

“Food safety and transport”

**Road Map for accession to and implementation of the
“Agreement on the international carriage of
perishable foodstuffs and on the special equipment to
be used for such carriage (ATP)”**



Geneva and Brussels, 26 January 2016

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A. INTRODUCTION

A.1 United Nations Economic Commission for Europe (UNECE)

The United Nations Economic Commission for Europe (UNECE) is one of the five United Nations regional commissions, administered by the Economic and Social Council (ECOSOC). It was established in 1947 with the mandate to help rebuild post-war Europe, develop economic activity and strengthen economic relations among European countries, and between Europe and the rest of the world. During the Cold War, UNECE served as a unique forum for economic dialogue and cooperation between East and West. Despite the complexity of this period, significant achievements were made, with consensus reached on numerous harmonization and standardization agreements.

In the post-Cold War era, UNECE acquired not only many new member States, but also new functions. Since the early 1990s the organization has focused on analyses of the transition process, using its harmonization experience to facilitate the integration of Central and Eastern European countries into the global markets.

UNECE is the forum where the countries of western, central and eastern Europe, central Asia and North America – 56 countries in all – come together to forge the tools of their economic cooperation. That cooperation concerns economics, statistics, environment, transport, trade, sustainable energy, timber and habitat. The Commission offers a regional framework for the elaboration and harmonization of conventions, norms and standards. The Commission's experts provide technical assistance to the countries of South-East Europe and the Commonwealth of Independent States. This assistance takes the form of advisory services, training seminars and workshops where countries can share their experiences and best practices.

A.2 Transport in UNECE

The UNECE Transport Division is the secretariat of the Inland Transport Committee (ITC) and the ECOSOC Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals. The ITC and its 17 working parties, as well as the ECOSOC Committee and its sub-committees are intergovernmental decision-making bodies that work to improve the daily lives of people and businesses around the world in measurable ways and with concrete actions that enhance traffic safety, environmental performance, energy efficiency and the competitiveness of the transport sector.

The ECOSOC Committee was set up in 1953 by the Secretary-General at the request of the Economic and Social Council to elaborate recommendations on the transport of dangerous goods. Its mandate was extended to the global (multisectoral) harmonization of systems of classification and labelling of chemicals in 1999. It is

composed of experts from countries which possess the relevant expertise and experience in the international trade and transport of dangerous goods and chemicals. Its membership is restricted in order to reflect a proper geographical balance between all regions of the world and to ensure adequate participation of developing countries. Although the Committee is a subsidiary body of ECOSOC, the Secretary-General decided in 1963 that the secretariat services would be provided by the UNECE Transport Division.

The Inland Transport Committee is a unique intergovernmental forum that was set up in 1947 to support the reconstruction of transport connections in post-war Europe. Over the years it has specialized in facilitating the harmonized and sustainable development of inland modes of transport. The main results of this persevering and ongoing work are reflected among other things (i) in 58 United Nations conventions and many more technical regulations which are updated on a regular basis and provide an international legal framework for the sustainable development of national and international road, rail, inland water and intermodal transport, as well as the transport of dangerous goods and the construction and inspection of road motor vehicles; (ii) in the Trans-European Motorways, Trans-European Railways and the Euro-Asia Transport Links projects that facilitate multi-country coordination of transport infrastructure investment programmes; (iii) in the TIR system which is a global customs transit facilitation solution; (iv) in the tool called For Future Inland Transport Systems (ForFITS) which can assist national and local governments to monitor CO2 emissions coming from inland transport modes and to select and design climate change mitigation policies based on their impact and adapted to local conditions; (v) in transport statistics – methods and data – that are internationally agreed on; and (vi) in studies and reports that help transport policy development by addressing timely issues based on cutting-edge research and analysis. ITC also devotes special attention to Intelligent Transport Services, sustainable urban mobility and city logistics, as well as to increasing the resilience of transport networks and services in response to climate change adaptation and security challenges.



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A.3 The EU-funded EuroMed Road, Rail and Urban Transport Project

The EU-funded EuroMed Regional Transport Project “Road, Rail and Urban Transport” (EuroMed RRU) aims at supporting the implementation of the Trans-Mediterranean Transport Network (TMT-N) by developing appropriate regulatory framework and operational conditions in order to facilitate cross-border transport, enhance land transport safety and promote sustainable and efficient urban transport. Within the implementation of the Regional Transport Action Plan (RTAP), the pursued objectives of the project are the following: enhanced implementation of the RTAP actions in the partner countries in the field of road, rail and urban transport; increased regional dialogue; enhanced interoperability on the future TMT-N by supporting similar operational conditions and regulatory framework; improved safety, efficiency and professionalization of the land transport sector; and better sustainability and efficiency of transport in urban areas. The 2014-2020 RTAP is currently being finalized.



EuroMed RRU Project, Visit to the National Research Council (CNR) of Padova, Study Tour on the ATP, Padova-Vicenza-Venice, Italy, 2 – 7 June 2014, © EuroMed RRU

The project activities cover the following fields of expertise:

- Road freight transport: UN agreements, harmonization of international road haulage, road safety, reform of the road transport industry, professionalism;

- Rail transport: rail interoperability and safety as well as structural reform;
- Urban transport: sustainable urban mobility plans, regulatory and institutional framework, fleet management, promotion of CIVITAS network.

Throughout the life of the project, workshops/conferences/trainings/study tours are organized, studies are conducted, good practices are shared and technical assistance activities are carried out.

The project is implemented in the framework of the European Neighborhood and Partnership Instrument ENPI-South and covers: Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Occupied Palestinian Territory, Syria and Tunisia.

B. THE ATP AGREEMENT

B.1 Food security for transport

Although globalization has reduced the relative distance between the different continents and regions of the world, at the same time, the actual distances between these regions are still a critical reality. As the distance between two places increases, so increase the dangers of the cargo transported being damaged. And while some cargo types can be damaged by shocks, others may be damaged by inappropriate temperature conditions. A range of goods, labeled as perishables (human foodstuffs, vegetables and fruits, fresh/frozen meat and fish, flowers and plants, pharmaceutical products etc.), have their quality degraded with time, because they naturally sustain specific chemical reactions. The rate of these reactions can be reduced by their transportation in temperature-controlled environments. In order to ensure that the transported goods are not damaged or degraded during transportation, businesses in the pharmaceutical, medical and food industries are increasingly relying on the cold chain.

As evident from the above, the cold chain refers to the transportation of temperature-sensitive goods along a supply chain, by using thermal and refrigerated packaging methods, along with the necessary logistical planning to protect the integrity of these shipments.

Since 1797, when British fishermen used natural ice to preserve their fish while at sea and 1942, when Frederick Jones developed the first portable refrigeration units to transport fresh foods and temperature-sensitive drugs and blood plasma for troops stationed overseas during World War II, cold chain operations have improved vastly – especially during the last decades, with many technological achievements. Nowadays, the industry is able to meet the transportation requirements for a wide range of products.

In order to ensure that a cargo will not degrade in terms of quality, it should be preserved in a specific temperature range, and as a result the type of container used as well as the refrigeration method are crucial factors. The transportation period, the size of the shipment and weather conditions are important when deciding what type of packaging is required. These types of packaging most often include an insulated box (varying from small-dimension packs to reefer containers and large reefer trucks), and use specific technologies to sustain a temperature-controlled environment. These technologies include dry ice, gel packs, eutectic plates, liquid nitrogen, quilts and refrigerating units.



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The most common of the above technologies in international transport are the refrigerating units, mounted on vans, small, medium and larger trucks, trailers, semi-trailers or even containers. However, in order to ensure that the equipment used in the transportation process can reliably sustain the temperature conditions for which it was designed, an international agreement has been developed: The Agreement on the international carriage of perishable foodstuffs and on the special equipment to be used for such carriage (ATP).

B.2 The ATP

The Agreement on the international carriage of perishable foodstuffs and on the special equipment to be used for such carriage (ATP), of 1970, is the response of European Governments for setting uniform standards for the transportation of temperature-sensitive goods. The acronym “ATP” is the abbreviation of the French name of the Agreement (**A**ccord relatif aux **T**ransports internationaux de denrées **P**érissables et aux engins spéciaux à utiliser pour ces transports).

The ATP mandates that specific types of equipment should be used to transport perishable food internationally and that such equipment should be regularly tested. The ATP applies to transport by road and by rail and sea crossings of less than 150 km, but it does not necessarily apply to transport within the borders of a single country, unless a country declares its use in domestic transport as well.

By regulating the above-mentioned technical specifications, the ATP creates a level playing field in the road haulage industry ensuring the quality and safety of the transported goods.

A number of EuroMed partner countries are considering accession to and implementation of the ATP Agreement to benefit from the widely harmonized ATP technical specifications framework.



B.3 Main provisions of the ATP Agreement

According to the Agreement, “for the international carriage of perishable foodstuffs, equipment shall not be designated as "insulated", "refrigerated", "mechanically refrigerated", or "heated" equipment unless it complies with the definitions and standards set forth in the Agreement” (Article 1).

Article 2 mandates the inspections of the above-mentioned equipment, in order to comply with the technical specifications imposed by the Agreement. The same article ensures the validity of certificates of compliance issued by one contracting State in another contracting State.

Article 3 defines the applicability of the Agreement in terms of means of transport and territory (application in international transport by rail or road, as well as sea crossings under 150 km).

The final provisions of the Agreement, including eligibility for accession, dispute settlement and procedures for amendment are provided for in Articles 9 to 20. Newly acceding countries should know that the Agreement is considered to enter into force one year after the deposit of its instrument of accession.

However, some of the most important provisions of the Agreement are included in its Annexes.



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Annex 1 provides the definitions of and standards for special equipment for the carriage of perishable foodstuffs (insulated, refrigerated, mechanically refrigerated and heated equipment), including technical specifications (notably the K factor) and the refrigeration classes (A to F). One of the most important parts of the Agreement is Appendix 2 to Annex 1, which mandates the methods and procedures for measuring and checking the insulating capacity and the efficiency of the cooling or heating appliances of special equipment for the carriage of perishable foodstuffs.

Appendices 3-4 include provisions regarding the certificate of compliance and the markings of the equipment used for carriage of perishable foodstuffs.

Finally, Annexes 2 and 3 refer to the temperature conditions to be observed for the carriage of quick (deep)-frozen and frozen foodstuffs (Annex 2) and chilled foodstuffs (Annex 3) as well as the need for monitoring and recording of air temperatures for deep frozen foodstuffs.



ATP Test Laboratory, EuroMed RRU Project, visit to the ATP Laboratory, Construction Technologies Institute of the National Research Council (ITC CNR) of Padova, © EuroMed RRU

Working Party on the Transport of Perishable Foodstuffs (WP.11)

The ATP is kept up to date and administered by the Working Party on the Transport of Perishable Foodstuffs, commonly known as WP.11. WP.11 has its annual meetings in Geneva. Member countries are represented by Ministries of transport, food and agriculture, or by representatives of official ATP testing stations nominated by their Governments. Representatives of the International Institute of Refrigeration, Transfrigoroute International, and associations of insulated body builders also participate.

WP.11 examines proposals for amendments made by countries. Recent amendments include the introduction of testing requirements for new multi-temperature, multi-compartment equipment.

Adopted amendments are annexed to the reports of WP.11. They are then communicated to ATP Contracting Parties by the United Nations Treaty Section in New York for a period of 6 months. If there is no objection, the amendments are considered accepted. Once accepted, the amendments take on legal force after a further period of six months.

The other possibility is for a country to object to the proposed amendments. Currently, if one country objects to a proposed amendment, even in the technical annexes, the amendment is not accepted.



*Class FRC (Class C mechanically refrigerated equipment with heavy insulation) certified equipment
EuroMed RRU © EuroMed RRU*

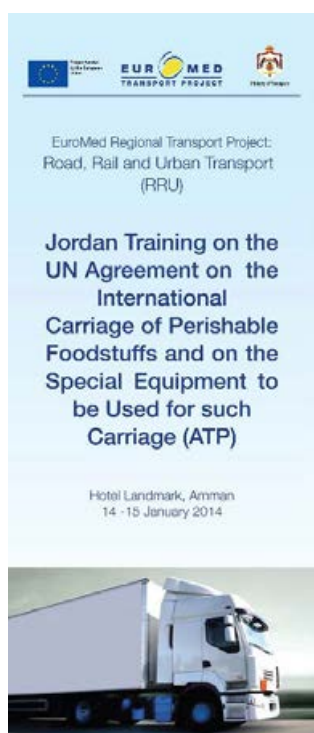


*EuroMed RRU Project, visit to Zanotti S.p.A., Constructor of refrigerating units, Pegognaga (MN) Italy
© EuroMed RRU*

C. PURPOSE, SCOPE AND OBJECTIVES OF THE ROADMAP

C.1 Purpose

The improvement of refrigerating methods and equipment has permitted the travel of greater distances and significantly increased the size of the global food market, thus enabling many developing countries to seize new opportunities. Furthermore, the technological improvements of the last decades have increased the efficiency and the reliability of the transportation of temperature-sensitive cargoes. This fact allows the food industry to take advantage of global seasonal variations in food production: in winter months, the countries of the southern hemisphere can export perishable goods to the northern hemisphere and vice versa during the summer months (albeit at a much smaller rate). Most important, however, is the fact that transportation of temperature-sensitive products that arrive in their original state of quality (and not degraded) to the final consumer is not only a matter of economics but also a matter of public health safety.



Taking note of the vital importance of the above, as well as the benefits of accession to and implementation of the ATP for EuroMed countries, the EuroMed RRU project has conducted focused national demand-driven training events in Algeria, Jordan and Morocco, with more to follow in Tunisia and Egypt. Following these events, EuroMed Partner countries have identified the importance of implementing ATP not only in their international but also for their domestic transport. Thus the issue for EuroMed Partner countries is how to prepare for accession to the ATP (the case of Jordan) and how they can benefit from its provisions in their international and national transportation of perishable food stuffs.

The present document, prepared jointly by EuroMed RRU and UNECE, presents the main steps and a number of sub-steps that countries wishing to accede and fully implement the ATP have to follow (the Road Map).

The first two steps deal with the preparatory work for accession, including coordination and responsibilities and highlight the strategic issues that need to be considered before accession. Step three exclusively deals with accession to the Agreement, eligibility and related procedures. The road map ends with the important aspects of enforcement and supporting measures addressed in step five.

All related legislative and explanatory documents are annexed. However, due to their volume, most of them are made available in electronic form only.

C.2 Scope and objectives

Drawing upon the extensive experience of the UNECE Sustainable Transport Division and the UNECE intergovernmental body administering the ATP Agreement as well as the EuroMed project experience gained through technical assistance provided to EuroMed Partner countries, this Road Map is aimed at providing concrete guidance for accession to and effective implementation of the ATP.



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D. THE UNECE-EU-EUROMED RRU PROJECT ROAD MAP FOR ACCESSION TO AND IMPLEMENTATION OF THE ATP

The present Road Map aims at providing guidance to EuroMed countries wishing to accede and implement the ATP Agreement as well as to other countries interested in acceding to the ATP beyond the EuroMed region.

The Road Map proposes the implementation of five main steps that if properly and timely pursued would result in the full application of the system in their territories.

STEP 1: Preparing for accession

1.1 Coordination and responsibilities at national level

The regulations that make up the ATP may be under the responsibility or interest of different ministries or administrations depending on the administrative structure in place in every country. The ministries, administrations and bodies concerned need to be identified and their representatives should be invited to take an active role in the pre-accession process.

A non-exhaustive list of the ministries, administrations and bodies usually concerned would include: ministries, authorities and bodies in charge of transport, agriculture, industry, trade and customs.

Representatives of the private sector should be consulted and be involved if possible in the process as representatives of the users of the regulations: transport sector, vehicle and insulated box manufacturers, test stations.

A formal coordination of all the participants in the process of pre-accession should be organized.

However, it should be noted that each country should assess and define their own needs for an administrative structure, based on culture, standard operating procedures, hierarchy schemes, staff and expertise availability. The sub-steps presented below are recommendations only and should not be regarded as obligatory.

1.2 Overall coordination and supervision

Although the regulations regarding the ATP may involve a number of different ministries and/or bodies, the main responsibility should be assigned to one ministry or government agency. In several ATP Contracting Parties this is the Ministry of Transport or Agriculture. In this case, the overall supervision and coordination of all ATP related actions should be under the competent minister.

1.3 Establishment of a competent ATP authority

The ATP is not a highly complex agreement to implement and secure its future seamless operation. However, the coordination and cooperation between all Ministries and other public bodies involved are critical for successful implementation. For this reason, a national competent authority should be established.

The competent authority will work on issues relating to national implementation and the concerned public and private stakeholders, taking into account the availability of expertise and resources. The competent authority should have both responsibility and authority and may represent the country in international meetings including the UNECE Working Party on Transport of Perishable Foodstuffs (WP.11).

Necessary resources, human and financial, should be made available.

As from an early stage, the designated national competent authority should appoint an ATP National Focal Point (ATP-NFP), dealing permanently with the ATP issues. His/her work is of outmost importance for the success of the implementation and smooth operation of the ATP in the country. The work of the ATP-NFP should be supported by a team of experts as well as by external expertise as necessary and appropriate.

STEP 2: Addressing strategic issues prior to accession

2.1 Studying the ATP and related national legislation

The ATP National Focal Point and the competent authority study the ATP Agreement and related national legislation. They also are responsible for ensuring that the translation of the ATP Agreement (as appropriate) is made available.

2.2 Deciding on the scope and applicability of the ATP

The ATP applies to international transport by road and rail and sea crossings under 150 km. However, several Contracting Parties also apply the Agreement's regulations in their domestic transport systems. This is the case in France, Italy, Russian Federation and Slovakia for example. As a result, newly acceding countries have to answer several critical questions, during the pre-accession phase. These include the scope and applicability e.g. international only or both international and domestic transport; a transition period may need to be applied in the case of domestic transport, and applicability with regard to already registered vehicles.

International transport only

If a country decides to apply the provisions of the ATP only for international transport by road, then the only step to be taken is to transpose the Agreement into the

national legislation, according to each country's established law-making procedures. It should be noted, however, that it might be easier for acceding countries just to refer to the ATP in their national laws, because attempts to re-write the Agreement's content in their own legislation may lead to discrepancies and later conflicts. The ATP is also amended frequently which could lead to problems if national legislation also has to be amended each time.

Both international and domestic transport

If a country opts for applying the ATP to both international and the domestic market, then some issues need to be clarified, including identification of the necessary transitional period and to which vehicles it will apply. However, it is strongly recommended that in that case, countries apply exactly the same requirements avoiding differences for both international and domestic markets, which could become a source of conflict and confusion for users and enforcers.

The decision of a country to apply the ATP Agreement in its domestic transport is its own.

STEP 3: Accession to the ATP

Article 9 of the ATP stipulates the eligibility for accession to it. Currently, States members of the Economic Commission for Europe and States admitted to the Commission in a consultative capacity may become Contracting Parties to the ATP, as well as States which may participate in certain activities of the Economic Commission for Europe by acceding. In effect, this means that the ATP is open to all countries of the world.

Countries that wish to accede to the ATP should submit to the Secretary-General of the United Nations an official request also known as an "Instrument of Accession".

This instrument should be signed by one of three specified authorities, namely the Head of State, Head of Government or Minister for Foreign Affairs. There is no specific form of the instrument, but it must include the following:

- Title, date and place of conclusion of the legal instrument concerned;
- Full name and title of the person signing the instrument, i.e., the Head of State, Head of Government or Minister for Foreign Affairs or any other person acting in such a position for the time being or with full powers for that purpose issued by one of the above authorities;
- An unambiguous expression of the intent of the Government, on behalf of the State, to consider itself bound by the legal instrument and to undertake faithfully to observe and implement its provisions;

- Date and place where the instrument was issued;
- Signature of the Head of State, Head of Government or Minister for Foreign Affairs (the official seal only is not sufficient) or any other person acting in such a position for the time being or with full powers for that purpose issued by one of the above authorities.

A model Instrument of Accession is presented below.

ANNEX 5 – MODEL INSTRUMENT OF ACCESSION

(To be signed by the Head of State, Head of Government
or Minister for Foreign Affairs)

ACCESSION

WHEREAS the [title of treaty, convention, agreement, etc.] was [concluded, adopted, opened for signature, etc.] at [place] on [date].

NOW THEREFORE I, [name and title of the Head of State, Head of Government or Minister for Foreign Affairs] declare that the Government of [name of State], having considered the above-mentioned [treaty, convention, agreement, etc.], accedes to the same and undertakes faithfully to perform and carry out the stipulations therein contained.

IN WITNESS WHEREOF, I have signed this instrument of accession at [place] on [date].

[Signature]

An instrument of accession becomes effective only when it is deposited with the Secretary-General of the United Nations at United Nations Headquarters in New York City. The date of deposit is normally recorded as that on which the instrument is received at Headquarters. Countries are advised to deliver such instruments to the

Treaty Section, Office of Legal Affairs of the United Nations directly to ensure the action is promptly processed.

Furthermore, it should be noted that the ATP enters into force one year after the deposit of its instrument of accession. By that time, each country should be in a position to comply with all provisions of the Agreement.

STEP 4: Setting up a National ATP Certification Network

The core aspect of the ATP is the issuance of certificates of compliance to inspected vehicles and insulated equipment. The certificates are issued after specific tests with advanced technological measuring equipment and sensors, which take place either at a Laboratory or an Expert workshop. Each country has first to nominate a competent authority responsible for the issuance of certificates of compliance with the ATP based on test reports issued by ATP laboratories or expert workshops. Countries may also choose to nominate their laboratories as the competent authority for the issuance of ATP certificates of compliance.

4.1 Setting up a Primary ATP Test Laboratory

One of the most inconvenient parts during ATP certification for vehicles from countries that have not acceded to the ATP, is the need to travel abroad in order to obtain a test report. This procedure has major drawbacks. Usually, a road transporter is obliged to travel long distances in order to find an ATP laboratory. During that time, the transporter is not able to perform transport operations, staying out of the market, not yielding any profits and thus sustaining economic losses.

In order to counter the above-described situation, each country is advised to set up a primary ATP Test Laboratory. This Laboratory will issue the first test report for each vehicle that enters the temperature-controlled supply chain.

According to experience in Europe, the required budget to set up such a Laboratory is estimated at between 1.0-1.2 million Euros. Although these numbers may seem high, the following parameters should be taken under consideration:

- The Laboratory will yield income every year, as new vehicles operating in the supply chain for temperature-sensitive products will need an initial ATP certificate or to have their certificates renewed. In this manner, the Laboratory will be able to repay back the initial invested capital and may expect to be profitable after a number of years¹.

¹ The ATP certification process is continuous: all existing vehicles and equipment operating in the temperature-controlled transport chain are obliged to have their certificates renewed every three or six years, while new vehicles and equipment will enter the market for others that will withdraw from it.

- An ATP Laboratory can operate in and claim a percentage of the private sector business, through external job orders for studies and technical advice as well as from agreements and contracts with firms and other organizations (national or international), thus increasing its revenue.



EuroMed RRU Project, Visit to the ATP Laboratory, Construction Technologies Institute of the National Research Council (ITC CNR) of Padova, © EuroMed RRU

Regarding the needed personnel, European experience (based on the laboratory in Padua in Italy) has shown that for the seamless operation of the Laboratory 1-2 Head Engineers are required, as well as 3-6 technicians, who will be sharing 3 8-hour shifts during a whole 24-hour day. In addition to the above, administrative personnel is needed proportionally to the needs of the Laboratory.

A typical ATP Laboratory possesses a large tunnel (length: 20-30 meters, width of entrance: 4-5 meters, vertical clearance: 4-5 meters) and relevant technical equipment (heating and cooling devices, temperature sensors, power generators, logging and analyzing equipment and computers etc).



Certification tests at ITC CNR ATP Laboratory, Padova, Italy © EuroMed RRU

4.2 Setting up ATP Expert workshops

According to the ATP Article 5 of Annex 1, Appendix 2, Experts may be appointed to assess the condition of the insulated equipment used in the temperature-controlled transport chain, in order to define if the equipment can retain its classification or move to another (lower).

The effectiveness of the thermal appliance is also checked by a so-called “pull-down” test, showing that it can cool the body to the required temperature in a fixed time.

If the results of these tests are satisfactory, the equipment may be kept in service for a further three years, and so on.



*Certification tests at C.S.E. s.r.l. Engineering, ATP Expert Test Station, Padova, Italy,
© EuroMed RRU*

These ATP Expert workshops are important in the ATP system, as they can handle a large volume of the necessary tests to be conducted for renewal of ATP certificates. They have the following characteristics:

- They can be either State-owned or privately owned.
- Their founding and setting up does not require large amounts of invested capital or extremely sophisticated or expensive technical equipment. This allows for a more lucrative business opportunity, reducing the burden the State has to bear.
- They can be operated by a small number of personnel. This allows for flexibility and low labour costs.

A sufficient number of expert workshops in the territory of the Contracting Party should be approved by the respective national authority, in order to facilitate in the most effective and efficient manner all the expert tests that need to be made.

The competent authority should not attempt to intervene in the commercial setting up of Expert workshops other than to ensure their sufficient number. However, their adherence to legal requirements should be subject to extensive and thorough audits

by the State, as the health of citizens not only in the country but also around the world rely on the test reports issued.



*Certification tests at C.S.E. s.r.l. Engineering, ATP Expert Test Station, Padova, Italy
© EuroMed RRU*

4.3 Procedures to be followed

The ATP mandates in every detail the methods and procedures that should be followed for the certification of vehicles and equipment operating in the transport of perishable goods. These methods and procedures apply not only for the first certification and classification of such vehicles and equipment, but also for renewal purposes. As a result, the State should make sure that these procedures are followed by all ATP Laboratories and expert workshops within its territory.

4.4 Create a reliable database accessible by all parties

All state authorities involved should have sufficient knowledge of the status of implementation and use of the ATP system in the country, while at the same time all parties involved in the ATP system, including companies that operate in the temperature-controlled transport chain, should be fully informed. The above can be achieved by the establishment of a reliable electronic system which will collect and store data, such as certificate expiration dates, infringements, used (installed) equipment etc. This database would provide several levels of access to the accumulated information, according to who requests it. This database could then be used for statistical, security and reference reasons.

STEP 5: Enforcement

Each vehicle or container operating in the transport of perishable goods should carry a certificate or plate to demonstrate that it meets the standards for refrigeration and thermal efficiency as mandated in the ATP. Checks on the acquired certificate or plate can be made at border stations or in the country's territory, during road-side checks or at food-processing facilities.

5.1 Introduce or amend laws for enforcement activities

The Contracting Parties implementing the ATP are expected through their competent authority to take into consideration the enforcement aspects at their respective national level and define an enforcement strategy.

According to Article 6 of the ATP, "each Contracting Party shall take all appropriate measures to ensure observance of the provisions of this Agreement. The competent authority of the Contracting Parties shall keep one another informed of the general measures taken for this purpose. If a Contracting Party discovers a breach committed by a person residing in the territory of another Contracting Party, or imposes a penalty upon such a person, the administration of the first Party shall inform the administration of the other Party of the breach discovered and of the penalty imposed."

To meet this requirement, countries are expected to submit information on their enforcement activities and the number of infringements of ATP detected each year to the secretariat of WP.11. A questionnaire is used to this end.

5.2 Train control officers appropriately

Law enforcers should be trained to identify the classification of vehicles and equipment operating in the temperature-controlled transport chain, in order to be able to perform their duties during checks. A non-exhaustive list of the training methods for such purposes would include:

- Seminars
- On-site demonstration at ATP Laboratories and Expert workshops
- Handbooks and manuals

In addition to the above, it is recommended that because of the sensitive cargoes that they carry that special provisions be put in place at national border crossings to:

- (i) minimize waiting times for ATP-approved vehicles transporting perishable foodstuffs
- (ii) ensure that the required controls are carried out as quickly as possible;

- (iii) allow the operation of the necessary refrigerating units of vehicles carrying perishable foodstuffs during the time of crossing the border;
- (iv) cooperate, in particular through advance information exchange, with their counterparts in other Contracting Parties in order to accelerate border crossing procedures for perishable foodstuff.

(These recommendations come from Annex 8 of the Convention on the Harmonization of Frontier Controls of Goods).



*Class FRC (Class C mechanically refrigerated equipment with heavy insulation) certified equipment
EuroMed RRU © EuroMed RRU*

E. SUMMARIZED ROAD MAP TABLE OF ACTIONS

NR.	STEPS	TIME OF COMPLETION	RESPONSIBLE	REMARKS
STEP 1: Preparing for accession				
1.1	Coordination and responsibilities at national level	Planning period	Highest government level	
1.2	Overall coordination and supervision	Planning period	Highest government level	
1.3	Establishment of a competent authority	Planning period	Highest government level	
STEP 2: Addressing strategic issues prior to accession				
1.1.	Studying the ATP and related national legislation	Planning period	Highest government level / National Focal Point / Competent ATP authority / National Experts	
1.2.	Deciding the scope and applicability of the ATP	Planning period	Highest government level / National Focal Point	
STEP 3: Accession to the ATP		After planning period	Highest government level	
STEP 4: Setting up a national ATP Certification Network				
4.1	Setting up a primary Test Laboratory	Within 3 months of accession	National Focal Point / Competent authority	

NR.	STEPS	TIME OF COMPLETION	RESPONSIBLE	REMARKS
4.2	Setting up Expert workshops	Within 6 months of accession	National Focal Point / Competent authority	
4.3	Procedures to be followed	Within 9 months of accession	National Focal Point / Competent authority	
4.4	Create a reliable database accessible by all parties	Within first year of accession	Competent authority	
STEP 5: Enforcement				
5.1	Introduce or amend laws for enforcement activities	Within 3 months of accession	Law-making authority	
5.2	Train control officers appropriately	Within 6 months of accession	National Focal Point / Competent authority	

F. ANNEXES AND BACKGROUND DOCUMENTS

NOTE: All documents annexed to the present will be made available only in the electronic version of the Road Map, while they can also be found in the UNECE website.

- I. Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) - Version of the ATP valid from 30 September 2015
- II. ATP Handbook 2015
- III. List of Competent Authorities and Test Stations

References:

UNECE website: <http://www.unece.org/trans/main/welcwp11.html>

ANNEX I

Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) - Version of the ATP valid from 30 September 2015

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
Inland Transport Committee



ECE/TRANS/249

ECONOMIC COMMISSION FOR EUROPE
Inland Transport Committee

ATP

as amended on 30 September 2015

**Agreement on the International Carriage
of Perishable Foodstuffs and on the Special
Equipment to be Used for such Carriage**



UNITED NATIONS
New York and Geneva, 2015

NOTE

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area, or of its authorities, or concerning the delimitation of its frontiers or boundaries.

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United Nations Economic Commission for Europe (UNECE)

The United Nations Economic Commission for Europe (UNECE) is one of the five United Nations regional commissions, administered by the Economic and Social Council (ECOSOC). It was established in 1947 with the mandate to help rebuild post-war Europe, develop economic activity and strengthen economic relations among European countries, and between Europe and the rest of the world. During the Cold War, UNECE served as a unique forum for economic dialogue and cooperation between East and West. Despite the complexity of this period, significant achievements were made, with consensus reached on numerous harmonization and standardization agreements.

In the post-Cold War era, UNECE acquired not only many new member States, but also new functions. Since the early 1990s the organization has focused on analyses of the transition process, using its harmonization experience to facilitate the integration of central and eastern European countries into global markets.

UNECE is the forum where the countries of western, central and eastern Europe, Central Asia and North America – 56 countries in all – come together to forge the tools of their cooperation. That cooperation concerns economic cooperation and integration, statistics, environment, transport, trade, sustainable energy, forestry and timber, housing and land management and population. The Commission offers a regional framework for the elaboration and harmonization of conventions, norms and standards. The Commission's experts provide technical assistance to the countries of South-East Europe and the Commonwealth of Independent States. This assistance takes the form of advisory services, training seminars and workshops where countries can share their experiences and best practices.

Transport in UNECE

The UNECE Transport Division is the secretariat of the Inland Transport Committee (ITC) and the ECOSOC Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals. The ITC and its 17 working parties, as well as the ECOSOC Committee and its sub-committees are intergovernmental decision-making bodies that work to improve the daily lives of people and businesses around the world in measurable ways and with concrete actions that enhance traffic safety, environmental performance, energy efficiency and the competitiveness of the transport sector.

The ECOSOC Committee was set up in 1953 by the Secretary-General at the request of the Economic and Social Council to elaborate recommendations on the transport of dangerous goods. Its mandate was extended to the global (multisectoral) harmonization of systems of classification and labelling of chemicals in 1999. It is composed of experts from countries which possess the relevant expertise and experience in the international trade and transport of dangerous goods and chemicals. Its membership is restricted in order to reflect a proper geographical balance between all regions of the world and to ensure adequate participation of developing countries. Although the Committee is a subsidiary body of ECOSOC, the Secretary-General decided in 1963 that the secretariat services would be provided by the UNECE Transport Division.

The Inland Transport Committee is a unique intergovernmental forum that was set up in 1947 to support the reconstruction of transport connections in post-war Europe. Over the years it has specialized in facilitating the harmonized and sustainable development of inland modes of transport. The main results of this persevering and ongoing work are reflected among other things (i) in 58 United Nations conventions and many more technical regulations which are updated on a regular basis and provide an international legal framework for the sustainable development of national and international road, rail, inland water and intermodal transport, as well as the transport of dangerous goods and the construction and inspection of road motor vehicles; (ii) in the Trans-European Motorways, Trans-European Railways and the Euro-Asia Transport Links projects that facilitate multi-country coordination of transport infrastructure investment programmes; (iii) in the TIR system which is a global customs transit facilitation solution; (iv) in the tool called For Future Inland Transport Systems (ForFITS) which can assist national and local governments to monitor CO₂ emissions coming from inland transport modes and to select and design climate change mitigation policies based on their impact and adapted to local conditions; (v) in transport statistics – methods and data – that are internationally agreed on; and (vi) in studies and reports that help transport policy development by addressing timely issues based on cutting-edge research and analysis.

ITC also devotes special attention to Intelligent Transport Services, sustainable urban mobility and city logistics, as well as to increasing the resilience of transport networks and services in response to climate change adaptation and security challenges.

FOREWORD

The Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) done at Geneva on 1 September 1970 entered into force on 21 November 1976.

The Agreement and its annexes have been regularly amended and updated since their entry into force by the Working Party on the Transport of Perishable Foodstuffs (WP.11) of the Economic Commission for Europe's Inland Transport Committee.

Territorial applicability

The ATP is an Agreement between States, and there is no overall enforcing authority. In practice, highway checks are carried out by Contracting Parties, and non-compliance may then result in legal action by national authorities against offenders in accordance with their domestic legislation. ATP itself does not prescribe any penalties. At the time of publishing, those Contracting Parties are Albania, Andorra, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Monaco, Montenegro, Morocco, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Saudi Arabia, Serbia, Slovakia, Slovenia, Spain, Sweden, Tajikistan, The former Yugoslav Republic of Macedonia, Tunisia, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America and Uzbekistan.

Additional practical information

Any query concerning the application of ATP should be directed to the relevant competent authority. Additional information may also be found on the UNECE Transport Division web site at the following link:

<http://www.unece.org/trans/main/wp11/atp.html>

This information, updated on a continuous basis, concerns:

- The status of ATP;
- Depositary notifications (e.g. new Contracting Parties, amendments or corrections to legal texts);
- Publication details (corrections, publication of new amendments);
- List and details of competent authorities and ATP Test Stations.

The text below comprises the Agreement itself and its annexes with the latest amendments which enter into force on 30 September 2015.

The amendments or corrections to the Agreement which have become applicable since the last edition of this publication are in Annex 1, paragraph 4; Annex 1, Appendix 1, paragraphs 3 and 6; Annex 1, Appendix 2, paragraphs 4.3.2, 6.3, 7 and 8; Annex 1, Appendix 3A and Appendix 3B; Annex 1, Appendix 4; and Annex 2, Appendix 1.

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**AGREEMENT ON THE INTERNATIONAL CARRIAGE OF PERISHABLE FOODSTUFFS
AND ON THE SPECIAL EQUIPMENT TO BE USED FOR SUCH CARRIAGE (ATP)**

THE CONTRACTING PARTIES,

DESIROUS of improving the conditions of preservation of the quality of perishable foodstuffs during their carriage, particularly in international trade,

CONSIDERING that the improvement of those conditions is likely to promote the expansion of trade in perishable foodstuffs,

HAVE AGREED as follows:

Chapter I

SPECIAL TRANSPORT EQUIPMENT

Article 1

For the international carriage of perishable foodstuffs, equipment shall not be designated as "insulated", "refrigerated", "mechanically refrigerated", or "heated" equipment unless it complies with the definitions and standards set forth in annex 1 to this Agreement.

Article 2

The Contracting Parties shall take the measures necessary to ensure that the equipment referred to in article 1 of this Agreement is inspected and tested for compliance with the said standards in conformity with the provisions of annex 1, appendices 1, 2, 3 and 4, to this Agreement. Each Contracting Party shall recognize the validity of certificates of compliance issued in conformity with annex 1, appendix 1, paragraph 3 to this Agreement by the competent authority of another Contracting Party. Each Contracting Party may recognize the validity of certificates of compliance issued in conformity with the requirements of annex 1, appendices 1 and 2, to this Agreement by the competent authority of a State not a Contracting Party.

Chapter II

**USE OF SPECIAL TRANSPORT EQUIPMENT FOR THE INTERNATIONAL
CARRIAGE OF CERTAIN PERISHABLE FOODSTUFFS**

Article 3

1. The provisions of article 4 of this Agreement shall apply to all carriage, whether for hire or reward or for own account, carried out exclusively - subject to the provisions of paragraph 2 of this article - by rail, by road or by a combination of the two, of

- quick (deep)-frozen and frozen foodstuffs, and of
- foodstuffs referred to in annex 3 to this Agreement even if they are neither quick (deep)-frozen nor frozen,

if the point at which the goods are, or the equipment containing them is, loaded on to a rail or road vehicle and the point at which the goods are, or the equipment containing them is, unloaded from that vehicle are in two different States and the point at which the goods are unloaded is situated in the territory of a Contracting Party.

In the case of carriage entailing one or more sea crossings other than sea crossings as referred to in paragraph 2 of this article, each land journey shall be considered separately.

- 1 -

2. The provisions of paragraph 1 of this article shall likewise apply to sea crossings of less than 150 km on condition that the goods are shipped in equipment used for the land journey or journeys without transloading of the goods and that such crossings precede or follow one or more land journeys as referred to in paragraph 1 of this article or take place between two such land journeys.

3. Notwithstanding the provisions of paragraphs 1 and 2 of this article, the Contracting Parties need not apply the provisions of article 4 of this Agreement to the carriage of foodstuffs not intended for human consumption.

Article 4

1. For the carriage of the perishable foodstuffs specified in annexes 2 and 3 to this Agreement, the equipment referred to in article 1 of this Agreement shall be used unless the temperatures to be anticipated throughout carriage render this requirement manifestly unnecessary for the purpose of maintaining the temperature conditions specified in annexes 2 and 3 to this Agreement. The equipment shall be so selected and used that the temperature conditions prescribed in the said annexes can be complied with throughout carriage. Furthermore, all appropriate measures shall be taken, more particularly as regards the temperature of the foodstuffs at the time of loading and as regards icing or re-icing during the journey or other necessary operations. Nevertheless, the provisions of this paragraph shall apply only in so far as they are not incompatible with international undertakings in the matter of international carriage arising for the Contracting Parties by virtue of conventions in force at the time of the entry into force of this Agreement or by virtue of conventions substituted for them.

2. If during carriage under this Agreement the provisions of paragraph 1 of this article have not been complied with,

- (a) the foodstuffs may not be disposed of in the territory of a Contracting Party after completion of carriage unless the competent authorities of that Contracting Party deem it compatible with the requirements of public health to authorize such disposal and unless such conditions as the authorities may attach to the authorization when granting it are fulfilled; and
- (b) every Contracting Party may, by reason of the requirements of public health or zooprophyllaxis and in so far as it is not incompatible with the other international undertakings referred to in the last sentence of paragraph 1 of this article, prohibit the entry of the foodstuffs into its territory or make their entry subject to such conditions as it may determine.

3. Compliance with the provisions of paragraph 1 of this article shall be required of carriers for hire or reward only in so far as they have undertaken to procure or provide services intended to ensure such compliance and if such compliance depends on the performance of those services. If other persons, whether individuals or corporate bodies, have undertaken to procure or provide services intended to ensure compliance with the provisions of this Agreement, they shall be required to ensure such compliance in so far as it depends on performance of the services they have undertaken to procure or provide.

4. During carriage which is subject to the provisions of this Agreement and for which the loading point is situated in the territory of a Contracting Party, responsibility for compliance with the requirements of paragraph 1 of this article shall rest, subject to the provisions of paragraph 3 of this article,

- in the case of transport for hire or reward, with the person, whether an individual or a corporate body, who is the consignor according to the transport document or, in the absence of a transport document, with the person, whether an individual or a corporate body, who has entered into the contract of carriage with the carrier;
- in other cases with the person, whether an individual or a corporate body, who performs carriage.

Chapter III

MISCELLANEOUS PROVISIONS

Article 5

The provisions of this Agreement shall not apply to carriage in containers classified as thermal maritime by land without transloading of the goods where such carriage is preceded or followed by a sea crossing other than a sea crossing as referred to in article 3, paragraph 2, of this Agreement.

Article 6

1. Each Contracting Party shall take all appropriate measures to ensure observance of the provisions of this Agreement. The competent administrations of the Contracting Parties shall keep one another informed of the general measures taken for this purpose.

2. If a Contracting Party discovers a breach committed by a person residing in the territory of another Contracting Party, or imposes a penalty upon such a person, the administration of the first Party shall inform the administration of the other Party of the breach discovered and of the penalty imposed.

Article 7

The Contracting Parties reserve the right to enter into bilateral or multilateral agreements to the effect that provisions applicable to special equipment and provisions applicable to the temperatures at which certain foodstuffs are required to be maintained during carriage may, more particularly by reason of special climatic conditions, be more stringent than those prescribed in this Agreement. Such provisions shall apply only to international carriage between Contracting Parties which have concluded bilateral or multilateral agreements as referred to in this article. Such agreements shall be transmitted to the Secretary-General of the United Nations, who shall communicate them to Contracting Parties to this Agreement which are not signatories of the said agreements.

Article 8

Failure to observe the provisions of this Agreement shall not affect either the existence or the validity of contracts entered into for the performance of carriage.

Chapter IV

FINAL PROVISIONS

Article 9

1. States members of the Economic Commission for Europe and States admitted to the Commission in a consultative capacity under paragraph 8 of the Commission's terms of reference may become Contracting Parties to this Agreement

- (a) by signing it;
- (b) by ratifying it after signing it subject to ratification; or
- (c) by acceding to it.

2. States which may participate in certain activities of the Economic Commission for Europe under paragraph 11 of the Commission's terms of reference may become Contracting Parties to this Agreement by acceding thereto after its entry into force.

3. This Agreement shall be open for signature until 31 May 1971 inclusive. Thereafter, it shall be open for accession.

4. Ratification or accession shall be effected by the deposit of an instrument with the Secretary-General of the United Nations.

Article 10

1. Any State may at the time of signing this Agreement without reservation as to ratification or of depositing its instrument of ratification or accession or at any time thereafter declare by notification addressed to the Secretary-General of the United Nations that the Agreement does not apply to carriage performed in any or in a particular one of its territories situated outside Europe. If notification as aforesaid is made after the entry into force of the Agreement in respect of the notifying State the Agreement shall, ninety days after the date on which the Secretary-General has received the notification, cease to apply to carriage in the territory or territories named in that notification. New Contracting Parties acceding to ATP as from 30 April 1999 and applying paragraph 1 of this article shall not be entitled to enter any objection to draft amendments in accordance with the procedure provided for in article 18, paragraph 2.

2. Any State which has made a declaration under paragraph 1 of this article may at any time thereafter declare by notification addressed to the Secretary-General of the United Nations that the Agreement will be applicable to carriage performed in a territory named in the notification made under paragraph 1 of this article and the Agreement shall become applicable to carriage in that territory one hundred and eighty days after the date on which the Secretary-General has received that notification.

Article 11

1. This Agreement shall come into force one year after five of the States referred to in its article 9, paragraph 1, have signed it without reservation as to ratification or have deposited their instruments of ratification or accession.

2. With respect to any State which ratifies, or accedes to, this Agreement after five States have signed it without reservation as to ratification or have deposited their instruments of ratification or accession, this Agreement shall enter into force one year after the said State has deposited its instrument of ratification or accession.

Article 12

1. Any Contracting Party may denounce this Agreement by giving notice of denunciation to the Secretary-General of the United Nations.

2. The denunciation shall take effect fifteen months after the date on which the Secretary-General received the notice of denunciation.

Article 13

This Agreement shall cease to have effect if the number of Contracting Parties is less than five throughout any period of twelve consecutive months after its entry into force.

Article 14

1. Any State may at the time of signing this Agreement without reservation as to ratification or of depositing its instrument of ratification or accession or at any time thereafter declare by notification addressed to the Secretary-General of the United Nations that this Agreement will be applicable to all or any of the territories for the international relations of which that State is responsible. This Agreement shall be applicable to the territory or territories named in the notification as from the ninetieth day after receipt of the notice by the Secretary-General or, if on that day the Agreement has not yet entered into force, as from its entry into force.

2. Any State which has made a declaration under paragraph 1 of this article making this Agreement applicable to a territory for whose international relations it is responsible may denounce the Agreement separately in respect of that territory in conformity with article 12 hereof.

Article 15

1. Any dispute between two or more Contracting Parties concerning the interpretation or application of this Agreement shall so far as possible be settled by negotiation between them.
2. Any dispute which is not settled by negotiation shall be submitted to arbitration if any one of the Contracting Parties concerned in the dispute so requests and shall be referred accordingly to one or more arbitrators selected by agreement between those Parties. If within three months from the date of the request for arbitration, the Parties concerned in the dispute are unable to agree on the selection of an arbitrator or arbitrators, any of those Parties may request the Secretary-General of the United Nations to designate a single arbitrator to whom the dispute shall be referred for decision.
3. The decision of the arbitrator or arbitrators designated under the preceding paragraph shall be binding on the Contracting Parties concerned in the dispute.

Article 16

1. Any State may, at the time of signing, ratifying, or acceding to, this Agreement, declare that it does not consider itself bound by article 15, paragraphs 2 and 3 of this Agreement. The other Contracting Parties shall not be bound by these paragraphs with respect to any Contracting Party which has entered such a reservation.
2. Any Contracting Party which has entered a reservation under paragraph 1 of this article may at any time withdraw the reservation by notification addressed to the Secretary-General of the United Nations.
3. With the exception of the reservation provided for in paragraph 1 of this article, no reservation to this Agreement shall be permitted.

Article 17

1. After this Agreement has been in force for three years, any Contracting Party may, by notification addressed to the Secretary-General of the United Nations, request that a conference be convened for the purpose of revising this Agreement. The Secretary-General shall notify all Contracting Parties of the request and a revision conference shall be convened by the Secretary-General if, within a period of four months from the date of the notification sent by the Secretary-General, not less than one third of the Contracting Parties signify their assent to the request.
2. If a conference is convened in pursuance of paragraph 1 of this article, the Secretary-General shall so advise all the Contracting Parties and invite them to submit within a period of three months, the proposals which they wish the conference to consider. The Secretary-General shall circulate the provisional agenda for the conference, together with the text of such proposals, to all Contracting Parties not less than three months before the date on which the conference is to open.
3. The Secretary-General shall invite to any conference convened in pursuance of this article all the countries referred to in article 9, paragraph 1, of this Agreement, and also the countries which have become Contracting Parties under the said article 9, paragraph 2.

Article 18

1. Any Contracting Party may propose one or more amendments to this Agreement. The text of any proposed amendment shall be communicated to the Secretary-General of the United Nations, who shall communicate it to all Contracting Parties and bring it to the notice of all the other States referred to in article 9, paragraph 1, of this Agreement.

The Secretary-General may also propose amendments to this Agreement or to its annexes which have been transmitted to him by the Working Party on the Transport of Perishable Foodstuffs of the Inland Transport Committee of the Economic Commission for Europe.

2. Within a period of six months following the date on which the proposed amendment is communicated by the Secretary-General, any Contracting Party may inform the Secretary-General

- (a) that it has an objection to the amendment proposed, or
- (b) that, although it intends to accept the proposal, the conditions necessary for such acceptance are not yet fulfilled in its country.

3. If a Contracting Party sends the Secretary-General a communication as provided for in paragraph 2 (b) of this article, it may, so long as it has not notified the Secretary-General of its acceptance, submit an objection to the proposed amendment within a period of nine months following the expiry of the period of six months prescribed in respect of the initial communication.

4. If an objection to the proposed amendment is stated in accordance with the terms of paragraphs 2 and 3 of this article, the amendment shall be deemed not to have been accepted and shall be of no effect.

5. If no objection to the proposed amendment has been stated in accordance with paragraphs 2 and 3 of this article, the amendment shall be deemed to have been accepted on the date specified below:

- (a) if no Contracting Party has sent a communication to the Secretary-General in accordance with paragraph 2 (b) of this article, on the expiry of the period of six months referred to in paragraph 2 of this article;
- (b) if at least one Contracting Party has sent a communication to the Secretary-General in accordance with paragraph 2 (b) of this article, on the earlier of the following two dates:
 - the date by which all the Contracting Parties which sent such communications have notified the Secretary-General of their acceptance of the proposed amendment, subject however to the proviso that if all the acceptances were notified before the expiry of the period of six months referred to in paragraph 2 of this article the date shall be the date of expiry of that period;
 - the date of expiry of the period of nine months referred to in paragraph 3 of this article.

6. Any amendment deemed to be accepted shall enter into force six months after the date on which it was deemed to be accepted.

7. The Secretary-General shall as soon as possible inform all Contracting Parties whether an objection to the proposed amendment has been stated in accordance with paragraph 2 (a) of this article and whether one or more Contracting Parties have sent him a communication in accordance with paragraph 2 (b) of this article. If one or more Contracting Parties have sent him such a communication, he shall subsequently inform all the Contracting Parties whether the Contracting Party or Parties which have sent such a communication raise an objection to the proposed amendment or accept it.

8. Independently of the amendment procedure laid down in paragraphs 1 to 6 of this article, the annexes and appendices to this Agreement may be modified by agreement between the competent administrations of all the Contracting Parties. If the administration of a Contracting Party has stated that under its national law its agreement is contingent on special authorization or on the approval of a legislative body, the consent of the Contracting Party concerned to the modification of an annex shall not be deemed to have been given until the Contracting Party has notified the Secretary-General that the necessary authorization or approval has been obtained. The agreement between the competent administrations may provide that, during a transitional period, the old annexes shall remain in force, wholly or in part, concurrently with the new annexes. The Secretary-General shall specify the date of the entry into force of the new texts resulting from such modifications.

Article 19

In addition to communicating to them the notifications provided for in articles 17 and 18 of this Agreement, the Secretary-General of the United Nations shall notify the States referred to in article 9, paragraph 1, of this Agreement and the States which have become Contracting Parties under article 9, paragraph 2, of:

- (a) signatures, ratifications and accessions under article 9;
- (b) the dates of entry into force of this Agreement pursuant to article 11;
- (c) denunciations under article 12;
- (d) the termination of this Agreement under article 13;
- (e) notifications received under articles 10 and 14;
- (f) declarations and notifications received under article 16, paragraphs 1 and 2;
- (g) the entry into force of any amendment pursuant to article 18.

Article 20

After 31 May 1971, the original of this Agreement shall be deposited with the Secretary-General of the United Nations, who shall transmit certified true copies to each of the States mentioned in article 9, paragraphs 1 and 2, of this Agreement.

IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed this Agreement.

DONE at Geneva, this first day of September, one thousand nine hundred and seventy, in a single copy, in the English, French and Russian languages, the three texts being equally authentic.

Annex 1

DEFINITIONS OF AND STANDARDS FOR SPECIAL EQUIPMENT ¹ FOR THE CARRIAGE OF PERISHABLE FOODSTUFFS

1. **Insulated equipment.** Equipment of which the body ² is built with insulating walls, doors, floor and roof, by which heat exchanges between the inside and outside of the body can be so limited that the overall coefficient of heat transfer (K coefficient) is such that the equipment is assignable to one or other of the following two categories:

I_N = Normally insulated equipment specified by: - a K coefficient equal to or less than 0.70 W/m².K;

I_R = Heavily insulated equipment specified by: - a K coefficient equal to or less than 0.40 W/m².K and by side-walls with a thickness of at least 45 mm for transport equipment of a width greater than 2.50 m.

The definition of the K coefficient and a description of the method to be used in measuring it are given in appendix 2 to this annex.

2. **Refrigerated equipment.** Insulated equipment which, using a source of cold (natural ice, with or without the addition of salt; eutectic plates; dry ice, with or without sublimation control; liquefied gases, with or without evaporation control, etc.) other than a mechanical or "absorption" unit, is capable, with a mean outside temperature of + 30 °C, of lowering the temperature inside the empty body to, and thereafter maintaining it:

At + 7 °C maximum in the case of class A;

At - 10 °C maximum in the case of class B;

At - 20 °C maximum in the case of class C; and

At 0 °C maximum in the case of class D.

If such equipment includes one or more compartments, receptacles or tanks for the refrigerant, the said compartments, receptacles or tanks shall:

be capable of being filled or refilled from the outside; and

have a capacity in conformity with the provisions of annex 1, appendix 2, paragraph 3.1.3.

The K coefficient of refrigerated equipment of classes B and C shall in every case be equal to or less than 0.40 W/m².K.

¹ Wagons, lorries, trailers, semi-trailers, containers and other similar equipment.

² In the case of tank equipment, the term "body" means under this definition, the tank itself.

3. **Mechanically refrigerated equipment.** Insulated equipment either fitted with its own refrigerating appliance, or served jointly with other units of transport equipment by such an appliance (fitted with either a mechanical compressor, or an "absorption" device, etc.). The appliance shall be capable, with a mean outside temperature of + 30 °C, of lowering the temperature T_i inside the empty body to, and thereafter maintaining it continuously in the following manner at:

In the case of classes A, B and C, any desired practically constant inside temperature T_i in conformity with the standards defined below for the three classes:

Class A. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i may be chosen between + 12 °C and 0 °C inclusive;

Class B. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i may be chosen between + 12 °C and - 10 °C inclusive;

Class C. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i may be chosen between + 12 °C and - 20 °C inclusive.

In the case of classes D, E and F a fixed practically constant inside temperature T_i in conformity with the standards defined below for the three classes:

Class D. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i is equal to or less than 0 °C;

Class E. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i is equal to or less than - 10 °C;

Class F. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i is equal to or less than - 20 °C. The K coefficient of equipment of classes B, C, E and F shall in every case be equal to or less than 0.40 W/m².K.

4. **Heated equipment.** Insulated equipment, which is capable of raising the inside temperature of the empty body to, and thereafter maintaining it for not less than 12 hours without renewal of supply at, a practically constant value of not less than + 12 °C when the mean outside temperature, is as indicated below:

-10 °C in the case of class A heated equipment;

-20 °C in the case of class B heated equipment;

-30° C in the case of class C heated equipment;

-40° C in the case of class D heated equipment.

Heat producing appliances shall have a capacity in conformity with the provisions of annex 1, appendix 2, paragraphs 3.3.1 to 3.3.5.

The K coefficient of equipment of classes B, C and D shall in every case be equal to or less than 0.40 W/m².K.

Annex 1, Appendix 1

PROVISIONS RELATING TO THE CHECKING OF INSULATED, REFRIGERATED, MECHANICALLY REFRIGERATED OR HEATED EQUIPMENT FOR COMPLIANCE WITH THE STANDARDS

1. Checks for conformity with the standards prescribed in this annex shall be made:
 - (a) before equipment enters into service;
 - (b) periodically, at least once every six years;
 - (c) whenever required by the competent authority.

Except in the cases provided for in appendix 2, sections 5 and 6, to this annex, the checks shall be made at a testing station designated or approved by the competent authority of the country in which the equipment is registered or recorded, unless, in the case of the check referred to in (a) above, a check has already been made on the equipment itself or on its prototype in a testing station designated or approved by the competent authority of the country in which the equipment was manufactured.

2. The methods and procedures to be used in checking for compliance with the standards are described in appendix 2 to this annex.
3. A certificate of compliance with the standards shall be issued by the competent authority of the country in which the equipment is to be registered or recorded. This certificate shall conform to the model reproduced in appendix 3 to this annex.

The certificate of compliance shall be carried on the equipment during carriage and be produced whenever so required by the control authorities. However, if a certification plate of compliance, as reproduced in appendix 3 to this annex, is fixed to the equipment, the certification plate of compliance shall be recognized as equivalent to a certificate of compliance. A certification plate of compliance may be fixed to the equipment only when a valid certificate of compliance is available. Certification plates of compliance shall be removed as soon as the equipment ceases to conform to the standards laid down in this annex.

In the case of equipment transferred to another country, which is a Contracting Party to ATP, it shall be accompanied by the following documents so that the competent authority of the country in which the equipment is to be registered or recorded can issue a certificate of compliance:

- (a) in all cases, the test report of the equipment itself or, in the case of serially produced equipment, of the reference equipment;
- (b) in all cases, the certificate of compliance issued by the competent authority of the country of manufacture or, for equipment in service, the competent authority of the country of registration. This certificate will be treated as a provisional certificate if necessary with a maximum validity of six months;
- (c) in the case of serially produced equipment, the technical specification of the equipment to be certified as issued by the manufacturer of the equipment or his duly accredited representative (this specification shall cover the same items as the descriptive pages concerning the equipment which appear in the test report and shall be drawn up in at least one of the official languages).

In the case of equipment transferred after it has been in use, the equipment may be subject to a visual inspection to confirm its identity before the competent authority of the country, in which it is to be registered or recorded, issues a certificate of compliance.

For a batch of identical serially produced insulated equipment (containers) having an internal volume of less than 2 m³, a certificate of compliance for the batch may be issued by the competent authority. In such cases the identification numbers of all the insulated equipment, or the first and the last identification numbers of the series, shall be indicated on the certificate of compliance instead of the serial number of each individual unit. In that case, the insulated equipment listed in that certificate shall be fitted with a certification plate of compliance as described in Annex 1, Appendix 3 B issued by the competent authority.

In the case of transfer of this insulated equipment (containers) to another country which is a Contracting Party to this Agreement in order to be registered or recorded there, the competent authority of the country of the new registration or recording may provide an individual certificate of compliance based on the original certificate of compliance established for the whole batch.

4. Distinguishing marks and particulars shall be affixed to the equipment in conformity with the provisions of appendix 4 to this annex. They shall be removed as soon as the equipment ceases to conform to the standards laid down in this annex.
5. The insulated bodies of "insulated", "refrigerated", "mechanically refrigerated" or "heated" transport equipment and their thermal appliances shall each bear a durable manufacturer's plate firmly affixed by the manufacturer in a conspicuous and readily accessible position on a part not subject to replacement in use. It shall be able to be checked easily and without the use of tools. For insulated bodies, the manufacturer's plate shall be on the outside of the body. The manufacturer's plate shall show clearly and indelibly at least the following particulars:³

Country of manufacture or letters used in international road traffic;

Name of manufacturer or company;

Model (figures and/or letters);

Serial number;

Month and year of manufacture.

6. (a) New equipment of a specific type serially produced may be approved by testing one unit of that type. If the unit tested meets the class specification, the resulting test report shall be regarded as a Type Approval Certificate. This certificate shall expire at the end of a period of six years beginning from the date of completion of the test.

The date of expiry of test reports shall be stated in months and years.
- (b) The competent authority shall take steps to verify that production of other units is in conformity with the approved type. For this purpose it may check by testing sample units drawn at random from the production series.
- (c) A unit shall not be regarded as being of the same type as the unit tested unless it satisfies the following minimum conditions:
 - (i) If it is insulated equipment, in which case the reference equipment may be insulated, refrigerated, mechanically refrigerated or heated equipment,

the construction shall be comparable and, in particular, the insulating material and the method of insulation shall be identical;

³ *These requirements shall apply to new plates only. A transitional period of three months shall be granted from the date of entry into force of this requirement.*

the thickness of the insulating material shall be not less than that of the reference equipment;

the interior fittings shall be identical or simplified;

the number of doors and the number of hatches or other openings shall be the same or less; and

the inside surface area of the body shall not be as much as 20% greater or smaller;

minor and limited modifications of added or exchanged interior and exterior fittings may be permitted:⁴

if the equivalent volume of accumulated insulation material of all such modifications is less than 1/100th of the total volume of the insulating material in the insulated unit;

if the K coefficient of the tested reference equipment, corrected by a calculation of the added thermal losses, is less than or equal to the K coefficient limit of the category of the equipment; and

if such modifications of interior fittings are carried out using the same technique, particularly as concerns glued fittings.

All modifications shall be done by or be approved by the manufacturer of the insulated equipment.

(ii) If it is refrigerated equipment, in which case the reference equipment shall be refrigerated equipment,

the conditions set out under (i) above shall be satisfied;

inside circulating fans shall be comparable;

the source of cold shall be identical; and

the reserve of cold per unit of inside surface area shall be greater or equal;

(iii) If it is mechanically refrigerated equipment, in which case the reference equipment shall be either:

(a) mechanically refrigerated equipment;

- the conditions set out in (i) above shall be satisfied; and

- the effective refrigerating capacity of the mechanical refrigeration appliance per unit of inside surface area, under the same temperature conditions, shall be greater or equal; or

(b) insulated equipment which is complete in every detail but minus its mechanical refrigeration unit which will be fitted at a later date.

⁴ *The present provisions regarding minor and limited modifications apply to equipment manufactured after the date of their entry into force (30 September 2015).*

The resulting aperture will be filled, during the measurement of the K coefficient, with close fitting panels of the same overall thickness and type of insulation as is fitted to the front wall. In which case:

- the conditions set out in (i) above shall be satisfied; and
 - the effective refrigerating capacity of the mechanical refrigeration unit fitted to insulated reference equipment shall be as defined in annex 1, appendix 2, paragraph 3.2.6.
- (iv) If it is heated equipment, in which case the reference equipment may be insulated or heated equipment,
- the conditions set out under (i) above shall be satisfied;
 - the source of heat shall be identical; and
 - the capacity of the heating appliance per unit of inside surface area shall be greater or equal.
- (d) If, in the course of the six-year period, the production series exceeds 100 units, the competent authority shall determine the percentage of units to be tested.

Annex I, Appendix 2

METHODS AND PROCEDURES FOR MEASURING AND CHECKING THE INSULATING CAPACITY AND THE EFFICIENCY OF THE COOLING OR HEATING APPLIANCES OF SPECIAL EQUIPMENT FOR THE CARRIAGE OF PERISHABLE FOODSTUFFS

1. DEFINITIONS AND GENERAL PRINCIPLES

- 1.1 K coefficient. The overall heat transfer coefficient (K coefficient) of the special equipment is defined by the following formula:

$$K = \frac{W}{S \cdot \Delta T}$$

where W is either the heating power or the cooling capacity, as the case may be, required to maintain a constant absolute temperature difference ΔT between the mean inside temperature T_i and the mean outside temperature T_e , during continuous operation, when the mean outside temperature T_e is constant for a body of mean surface area S.

- 1.2 The mean surface area S of the body is the geometric mean of the inside surface area S_i and the outside surface area S_e of the body:

$$S = \sqrt{S_i \cdot S_e}$$

In determining the two surface areas S_i and S_e , structural peculiarities and surface irregularities of the body, such as chamfers, wheel-arches and similar features, shall be taken into account and shall be noted under the appropriate heading in test reports; however, if the body is covered with corrugated sheet metal the area considered shall be that of the plane surface occupied, not that of the developed corrugated surface.

Temperature measuring points

- 1.3 In the case of parallelepipedic bodies, the mean inside temperature of the body (T_i) is the arithmetic mean of the temperatures measured 10 cm from the walls at the following 12 points:

- (a) The eight inside corners of the body; and
- (b) The centres of the four inside faces having the largest area.

If the body is not parallelepipedic, the 12 points of measurements shall be distributed as satisfactorily as possible having regard to the shape of the body.

- 1.4 In the case of parallelepipedic bodies, the mean outside temperature of the body (T_e) is the arithmetic mean of the temperatures measured 10 cm from the walls at the following 12 points:

- (a) The eight outside corners of the body; and
- (b) The centres of the four outside faces having the largest area.

If the body is not parallelepipedic, the 12 points of measurement shall be distributed as satisfactorily as possible having regard to the shape of the body.

- 1.5 The mean temperature of the walls of the body is the arithmetic mean of the mean outside temperature of the body and the mean inside temperature of the body:

$$\frac{T_e + T_i}{2}$$

- 1.6 Temperature measuring instruments protected against radiation shall be placed inside and outside the body at the points specified in paragraphs 1.3 and 1.4 of this appendix.

Steady state period and duration of test

- 1.7 The mean outside temperatures and the mean inside temperatures of the body, taken over a steady period of not less than 12 hours, shall not vary by more than ± 0.3 K, and these temperatures shall not vary by more than ± 1.0 K during the preceding 6 hours.

The difference between the heating power or cooling capacity measured over two periods of not less than 3 hours at the start and at the end of the steady state period, and separated by at least 6 hours, shall be less than 3 %.

The mean values of the temperatures and heating or cooling capacity over at least the last 6 hours of the steady state period will be used in K coefficient calculation.

The mean inside and outside temperatures at the beginning and the end of the calculation period of at least 6 hours shall not differ by more than 0.2 K.

2. INSULATING CAPACITY OF EQUIPMENT

Procedures for measuring the K coefficient

2.1 Equipment other than liquid-foodstuffs tanks

- 2.1.1 The K coefficient shall be measured in continuous operation either by the internal cooling method or by the internal heating method. In either case, the empty body shall be placed in an insulated chamber.

Test method

- 2.1.2 Where the internal cooling method is used, one or more heat exchangers shall be placed inside the body. The surface area of these exchangers shall be such that, if a fluid at a temperature not lower than $0\text{ }^{\circ}\text{C}$ ⁵ passes through them, the mean inside temperature of the body remains below $+10\text{ }^{\circ}\text{C}$ when continuous operation has been established. Where the internal heating method is used, electrical heating appliances (resistors, etc.) shall be used. The heat exchangers or electrical heating appliances shall be fitted with fans having a delivery rate sufficient to obtain 40 to 70 air charges per hour related to the empty volume of the tested body, and the air distribution around all inside surfaces of the tested body shall be sufficient to ensure that the maximum difference between the temperatures of any 2 of the 12 points specified in paragraph 1.3 of this appendix does not exceed 2 K when continuous operation has been established.

- 2.1.3 Heat quantity: The heat dissipated by the electrical resistance fan heaters shall not exceed a flow of $1\text{W}/\text{cm}^2$ and the heater units shall be protected by a casing of low emissivity.

The electrical energy consumption shall be determined with an accuracy of $\pm 0.5\%$.

⁵ *To prevent frosting.*

Test procedure

- 2.1.4 Whatever the method employed, the mean temperature of the insulated chamber shall throughout the test be kept uniform, and constant in compliance with paragraph 1.7 of this appendix, to within ± 0.5 K, at a level such that the temperature difference between the inside of the body and the insulated chamber is $25^{\circ}\text{C} \pm 2$ K, the average temperature of the walls of the body being maintained at $+ 20^{\circ}\text{C} \pm 0.5$ K.
- 2.1.5 During the test, whether by the internal cooling method or by the internal heating method, the mass of air in the chamber shall be made to circulate continuously so that the speed of movement of the air 10 cm from the walls is maintained at between 1 and 2 metres/second.
- 2.1.6 The appliances for generating and distributing cold or heat and for measuring the quantity of cold or heat exchanged and the heat equivalent of the air-circulating fans shall be started up. Electrical cable losses between the heat input measuring instrument and the tested body shall be established by a measurement or calculation and subtracted from the total heat input measured.
- 2.1.7 When continuous operation has been established, the maximum difference between the temperatures at the warmest and at the coldest points on the outside of the body shall not exceed 2 K.
- 2.1.8 The mean outside temperature and the mean inside temperature of the body shall each be read not less than four times per hour.

2.2 Liquid-foodstuffs tanks

- 2.2.1 The method described below applies only to single-compartment or multiple-compartment tank equipment intended solely for the carriage of liquid foodstuffs such as milk. Each compartment of such tanks shall have at least one manhole and one discharge-pipe connecting socket; where there are several compartments they shall be separated from one another by non-insulated vertical partitions.
- 2.2.2 K coefficients shall be measured in continuous operation by internal heating of the empty tank in an insulated chamber.

Test method

- 2.2.3 An electrical heating appliance (resistors, etc.) shall be placed inside the tank. If the tank has several compartments, an electrical heating appliance shall be placed in each compartment. The electrical heating appliances shall be fitted with fans with a delivery rate sufficient to ensure that the difference between the maximum temperature and the minimum temperature inside each compartment does not exceed 3 K when continuous operation has been established. If the tank comprises several compartments, the difference between the mean temperature in the coldest compartment and the mean temperature in the warmest compartment shall not exceed 2 K, the temperatures being measured as specified in paragraph 2.2.4 of this appendix.
- 2.2.4 Temperature measuring instruments protected against radiation shall be placed inside and outside the tank 10 cm from the walls, as follows:
- (a) If the tank has only one compartment, measurements shall be made at a minimum of 12 points positioned as follows:

The four extremities of two diameters at right angles to one another, one horizontal and the other vertical, near each of the two ends of the tank;

The four extremities of two diameters at right angles to one another, inclined at an angle of 45° to the horizontal, in the axial plane of the tank;

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- (b) If the tank has two compartments, the measurements shall be made at least at the following points:

Near the end of the first compartment and near the partition with the second compartment, at the extremities of three radiuses forming 120° angles, one of the radiuses being directed vertically upwards.

Near the end of the second compartment and near the partition with the first compartment, at the extremities of three radiuses forming 120° angles, one of the radiuses being directed vertically downwards.

- (c) If the tank has several compartments, the points of measurement shall be as follows:

for each of the two end compartments, at least the following:

The extremities of a horizontal diameter near the end and the extremities of a vertical diameter near the partition;

and for each of the other compartments, at least the following:

The extremities of a diameter inclined at an angle of 45° to the horizontal near one of the partitions and the extremities of a diameter perpendicular to the first and near the other partition.

- (d) The mean inside temperature and the mean outside temperature of the tank shall respectively be the arithmetic mean of all the measurements taken inside and all the measurements taken outside the tank. In the case of tanks having at least two compartments, the mean inside temperature of each compartment shall be the arithmetic mean of the measurements made in the compartment, and the number of those measurements in each compartment shall be no less than four and the total number of measurements in all compartments of the tank shall be no less than twelve.

Test procedure

- 2.2.5 Throughout the test, the mean temperature of the insulated chamber shall be kept uniform, and constant in compliance with paragraph 1.7 of this appendix, at a level such that the difference in temperature between the inside of the tank and that of the insulated chamber is not less than $25^\circ\text{C} \pm 2\text{K}$, with the average temperature of the tank walls being maintained at $+20^\circ\text{C} \pm 0.5\text{K}$.
- 2.2.6 The mass of air in the chamber shall be made to circulate continuously so that the speed of movement of the air 10 cm from the walls is maintained at between 1 and 2 metres/second.
- 2.2.7 The appliances for heating and circulating the air and for measuring the quantity of heat exchanged and the heat equivalent of the air-circulating fans shall be started up.
- 2.2.8 When continuous operation has been established, the maximum difference between the temperatures at the warmest and at the coldest points on the outside of the tank shall not exceed 2 K.
- 2.2.9 The mean outside temperature and the mean inside temperature of the tank shall each be read not less than four times per hour.

2.3 Provisions common to all types of insulated equipment

2.3.1 Verification of the K coefficient

Where the purpose of the tests is not to determine the K coefficient but simply to verify that it is below a certain limit, the tests carried out as described in paragraphs 2.1.1 to 2.2.9 of this appendix may be stopped as soon as the measurements made show that the K coefficient meets the requirements.

2.3.2 Accuracy of measurements of the K coefficient

Testing stations shall be provided with the equipment and instruments necessary to ensure that the K coefficient is determined with a maximum margin of error of $\pm 10\%$ when using the method of internal cooling and $\pm 5\%$ when using the method of internal heating.

3. EFFECTIVENESS OF THERMAL APPLIANCES OF EQUIPMENT

Procedures for determining the efficiency of thermal appliances of equipment

3.1 Refrigerated equipment

3.1.1 The empty equipment shall be placed in an insulated chamber whose mean temperature shall be kept uniform, and constant to within ± 0.5 K, at $+ 30$ °C. The mass of air in the chamber shall be made to circulate as described in paragraph 2.1.5 of this appendix.

3.1.2 Temperature measuring instruments protected against radiation shall be placed inside and outside the body at the points specified in paragraphs 1.3 and 1.4 of this appendix.

Test procedure

- 3.1.3 (a) In the case of equipment other than equipment with fixed eutectic plates, and equipment fitted with liquefied gas systems, the maximum weight of refrigerant specified by the manufacturer or which can normally be accommodated shall be loaded into the spaces provided when the mean inside temperature of the body has reached the mean outside temperature of the body ($+ 30$ °C). Doors, hatches and other openings shall be closed and the inside ventilation appliances (if any) of the equipment shall be started up at maximum capacity. In addition, in the case of new equipment, a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the temperature prescribed for the class to which the equipment is presumed to belong has been reached. No additional refrigerant shall be loaded during the test;
- (b) In the case of equipment with fixed eutectic plates, the test shall comprise a preliminary phase of freezing of the eutectic solution. For this purpose, when the mean inside temperature of the body and the temperature of the plates have reached the mean outside temperature ($+ 30$ °C), the plate-cooling appliance shall be put into operation for 18 consecutive hours after closure of the doors and hatches. If the plate-cooling appliance includes a cyclically-operating mechanism, the total duration of operation of the appliance shall be 24 hours. In the case of new equipment, as soon as the cooling appliance is stopped, a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the temperature prescribed for the class to which the equipment is presumed to belong has been reached. The solution shall not be subjected to any re-freezing operation during the test;
- (c) In the case of equipment fitted with liquefied gas systems, the following test procedure shall be used: when the mean inside temperature of the body has reached the mean outside temperature ($+ 30$ °C), the receptacles for the liquefied gas shall be filled to the

level prescribed by the manufacturer. Then the doors, hatches and other openings shall be closed as in normal operation and the inside ventilation appliances (if any) of the equipment shall be started up at maximum capacity. The thermostat shall be set at a temperature not more than 2 degrees below the limit temperature of the presumed class of the equipment. Cooling of the body then shall be commenced. During the cooling of the body the refrigerant consumed is simultaneously replaced. This replacement shall be effected:

either for a time corresponding to the interval between the commencement of cooling and the moment when the temperature prescribed for the class to which the equipment is presumed to belong is reached for the first time; or

for a duration of three hours counting from the commencement of cooling, whichever is shorter.

Beyond this period, no additional refrigerant shall be loaded during the test.

In the case of new equipment, a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the class temperature has been reached.

Provisions common to all types of refrigerated equipment

- 3.1.4 The mean outside temperature and the mean inside temperature of the body shall each be read not less often than once every 30 minutes.
- 3.1.5 The test shall be continued for 12 hours after the mean inside temperature of the body has reached the lower limit prescribed for the class to which the equipment is presumed to belong (A = +7 °C; B = -10 °C; C = -20 °C; D = 0 °C) or, in the case of equipment with fixed eutectic plates, after stoppage of the cooling appliance.

Criterion of satisfaction

- 3.1.6 The test shall be deemed satisfactory if the mean inside temperature of the body does not exceed the aforesaid lower limit during the aforesaid period of 12 hours.

3.2 Mechanically refrigerated equipment

Test method

- 3.2.1 The test shall be carried out in the conditions described in paragraphs 3.1.1 and 3.1.2 of this appendix.

Test procedure

- 3.2.2 When the mean inside temperature of the body reaches the outside temperature (+ 30 °C), the doors, hatches and other openings shall be closed and the refrigerating appliance and the inside ventilating appliances (if any) shall be started up at maximum capacity. In addition, in the case of new equipment, a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the temperature prescribed for the class to which the equipment is presumed to belong has been reached.
- 3.2.3 The mean outside temperature and the mean inside temperature of the body shall each be read not less often than once every 30 minutes.

- 3.2.4 The test shall be continued for 12 hours after the mean inside temperature of the body has reached:
- either the lower limit prescribed for the class to which the equipment is presumed to belong in the case of classes A, B and C (A = 0 °C; B = -10 °C; C = -20 °C); or
 - a level not lower than the upper limit prescribed for the class to which the equipment is presumed to belong in the case of classes D, E, and F (D = 0 °C; E = -10 °C; F = -20 °C).

Criterion of satisfaction

- 3.2.5 The test shall be deemed satisfactory if the refrigerating appliance is able to maintain the prescribed temperature conditions during the said 12-hour periods, with any automatic defrosting of the refrigerating unit not being taken into account.
- 3.2.6 If the refrigerating appliance with all its accessories has undergone separately, to the satisfaction of the competent authority, a test to determine its effective refrigerating capacity at the prescribed reference temperatures, the transport equipment may be accepted as mechanically refrigerated equipment without undergoing an efficiency test if the effective refrigerating capacity of the appliance in continuous operation exceeds the heat loss through the walls for the class under consideration, multiplied by the factor 1.75.
- 3.2.7 If the mechanically refrigerating unit is replaced by a unit of a different type, the competent authority may:
- (a) require the equipment to undergo the determinations and verifications prescribed in paragraphs 3.2.1 to 3.2.4; or
 - (b) satisfy itself that the effective refrigerating capacity of the new mechanically refrigerating unit is, at the temperature prescribed for equipment of the class concerned, at least equal to that of the unit replaced; or
 - (c) satisfy itself that the effective refrigerating capacity of the new mechanically refrigerating unit meets the requirements of paragraph 3.2.6.

3.3 Heated equipment

Test method

- 3.3.1 The empty equipment shall be placed in an insulated chamber whose temperature shall be kept uniform and constant at as low a level as possible. The atmosphere of the chamber shall be made to circulate as described in paragraph 2.1.5 of this appendix.
- 3.3.2 Temperature measuring instruments protected against radiation shall be placed inside and outside the body at the points specified in paragraphs 1.3 and 1.4 of this appendix.

Test procedure

- 3.3.3 Doors, hatches and other openings shall be closed and the heating equipment and the inside ventilating appliances (if any) shall be started up at maximum capacity.
- 3.3.4 The mean outside temperature and the mean inside temperature of the body shall each be read not less often than once every 30 minutes.
- 3.3.5 The test shall be continued for 12 hours after the difference between the mean inside

temperature and the mean outside temperature of the body has reached the level corresponding to the conditions prescribed for the class to which the equipment is presumed to belong. In the case of new equipment, the above temperature difference shall be increased by 35 per cent.

Criterion of satisfaction

- 3.3.6 The test shall be deemed satisfactory if the heating appliance is able to maintain the prescribed temperature difference during the 12 hours aforesaid.

4. PROCEDURE FOR MEASURING THE EFFECTIVE REFRIGERATING CAPACITY W_o OF A UNIT WHEN THE EVAPORATOR IS FREE FROM FROST

4.1 General principles

- 4.1.1 When attached to either a calorimeter box or the insulated body of a unit of transport equipment, and operating continuously, this capacity is:

$$W_o = W_j + U \cdot \Delta T$$

where U is the heat leakage of the calorimeter box or insulated body, Watts/°C.

ΔT is the difference between the mean inside temperature T_i and the mean outside temperature T_e of the calorimeter or insulated body (K),

W_j is the heat dissipated by the fan heater unit to maintain each temperature difference in equilibrium.

4.2 Test method

- 4.2.1 The refrigeration unit is either fitted to a calorimeter box or the insulated body of a unit of transport equipment.

In each case, the heat leakage is measured at a single mean wall temperature prior to the capacity test. An arithmetical correction factor, based upon the experience of the testing station, is made to take into account the average temperature of the walls at each thermal equilibrium during the determination of the effective refrigerating capacity.

It is preferable to use a calibrated calorimeter box to obtain maximum accuracy.

Measurements and procedure shall be as described in paragraphs 1.1 to 2.1.8 above; however, it is sufficient to measure U the heat leakage only, the value of this coefficient being defined by the following relationship:

$$U = \frac{W}{\Delta T_m}$$

where:

W is the heating power (in Watts) dissipated by the internal heater and fans;

ΔT_m is the difference between the mean internal temperature T_i and the mean external temperature T_e ;

U is the heat flow per degree of difference between the air temperature inside and outside the calorimeter box or unit of transport equipment measured with the refrigeration unit fitted.

The calorimeter box or unit of transport equipment is placed in a test chamber. If a calorimeter box is used, $U \cdot \Delta T$ should be not more than 35% of the total heat flow W_o .

The calorimeter box or unit of transport equipment shall be heavily insulated.

4.2.2 Instrumentation

Test stations shall be equipped with instruments to measure the U value to an accuracy of $\pm 5\%$. Heat transfer through air leakage should not exceed 5% of the total heat transfer through the calorimeter box or through the insulated body of the unit of transport equipment. The refrigerating capacity shall be determined with an accuracy of $\pm 5\%$.

The instrumentation of the calorimeter box or unit of transport equipment shall conform to paragraphs 1.3 and 1.4 above. The following are to be measured:

- (a) *Air temperatures:* At least four thermometers uniformly distributed at the inlet to the evaporator;

At least four thermometers uniformly distributed at the outlet to the evaporator;

At least four thermometers uniformly distributed at the air inlet(s) to the refrigeration unit;

The thermometers shall be protected against radiation.

The accuracy of the temperature measuring system shall be ± 0.2 K;

- (b) *Energy consumption:* Instruments shall be provided to measure the electrical energy or fuel consumption of the refrigeration unit.

The electrical energy and fuel consumption shall be determined with an accuracy of $\pm 0.5\%$;

- (c) *Speed of rotation:* Instruments shall be provided to measure the speed of rotation of the compressors and circulating fans or to allow these speeds to be calculated where direct measurement is impractical.

The speed of rotation shall be measured to an accuracy of $\pm 1\%$;

- (d) *Pressure:* High precision pressure gauges (accurate to $\pm 1\%$) shall be fitted to the condenser and evaporator and to the compressor inlet when the evaporator is fitted with a pressure regulator.

4.2.3 Test conditions

- (i) The average air temperature at the inlet(s) to the refrigeration unit shall be maintained at $30\text{ }^\circ\text{C} \pm 0.5$ K.

The maximum difference between the temperatures at the warmest and at the coldest points shall not exceed 2 K.

- (ii) Inside the calorimeter box or the insulated body of the unit of transport equipment (at the air inlet to the evaporator): there shall be three levels of temperature between $-25\text{ }^\circ\text{C}$ and $+12\text{ }^\circ\text{C}$ depending on the characteristics of the unit, one temperature level being at the minimum prescribed for the class requested by the manufacturer with a tolerance of ± 1 K.

The mean inside temperature shall be maintained within a tolerance of ± 0.5 K. During the measurement of refrigerating capacity, the heat dissipated within the calorimeter box or the insulated body of the unit of transport equipment shall be maintained at a constant level with a tolerance of $\pm 1\%$.

When presenting a refrigeration unit for test, the manufacturer shall supply:

- Documents describing the unit to be tested;
- A technical document outlining the parameters that are most important to the functioning of the unit and specifying their allowable range;
- The characteristics of the equipment series tested; and
- A statement as to which prime mover(s) shall be used during testing.

4.3 Test procedure

4.3.1 The test shall be divided into two major parts, the cooling phase and the measurement of the effective refrigerating capacity at three increasing temperature levels.

- (a) Cooling phase; the initial temperature of the calorimeter box or transport equipment shall be $30\text{ °C} \pm 3\text{ K}$. It shall then be lowered to the following temperatures: -25 °C for -20 °C class, -13 °C for -10 °C class or -2 °C for 0 °C class;
- (b) Measurement of effective refrigerating capacity, at each internal temperature level.

A first test to be carried out, for at least four hours at each level of temperature, under control of the thermostat (of the refrigeration unit) to stabilize the heat transfer between the interior and exterior of the calorimeter box or unit of transport equipment.

A second test shall be carried out without the thermostat in operation in order to determine the maximum refrigerating capacity, with the heating power of the internal heater producing an equilibrium condition at each temperature level as prescribed in paragraph 4.2.3.

The duration of the second test shall be not less than four hours.

Before changing from one temperature level to another, the box or unit shall be manually defrosted.

If the refrigeration unit can be operated by more than one form of energy, the tests shall be repeated accordingly.

If the compressor is driven by the vehicle engine, the test shall be carried out at both the minimum speed and at the nominal speed of rotation of the compressor as specified by the manufacturer.

If the compressor is driven by the vehicle motion, the test shall be carried out at the nominal speed of rotation of the compressor as specified by the manufacturer.

4.3.2 The same procedure shall be followed for the enthalpy method described below, but in this case the heat power dissipated by the evaporator fans at each temperature level shall also be measured.

This method may, alternatively, be used to test reference equipment. In this case, the effective

refrigerating capacity is measured by multiplying the mass flow (m) of the refrigerant liquid by the difference in enthalpy between the refrigerant vapour leaving the unit (h_o) and the liquid at the inlet to the unit (h_i).

To obtain the effective refrigerating capacity, the heat generated by the evaporator fans (W_f) is deducted. It is difficult to measure W_f if the evaporator fans are driven by an external motor, in this particular case the enthalpy method is not recommended. When the fans are driven by internal electric motors, the electrical power is measured by appropriate instruments with an accuracy of $\pm 3\%$, with refrigerant flow measurement being accurate to $\pm 3\%$.

The heat balance is given by the formula:

$$W_o = (h_o - h_i) m - W_f$$

Appropriate methods are described in standards ISO 917, BS 3122, DIN, NEN, etc. An electric heater is placed inside the equipment in order to obtain the thermal equilibrium.

4.3.3 Precautions

As the tests for effective refrigerating capacity are carried out with the thermostat of the refrigeration unit disconnected, the following precautions shall be observed:

If the equipment has a hot gas injection system, it shall be inoperative during the test;

with automatic controls of the refrigeration unit which unload individual cylinders (to tune the capacity of the refrigeration unit to motor output) the test shall be carried out with the number of cylinders appropriate for the temperature.

4.3.4 Checks

The following should be verified and the methods used indicated on the test report:

- (i) the defrosting system and the thermostat are functioning correctly;
- (ii) the rate of air circulation is that specified by the manufacturer.

If the air circulation of a refrigeration unit's evaporator fans is to be measured, methods capable of measuring the total delivery volume shall be used. Use of one of the relevant existing standards, i.e. BS 848, ISO 5801, AMCA 210-85, AMCA 210-07, DIN 24163, NFE 36101, NF X10.102, DIN 4796 is recommended;

- (iii) the refrigerant used for tests is that specified by the manufacturer.

4.4 **Test result**

- 4.4.1 The refrigeration capacity for ATP purposes is that relating to the mean temperature at the inlet(s) of the evaporator. The temperature measuring instruments shall be protected against radiation.

5. **CHECKING THE INSULATING CAPACITY OF EQUIPMENT IN SERVICE**

For the purpose of checking the insulating capacity of each piece of equipment in service as prescribed in appendix 1, paragraphs 1 (b) and 1 (c), to this annex, the competent authorities may:

Apply the methods described in paragraphs 2.1.1 to 2.3.2 of this appendix; or

Appoint experts to assess the fitness of the equipment for retention in one or other of the categories of insulated equipment. These experts shall take the following particulars into account and shall base their conclusions on information as indicated below.

5.1 General examination of the equipment

This examination shall take the form of an inspection of the equipment to determine the following:

- (i) the durable manufacturer's plate affixed by the manufacturer;
- (ii) the general design of the insulating sheathing;
- (iii) the method of application of insulation;
- (iv) the nature and condition of the walls;
- (v) the condition of the insulated compartment;
- (vi) the thickness of the walls;

and to make all appropriate observations concerning the effective insulating capacity of the equipment. For this purpose the experts may cause parts of the equipment to be dismantled and require all documents they may need to consult (plans, test reports, specifications, invoices, etc.) to be placed at their disposal.

5.2 Examination for air-tightness (not applicable to tank equipment)

The inspection shall be made by an observer stationed inside the equipment, which shall be placed in a brightly-illuminated area. Any method yielding more accurate results may be used.

5.3 Decisions

- (i) If the conclusions regarding the general condition of the body are favourable, the equipment may be kept in service as insulated equipment of its initial class for a further period of not more than three years. If the conclusions of the expert or experts are not acceptable, the equipment may be kept in service only following a satisfactory measurement of the K coefficient according to the procedure described in paragraphs 2.1.1 to 2.3.2 of this appendix; it may then be kept in service for a further period of six years.
- (ii) In the case of heavily insulated equipment, if the conclusions of an expert or experts show the body to be unsuitable for keeping in service in its initial class but suitable for continuing in service as normally insulated equipment, then the body may be kept in service in an appropriate class for a further three years. In this case, the distinguishing marks (as in appendix 4 of this annex) shall be changed appropriately.
- (iii) If the equipment consists of units of serially-produced equipment of a particular type satisfying the requirements of appendix 1, paragraph 6, to this annex and belonging to one owner, then in addition to an inspection of each unit of equipment, the K coefficient of not less than 1% of the number of units involved, may be measured in conformity with the provisions of sections 2.1, 2.2 and 2.3 of this appendix. If the results of the examinations and measurements are acceptable, all the equipment in question may be kept in service as insulating equipment of its initial class for a further period of six years.

6. VERIFYING THE EFFECTIVENESS OF THERMAL APPLIANCES OF EQUIPMENT IN SERVICE

To verify as prescribed in appendix 1, paragraphs 1 (b) and 1 (c), to this annex the effectiveness of the thermal appliance of each item of refrigerated, mechanically refrigerated or heated equipment in service, the competent authorities may:

Apply the methods described in sections 3.1, 3.2 and 3.3 of this appendix; or

Appoint experts to apply the particulars described in sections 5.1 and 5.2 of this appendix when applicable as well as the following provisions:

6.1 Refrigerated equipment other than equipment with fixed eutectic accumulators

It shall be verified that the inside temperature of the empty equipment, previously brought to the outside temperature, can be brought to the limit temperature of the class to which the equipment belongs, as prescribed in this annex, and maintained below the said limit temperature for a period t

$$\text{such that } t \geq \frac{12\Delta T}{\Delta T'}$$

in which

ΔT is the difference between + 30 °C and the said limit temperature, and

$\Delta T'$ is the difference between the mean outside temperature during the test and the class limit temperature, the outside temperature being not lower than + 15 °C.

If the results are acceptable, the equipment may be kept in service as refrigerated equipment of its initial class for a further period of not more than three years.

6.2 Mechanically refrigerated equipment

(i) Equipment constructed from 2 January 2012

It shall be verified that, when the outside temperature is not lower than + 15 °C, the inside temperature of the empty equipment can be brought to the class temperature within a maximum period (in minutes), as prescribed in the table below:

Outside temperature	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	°C
Class C, F	360	350	340	330	320	310	300	290	280	270	260	250	240	230	220	210	min
Class B, E	270	262	253	245	236	228	219	211	202	194	185	177	168	160	151	143	min
Class A, D	180	173	166	159	152	145	138	131	124	117	110	103	96	89	82	75	min

The inside temperature of the empty equipment must have been previously brought to the outside temperature.

If the results are acceptable, the equipment may be kept in service as mechanically refrigerated equipment of its initial class for a further period of not more than three years.

(ii) Transitional provisions applicable to equipment in service

For equipment constructed prior to the date given in 6.2 (i), the following provisions shall apply:

It shall be verified that, when the outside temperature is not lower than +15° C, the inside temperature of the empty equipment, which has been previously brought to the outside

temperature, can be brought within a maximum period of six hours:

In the case of equipment in classes A, B or C, to the minimum temperature, as prescribed in this annex;

In the case of equipment in classes D, E or F, to the limit temperature, as prescribed in this annex.

If the results are acceptable, the equipment may be kept in service as mechanically refrigerated equipment of its initial class for a further period of not more than three years.

6.3 Heated equipment

It shall be verified that the difference between the inside temperature of the equipment and the outside temperature which governs the class to which the equipment belongs as prescribed in this annex (a difference of 22 K in the case of class A, 32 K in the case of class B, 42 K in the case of class C and 52 K in the case of class D) can be achieved and be maintained for not less than 12 hours. If the results are acceptable, the equipment may be kept in service as heated equipment of its initial class for a further period of not more than three years.

6.4 Temperature measuring points

Temperature measuring points protected against radiation shall be placed inside the body and outside the body.

For measuring the inside temperature of the body (T_i), at least 2 temperature measuring points shall be placed inside the body at a maximum distance of 50 cm from the front wall, 50 cm from the rear door at a height of a minimum of 15 cm and a maximum of 20 cm above the floor area.

For measuring the outside temperature of the body (T_e), at least 2 temperature measuring points shall be placed at a distance of at least 10 cm from an outer wall of the body and at least 20 cm from the air inlet of the condenser unit.

The final reading should be from the warmest point inside the body and the coldest point outside.

6.5 Provisions common to refrigerated, mechanically refrigerated and heated equipment

- (i) If the results are not acceptable, refrigerated, mechanically refrigerated or heated equipment may be kept in service in its initial class only if it passes at a testing station the tests described in sections 3.1, 3.2 and 3.3 of this appendix; it may then be kept in service in its initial class for a further period of six years.
- (ii) If the equipment consists of units of serially-produced refrigerated, mechanically refrigerated or heated equipment of a particular type satisfying the requirements of appendix 1, paragraph 6, to this annex and belonging to one owner, then in addition to an inspection of the thermal appliances to ensure that their general condition appears to be satisfactory, the effectiveness of the cooling or heating appliances of not less than 1% of the number of units may be determined at a testing station in conformity with the provisions of sections 3.1, 3.2 and 3.3 of this appendix. If the results of the examinations and of the determination of effectiveness are acceptable, all the equipment in question may be kept in service in its initial class for a further period of six years.

7. PROCEDURE FOR MEASURING THE CAPACITY OF MECHANICAL MULTI-TEMPERATURE REFRIGERATION UNITS AND DIMENSIONING MULTI-COMPARTMENT EQUIPMENT

7.1 Definitions

- (a) Multi-compartment equipment: Equipment with two or more insulated compartments for maintaining a different temperature in each compartment;
- (b) Multi-temperature mechanical refrigeration unit: Mechanical refrigeration unit with compressor and common suction inlet, condenser and two or more evaporators set at different temperatures in the various compartments of multi-compartment equipment;
- (c) Host unit: Refrigeration unit with or without an integral evaporator;
- (d) Unconditioned compartment: a compartment considered to have no evaporator or for which the evaporator is inactive for the purposes of dimensioning calculations and certification;
- (e) Multi-temperature operation: Operation of a multi-temperature mechanical refrigeration unit with two or more evaporators operating at different temperatures in multi-compartment equipment;
- (f) Nominal refrigerating capacity: Maximum refrigerating capacity of the refrigeration unit in mono-temperature operation with two or three evaporators operating simultaneously at the same temperature;
- (g) Individual refrigerating capacity ($P_{\text{ind-evap}}$): The maximum refrigerating capacity of each evaporator in solo operation with the host unit;
- (h) Effective refrigerating capacity ($P_{\text{eff-frozen-evap}}$): The refrigerating capacity available to the lowest temperature evaporator when two or more evaporators are each operating in multi-temperature mode, as prescribed in paragraph 7.3.5.

7.2 Test procedure for multi-temperature mechanical refrigeration units

7.2.1 General procedure

The test procedure shall be as defined in section 4 of this appendix.

The host unit shall be tested in combination with different evaporators. Each evaporator shall be tested on a separate calorimeter, if applicable.

The nominal refrigerating capacity of the host unit in mono-temperature operation, as prescribed in paragraph 7.2.2, shall be measured with a single combination of two or three evaporators including the smallest and largest.

The individual refrigerating capacity shall be measured for all evaporators, each in mono-temperature operation with the host unit, as prescribed in paragraph 7.2.3.

This test shall be conducted with two or three evaporators including the smallest, the largest and, if necessary, a mid-sized evaporator.

If the multi-temperature unit can be operated with more than two evaporators:

- The host unit shall be tested with a combination of three evaporators: the smallest, the largest and a mid-sized evaporator.
- In addition, on demand of the manufacturer, the host unit can be tested optionally with a combination of two evaporators: the largest and smallest.

The tests are done in independent mode and stand by.

7.2.2 Determination of the nominal refrigerating capacity of the host unit

The nominal refrigerating capacity of the host unit in mono-temperature operation shall be measured with a single combination of two or three evaporators operating simultaneously at the same temperature. This test shall be conducted at -20°C and at 0°C.

The air inlet temperature of the host unit shall be +30°C.

The nominal refrigerating capacity at -10°C shall be calculated by linear interpolation from the capacities at -20°C and 0°C.

7.2.3 Determination of the individual refrigerating capacity of each evaporator

The individual refrigerating capacity of each evaporator shall be measured in solo operation with the host unit. The test shall be conducted at -20°C and 0°C. The air inlet temperature of the refrigeration unit shall be +30°C.

The individual refrigerating capacity at -10°C shall be calculated by linear interpolation from the capacities at 0°C and -20°C.

7.2.4 Test of the remaining effective refrigerating capacities of a set of evaporators in multi-temperature operation at a reference heat load

The remaining effective refrigerating capacity shall be measured for each tested evaporator at -20°C with the other evaporator(s) operating under control of a thermostat set at 0°C with a reference heat load of 20% of the individual refrigerating capacity at -20 °C of the evaporator in question. The air inlet temperature of the host unit shall be +30 °C.

For multi-temperature refrigeration units with more than one compressor such as cascade systems or units with two-stage compression systems, where the refrigerating capacities can be simultaneously maintained in the frozen and chilled compartments, the measurement of the effective refrigerating capacity, shall be done at one additional heat load.

7.3 **Dimensioning and certification of refrigerated multi-temperature equipment**

7.3.1 General procedure

The refrigerating capacity demand of multi-temperature equipment shall be based on the refrigerating capacity demand of mono-temperature equipment as defined in this appendix.

For multi-compartment equipment, a K coefficient less than or equal to 0.40 W/m².K for the outer body as a whole shall be approved in accordance with subsections 2 to 2.2 of this appendix.

The insulation capacities of the outer body walls shall be calculated using the K coefficient of the body approved in accordance with this Agreement. The insulation capacities of the internal dividing walls shall be calculated using the K coefficients in the table in paragraph 7.3.7.

For issuance of an ATP certificate:

- The nominal refrigerating capacity of the multi-temperature refrigeration unit shall be at least equal to the heat loss through the internal dividing and outer body walls of the equipment as a whole multiplied by the factor 1.75 as specified in paragraph 3.2.6 of this appendix.
- In each compartment, the calculated remaining effective refrigerating capacity at the lowest temperature of each evaporator in multi-temperature operation shall be greater than or equal to the maximum refrigeration demand of the compartment in the most unfavourable conditions, as prescribed in paragraphs 7.3.5 and 7.3.6, multiplied by the factor 1.75 as specified in paragraph 3.2.6 of this appendix.

7.3.2 Conformity of the entire body

The outer body shall have a K value $K \leq 0.40 \text{ W/m}^2\cdot\text{K}$.

The internal surface of the body shall not vary by more than 20 %.

The equipment shall conform to:

$$P_{\text{nominal}} > 1.75 * K_{\text{body}} * S_{\text{body}} * \Delta T$$

Where:

P_{nominal} is the nominal refrigerating capacity of the multi-temperature refrigeration unit,

K_{body} is the K value of the outer body,

S_{body} is the internal surface of the full body,

ΔT is the difference in temperature between outside and inside the body.

7.3.3 Determination of the refrigerating demand of chilled evaporators

With the bulkheads in given positions, the refrigerating capacity demand of each chilled evaporator is calculated as follows:

$$P_{\text{chilled demand}} = (S_{\text{chilled-comp}} - \sum S_{\text{bulk}}) * K_{\text{body}} * \Delta T_{\text{ext}} + \sum (S_{\text{bulk}} * K_{\text{bulk}} * \Delta T_{\text{int}})$$

Where:

K_{body} is the K value given by an ATP test report for the outer body,

$S_{\text{chilled-comp}}$ is the surface of the chilled compartment for the given positions of the bulkheads,

S_{bulk} are the surfaces of the bulkheads,

K_{bulk} are the K values of the bulkheads given by the table in paragraph 7.3.7,

ΔT_{ext} is the difference in temperatures between the chilled compartment and +30°C outside the body,

ΔT_{int} is the difference in temperatures between the chilled compartment and other compartments. For unconditioned compartments a temperature of +20°C shall be used for calculations.

7.3.4 Determination of the refrigerating demand of frozen compartments

With the bulkheads in given positions, the refrigerating capacity demand of each frozen compartment is calculated as follows:

$$P_{\text{frozen demand}} = (S_{\text{frozen-comp}} - \sum S_{\text{bulk}}) * K_{\text{body}} * \Delta T_{\text{ext}} + \sum (S_{\text{bulk}} * K_{\text{bulk}} * \Delta T_{\text{int}})$$

Where:

K_{body} is the K value given by an ATP test report for the outer body,

$S_{\text{frozen-comp}}$ is the surface of the frozen compartment for the given positions of the bulkheads,

S_{bulk} are the surfaces of the bulkheads,

K_{bulk} are the K values of the bulkheads given by the table in paragraph 7.3.7,

ΔT_{ext} is the difference in temperatures between the frozen compartment and +30 °C outside the body,

ΔT_{int} is the difference in temperatures between the frozen compartment and other compartments. For insulated compartments a temperature of +20°C shall be used for calculations.

7.3.5 Determination of the effective refrigerating capacity of frozen evaporators

The effective refrigerating capacity, in given positions of the bulkheads, is calculated as follows:

$$P_{\text{eff-frozen-evap}} = P_{\text{ind-frozen-evap}} * [1 - \sum (P_{\text{eff-chilled-evap}} / P_{\text{ind-chilled-evap}})]$$

Where:

$P_{\text{eff-frozen-evap}}$ is the effective refrigerating capacity of the frozen evaporator with a given configuration,

$P_{\text{ind-frozen-evap}}$ is the individual refrigeration capacity of the frozen evaporator at -20 °C,

$P_{\text{eff-chilled-evap}}$ is the effective refrigeration capacity of each chilled evaporator in the given configuration as defined in paragraph 7.3.6,

$P_{\text{ind-chilled-evap}}$ is the individual refrigerating capacity at -20 °C for each chilled evaporator.

This calculation method is only approved for multi-temperature mechanical refrigeration units with a single one-stage compressor. For multi-temperature refrigeration units with more than one compressor such as cascade systems or units with two-stage compression systems, where the refrigerating capacities can be simultaneously maintained in the frozen and the chilled compartments, this calculation method shall not be used, because it will lead to an underestimation of the effective refrigerating capacities. For this equipment, the effective refrigerating capacities shall be interpolated between the effective refrigerating capacities measured with two different heat loads given in the tests reports as prescribed in 7.2.4.

7.3.6 Conformity declaration

The equipment is declared in conformity in multi-temperature operation if, for each position of the bulkheads, and each distribution of temperature in the compartments:

$$P_{\text{eff-frozen-evap}} \geq 1.75 * P_{\text{frozen demand}}$$

$$P_{\text{eff-chilled-evap}} \geq 1.75 * P_{\text{chilled demand}}$$

Where:

$P_{\text{eff-frozen-evap}}$ is the effective refrigeration capacity of the considered frozen evaporator at the class temperature of the compartment in the given configuration,

$P_{\text{eff-chilled-evap}}$ is the effective refrigeration capacity of the considered chilled evaporator at the class temperature of the compartment in the given configuration,

$P_{\text{frozen demand}}$ is the refrigerating demand of the considered compartment at the class temperature of the compartment in the given configuration as calculated according to 7.3.4,

$P_{\text{chilled demand}}$ is the refrigerating demand of the considered compartment at the class temperature of the compartment in the given configuration as calculated according to 7.3.3.

It shall be considered that all the positions of the bulkheads have been dimensioned if the wall positions from the smallest to the largest compartment sizes are checked by iterative methods whereby no input step change in surface area is greater than 20 %.

7.3.7 Internal dividing walls

Thermal losses through internal dividing walls shall be calculated using the K coefficients in the following table.

	<i>K coefficient – [W/m².K]</i>		<i>Minimum foam thickness [mm]</i>
	<i>Fixed</i>	<i>Removable</i>	
Longitudinal – alu floor	2.0	3.0	25
Longitudinal – GRP floor	1.5	2.0	25
Transversal – alu floor	2.0	3.2	40
Transversal – GRP floor	1.5	2.6	40

K coefficients of movable dividing walls include a safety margin for specific ageing and unavoidable thermal leakages.

For specific designs with additional heat transfer caused by additional thermal bridges compared to a standard design, the partition K coefficient shall be increased.

7.3.8 The requirements of section 7 shall not apply to equipment produced before the entry into force of the requirements and having undergone equivalent tests as multi-temperature equipment. Equipment produced before the entry into force of this section may be operated in international transport but may only be transferred from one country to another with the agreement of the competent authorities of the countries concerned.

8. TEST REPORTS

A test report of the type appropriate to the equipment tested shall be drawn up for each test in conformity with one or other of the models 1 to 10 hereunder.

MODEL No. 1 A

Test Report

Prepared in conformity with the provisions of the Agreement on the International Carriage of
Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP)

Test report No.....

Section 1

Specifications of the equipment (equipment other than tanks for the carriage of liquid foodstuffs)

Approved testing station/expert: ¹

Name

Address

Type of equipment: ²

Make..... Registration number..... Serial number

Date of first entry into service

Tare ³.....kg Carrying capacity ³.....kg

Body:

Make and type Identification number

Built by.....

Owned or operated by

Submitted by

Date of construction

Principal dimensions:

Outside: length m, widthm, height..... m

Inside: length m, widthm, height..... m

Total floor area of body m²

Usable internal volume of body m³

MODEL No. 1 A (cont'd)

Total inside surface area S_i of body m²

Total outside surface area S_e of body m²

Mean surface area: $S = \sqrt{S_i \cdot S_e}$ m²

Specifications of the body walls: ⁴

Top

Bottom

Sides

Structural peculiarities of body: ⁵

Number, () of doors

positions () of vents

and dimensions () of ice-loading apertures.....

Accessories ⁶

K coefficient =W/m².K

¹ Delete as necessary (experts only in the case of tests carried out under ATP Annex 1, Appendix 2, sections 5 or 6).

² Wagon, lorry, trailer, semi-trailer, container, etc.

³ State source of information.

⁴ Nature and thickness of materials constituting the body walls, from the interior to the exterior, mode of construction, etc.

⁵ If there are surface irregularities, show how S_i and S_e were determined.

⁶ Meat bars, flettner fans, etc.

MODEL No. 1 B

Test Report

Prepared in conformity with the provisions of the Agreement on the International Carriage of
Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP)

Test report No.....

Section 1

Specifications of tanks for the carriage of liquid foodstuffs

Approved testing station/expert: ¹

Name

Address

Type of tank: ²

Make Registration number Serial number

Date of first entry into service

Tare ³ kg Carrying capacity ³ kg

Tank:

Make and type Identification number

Built by

Owned or operated by

Submitted by

Date of construction

Principal dimensions:

Outside: length of cylinderm, major axis m, minor axis m

Inside: length of cylinder m, major axis m, minor axis m

Usable internal volume m³

MODEL No. 1 B (cont'd)

Internal volume of each compartment	m ³
Total inside surface area S _i of tank	m ²
Inside surface area of each compartment S _{i1}, S _{i2}	m ²
Total outside surface area S _e of tank	m ²
Mean surface area of tank: $S = \sqrt{S_i \cdot S_e}$	m ²
Specifications of the tank walls: ⁴	
Structural peculiarities of the tank: ⁵	
Number, dimensions and description of manholes	
Description of manhole covers	
Number, dimensions and description of discharge piping	
Number and description of tank cradles	
Accessories	

¹ Delete as necessary (experts only in the case of tests carried out under ATP Annex 1, Appendix 2, sections 5 or 6).
² Wagon, lorry, trailer, semi-trailer, container, etc.
³ State source of information.
⁴ Nature and thickness of materials constituting the tank walls, from the interior to the exterior, mode of construction, etc.
⁵ If there are surface irregularities, show how S_i and S_e were determined.

MODEL No. 2 A

Section 2

Measurement in accordance with ATP, Annex 1, Appendix 2, sub-section 2.1, of the overall coefficient of heat transfer of equipment other than tanks for liquid foodstuffs

Testing method: inside cooling/inside heating ¹

Date and time of closure of equipment's doors and other openings:

Averages obtained for hours of continuous operation
(from a.m./p.m. to a.m./p.m.):

(a) Mean outside temperature of body: $T_e = \dots\dots\dots^\circ\text{C} \pm \dots\dots\dots\text{K}$

(b) Mean inside temperature of body: $T_i = \dots\dots\dots^\circ\text{C} \pm \dots\dots\dots\text{K}$

(c) Mean temperature difference achieved: $\Delta T = \dots\dots\dots\text{K}$

Maximum temperature spread:

Outside bodyK

Inside bodyK

Mean temperature of walls of body $\frac{T_e + T_i}{2}$ °C

Operating temperature of heat exchanger ² °C

Dew point of atmosphere outside body during continuous operation ²
..... °C ±K

Total duration of testh

Duration of continuous operationh

Power consumed in exchangers: W_1 W

Power absorbed by fans: W_2 W

Overall coefficient of heat transfer calculated by the formula:

Inside-cooling test ¹ $K = \frac{W_1 - W_2}{S \cdot \Delta T}$

Inside-heating test ¹ $K = \frac{W_1 + W_2}{S \cdot \Delta T}$

$K = \dots\dots\dots \text{W/m}^2\text{K}$

MODEL No. 2 A (cont'd)

Maximum error of measurement with test used %

Remarks: ³

(To be completed only if the equipment does not have thermal appliances:)

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP Annex 1, Appendix 3, valid for a period of not more than six years, with the distinguishing mark IN/IR.¹

However, this report shall be valid as a certificate of type approval within the meaning of ATP Annex 1, Appendix 1, paragraph 6 (a) only for a period of not more than six years, that is until

Done at:

on

.....

Testing Officer

¹ Delete as necessary.

² For inside-cooling test only.

³ If the body is not parallelepipedic, specify the points at which the outside and inside temperatures were measured.

MODEL No. 2 B

Section 2

Measurement, in accordance with ATP Annex 1, Appendix 2, sub-section 2.2, of the overall coefficient of heat transfer of tanks for liquid foodstuffs

Testing method: inside heating

Date and time of closure of equipment's openings

Mean values obtained forhours of continuous operation

(from a.m./p.m. to a.m./p.m.):

(a) Mean outside temperature of tank: $T_e = \dots\dots\dots^\circ\text{C} \pm \dots\dots\dots\text{K}$

(b) Mean inside temperature of tank:

$$T_i = \frac{\sum S_{in} \cdot T_{in}}{\sum S_{in}} = \dots\dots\dots^\circ\text{C} \pm \dots\dots\dots\text{K}$$

(c) Mean temperature difference achieved: $\Delta T \dots\dots\dots\text{K}$

Maximum temperature spread:

Inside tankK

Inside each compartmentK

Outside tankK

Mean temperature of tank walls $^\circ\text{C}$

Total duration of testh

Duration of continuous operationh

Power consumed in exchangers: $W_1 \dots\dots\dots\text{W}$

Power absorbed by fans: $W_2 \dots\dots\dots\text{W}$

Overall coefficient of heat transfer calculated by the formula:

$$K = \frac{W_1 + W_2}{S \cdot \Delta T}$$

$K = \dots\dots\dots\text{W/m}^2\cdot\text{K}$

MODEL No. 2 B (cont'd)

Maximum error of measurement with test used %

Remarks: ¹
.....

(To be completed only if the equipment does not have thermal appliances:)

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP Annex 1, Appendix 3, valid for a period of not more than six years, with the distinguishing mark IN/IR. ²

However, this report shall be valid as a certificate of type approval within the meaning of ATP Annex 1, Appendix 1, paragraph 6 (a) only for a period of not more than six years, that is until

Done at:.....

on: Testing Officer

¹ *If the tank is not parallelepipedic, specify the points at which the outside and inside temperatures were measured.*

² *Delete as necessary.*

MODEL No. 3

Section 2

Expert field check of the insulating capacity of equipment in service in accordance with
ATP Annex 1, Appendix 2, section 5

The check was based on test report No..... dated
issued by approved testing station expert (name and address).....
.....

Condition when checked:

Top

Side walls

End wall

Bottom

Doors and openings

Seals

Cleaning drainholes

Air tightness

K coefficient of the equipment when new (as shown in the previous test report)W/m².K
.....

Remarks:
.....

According to the above test results the equipment may be recognized by means of a certificate in
accordance with ATP Annex 1, Appendix 3, valid for not more than three years, with the
distinguishing mark IN/IR.¹

Done at

on:

.....
Testing Officer

¹ Delete as necessary.

MODEL No. 4 A

Section 3

Determination of the efficiency of cooling appliances of refrigerated equipment using ice or dry ice by an approved testing station in accordance with ATP Annex 1, Appendix 2, sub-section 3.1, except 3.1.3 (b) and 3.1.3 (c)

Cooling appliance:

Description of cooling appliance

Nature of refrigerant

Nominal refrigerant filling capacity specified
by manufacturerkg

Actual filling of refrigerant used for testkg

Drive independent/dependent/mains-operated ¹

Cooling appliance removable/not removable ¹

Manufacturer

Type, serial number

Year of manufacture

Filling device (description, where situated;
attach drawing if necessary)

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fans W

Delivery rate m³/h

Dimensions of ducts: cross-section m², lengthm

Air intake screen; description ¹

¹ Delete if not applicable.

MODEL No. 4 A (cont'd)

Automatic devices

Mean temperatures at beginning of test:

Inside°C ±K

Outside°C ±K

Dew point in test chamber°C ±K

Power of internal heating system W

Date and time of closure of equipment's doors and other openings

Record of mean inside and outside temperatures of body and/or curve showing variation
of these temperatures with time

Remarks:
.....

According to the above test results, the equipment may be recognized by means of a certificate in
accordance with ATP Annex 1, Appendix 3, valid for a period of not more than six years, with the
distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP
Annex 1, Appendix 1, paragraph 6 (a) only for a period of not more than six years, that is until
.....

Done at:

on:

Testing Officer

MODEL No. 4 B

Section 3

Determination of the efficiency of cooling appliances of refrigerated equipment with eutectic plates
by an approved testing station in accordance with ATP Annex 1, Appendix 2, sub-section 3.1,
except 3.1.3 (a) and 3.1.3 (c)

Cooling appliance:

Description

Nature of eutectic solution

Nominal eutectic solution filling capacity specified
by manufacturer kg

Latent heat at freezing temperature stated by manufacturerkJ/kg at °C

Cooling appliance removable/not removable ¹

Drive independent/dependent/mains-operated ¹

Manufacturer

Type, serial number

Year of manufacture

Eutectic plates: Make Type

Dimensions and number of plates, where situated;
distance from walls (attach drawing)

Total cold reserve stated by manufacturer for freezing
temperature ofkJ to °C

Inside ventilation appliances (if any):

Description

Automatic devices

¹ Delete if not applicable.

MODEL No. 4 B (cont'd)

Mechanical refrigerator (if any):

Make Type No.....

Where situated

Compressor: Make Type

Type of drive

Nature of refrigerant

Condenser

Refrigerating capacity stated by the manufacturer for the specified freezing temperature and an outside temperature of + 30 °C W

Automatic devices:

Make Type

Defrosting (if any)

Thermostat

LP pressostat

HP pressostat

Relief valve

Others

Accessory devices:

Electrical heating devices of the door joint:

Capacity by linear metre of the resistor W/m

Linear length of the resistor m

Mean temperatures at beginning of test:

Inside °C ± K

Outside °C ± K

Dew point in test chamber °C ± K

MODEL No. 4 B (cont'd)

Power of internal heating system W

Date and time of closure of equipment's
doors and openings

Period of accumulation of coldh

Record of mean inside and outside temperatures of body
and/or curve showing variation of these temperatures
with time

.....

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP Annex 1, Appendix 3, valid for a period of not more than six years, with the distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP Annex 1, Appendix 1, paragraph 6 (a) only for a period of not more than six years, that is until

Done at:

on: Testing Officer

Testing Officer

MODEL No. 4 C

Section 3

Determination of the efficiency of cooling appliances of refrigerated equipment using liquefied gases by an approved testing station in accordance with ATP Annex 1, Appendix 2, sub-section 3.1, except 3.1.3 (a) and 3.1.3 (b)

Cooling appliance:

Description

Drive independent/dependent/mains-operated ¹

Cooling appliance removable/not removable ¹

Manufacturer

Type, serial number

Year of manufacture

Nature of refrigerant

Nominal refrigerant filling capacity specified
by manufacturerkg

Actual filling of refrigerant used for testkg

Description of tank.....

Filling device (description, where situated)

Inside ventilation appliances:

Description (number, etc.)

Power of electric fans W

Delivery rate m³/h

Dimensions of ducts: cross-section m², length m

Automatic devices

¹ Delete if not applicable.

MODEL No. 4 C (cont'd)

Mean temperatures at beginning of test:

Inside °C ±K

Outside °C ±K

Dew point in test chamber °C ±K

Power of internal heating system W

Date and time of closure of equipment's
doors and openings

Record of mean inside and outside temperatures of body and/or curve showing
variation of these temperatures with time

.....

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP Annex 1, Appendix 3, valid for a period of not more than six years, with the distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP Annex 1, Appendix 1, paragraph 6 (a), only for a period of not more than six years, that is until

Done at:

on:

Testing Officer

MODEL No. 5

Section 3

Determination of the efficiency of cooling appliances of mechanically refrigerated equipment by an approved testing station in accordance with ATP Annex 1, Appendix 2, sub-section 3.2

Mechanical refrigerating appliances:

Drive independent/dependent/mains-operated ¹

Mechanical refrigerating appliances removable/not removable ¹

Manufacturer

Type, serial number

Year of manufacture

Nature of refrigerant and filling capacity

Effective refrigerating capacity stated by manufacturer for an outside temperature of + 30 °C and an inside temperature of:

0 °C W

-10 °C W

-20 °C W

Compressor:

Make Type

Drive: electric/thermal/hydraulic ¹

Description

Make Type powerkW atrpm

Condenser and evaporator

Motor element of fan(s): make type number

power kW at rpm

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fans W

Delivery rate m³/h

Dimensions of ducts: cross-section m², length m

¹ Delete if not applicable.

MODEL No. 5 (cont'd)

Automatic devices:

Make Type

Defrosting (if any)

Thermostat

LP pressostat

HP pressostat

Relief valve

Others

Mean temperatures at beginning of test:

Inside temperature °C ± K

Outside temperature °C ± K

Dew point in test chamber °C ± K

Power of internal heating system W

Date and time of closure of equipment's
doors and other openings

Record of mean inside and outside temperatures of body and/or curve showing variation
of these temperatures with time

Time between beginning of test and attainment
of prescribed mean inside temperature of body h

Remarks:

According to the above test results, the equipment may be recognized by means of a certificate in
accordance with ATP Annex 1, Appendix 3, valid for a period of not more than six years, with the
distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP
Annex 1, Appendix 1, paragraph 6 (a), only for a period of not more than six years, that is until
.....

Done at:

on:

Testing Officer

MODEL No. 6

Section 3

Determination of the efficiency of heating appliances of heated equipment by an approved testing station in accordance with ATP Annex 1, Appendix 2, sub-section 3.3

Heating appliance:

Description

Drive independent/dependent/mains-operated ¹

Heating appliance removable/not removable ¹

Manufacturer

Type, serial number

Year of manufacture

Where situated

Overall area of heat exchange surfaces m²

Effective power rating as specified by manufacturer kW

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fans..... W

Delivery rate m³/h

Dimensions of ducts: cross-section m², lengthm

Mean temperatures at beginning of test:

Inside temperature °C ±K

Outside temperature °C ±K

Date and time of closure of equipment's doors and other openings

¹ Delete if not applicable.

MODEL No. 6 (cont'd)

Record of mean inside and outside temperatures of body and/or
curve showing variation of these temperatures with time

.....

Time between beginning of test and attainment of prescribed
mean inside temperature of bodyh

Where applicable, mean heating output during test to
maintain prescribed temperature difference ² between
inside and outside of body..... W

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in
accordance with ATP Annex 1, Appendix 3, valid for a period of not more than six years, with the
distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP
Annex 1, Appendix 1, paragraph 6 (a), only for a period of not more than six years, that is until
.....

Done at:

on:

Testing Officer

² Increased by 35% for new equipment.

MODEL No. 7

Section 3

Expert field check of the efficiency of cooling appliances of refrigerated equipment in service in accordance with ATP Annex 1, Appendix 2, sub-section 6.1

The check was conducted on the basis of report No
dated, issued by approved
testing station/expert (name, address)

Cooling appliance:

Description

Manufacturer

Type, serial number

Year of manufacture

Nature of refrigerant

Nominal refrigerant filling capacity
specified by manufacturer kg

Actual filling of refrigerant used for test kg

Filling device (description, where situated)

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fans W

Delivery rate m³/h

Dimensions of ducts: cross-section m², length m

Condition of cooling appliance and ventilation appliances

Inside temperature attained °C

At an outside temperature of °C

MODEL No. 7 (cont'd)

Inside temperature of the equipment before the refrigerating appliance is started °C

Total running time of the refrigerating unith

Time between beginning of test and attainment of prescribed
mean inside temperature of bodyh

Check on operation of thermostat

For refrigerated equipment with eutectic plates:

Period of operation of the cooling appliance for freezing
of the eutectic solutionh

Period during which inside air temperature is maintained
after the appliance is switched offh

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in
accordance with ATP Annex 1, Appendix 3, valid for a period of not more than three years, with the
distinguishing mark

Done at:

on:

Testing Officer

MODEL No. 8

Section 3

Expert field check of the efficiency of cooling appliances of mechanically refrigerated equipment in service in accordance with ATP Annex 1, Appendix 2, sub-section 6.2

The check was conducted on the basis of report No..... dated
issued by approved testing station/expert (name, address)

Mechanical refrigerating appliances:

Manufacturer

Type, serial number

Year of manufacture

Description

Effective refrigerating capacity specified by manufacturer for an outside temperature of +30 °C and an inside temperature of

0 °C W

-10 °C W

-20 °C W

Nature of refrigerant and filling capacity kg

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fans W

Delivery rate m³/h

Dimensions of ducts: cross-section m², length m

Condition of mechanical refrigerating appliance and inside ventilation appliances

MODEL No. 8 (cont'd)

Inside temperature attained °C
At an outside temperature of °C
and with a relative running time of %
Running time h
Check on operation of thermostat
Remarks:
.....

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP Annex 1, Appendix 3 valid for a period of not more than three years, with the distinguishing mark

Done at:

on:
.....

Testing Officer

MODEL No. 9

Section 3

Expert field check of the efficiency of heating appliances of heated equipment in service in accordance with ATP Annex 1, Appendix 2, sub-section 6.3

The check was conducted on the basis of report No. dated
issued by approved testing station/expert (name, address)

Mode of heating:

Description

Manufacturer

Type, serial number

Year of manufacture

Where situated

Overall area of heat exchange surfaces m²

Effective power rating as specified by manufacturer kW

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fans W

Delivery rate m³/h

Dimensions of ducts: cross-section m², length m

Condition of heating appliance and inside ventilation appliances

.....

.....

Inside temperature attained °C

MODEL No. 9 (cont'd)

At an outside temperature of °C

and with a relative running time of %

Running time h

Check on operation of thermostat

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP Annex 1, Appendix 3, valid for a period of not more than three years, with the distinguishing mark

Done at:

on:

Testing Officer

MODEL No. 10 (cont'd)

Internal combustion engine: Make: Type:
 Number of cylinders: Cubic capacity:
 Power:..... kW atrpm
 Fuel:

Hydraulic motor: Make: Type:
 Method of drive:.....

Alternator: Make: Type:.....
 Method of drive:.....

Speed of rotation: (nominal speed given by the manufacturer:
 (.....rpm
 (.....rpm
 (minimum speed:rpm

Refrigerant fluid:

Heat exchangers		Condenser	Evaporator
Make-type			
Number of tubes			
Fan pitch (mm) ^{2/}			
Tube: nature and diameter (mm) ^{2/}			
Exchange surface area (m ²) ^{2/}			
Frontal area (m ²)			
FANS	Number		
	Number of blades per fan		
	Diameter (mm)		
	Nominal power (W) ^{2/3/}		
	Total nominal output at a pressure of Pa (m ³ /h) ^{2/}		
	Method of drive		

Expansion valve: Make: Model:

Adjustable: ¹ Not adjustable: ¹

Defrosting device:

Automatic device:

MODEL No.10 (cont'd)

Results of measurements and refrigerating performance

(Mean temperature of the air to the inlet(s) of the refrigeration unit °C)

Effective refrigerating capacity		W		
Internal temperature	Inlet to evaporator	°C		
	Mean	°C		
Mean temperature around the body		°C		
Fuel or electrical power consumption		W or l/hr		
Power absorbed by the unit cooler fan ⁴		W		
Power of internal fan heater		W		
Speed of rotation	Compressor ³	rpm		
	Alternator ³	rpm		
	Fans ³	rpm		
			Nominal	Minimal

MODEL No. 10 (cont'd)

(b) Test method and results:

Test method ¹: heat balance method/enthalpy difference method

In a calorimeter box of mean surface area = m²
 measured value of the U-coefficient of a box
 fitted with a refrigeration unit: W/°C,
 at a mean wall temperature of °C.

In an item of transport equipment:
 measured value of the U-coefficient of an item of transport equipment fitted with a
 refrigeration unit: W/°C,
 at a mean wall temperature of °C.

Method employed for the correction of the U-coefficient of the body as a function of the mean wall
 temperature of the body:

Maximum errors of determination of:

U-coefficient of the body
 refrigerating capacity of the unit

(c) Checks

Temperature regulator: Setting °C Differential °C

Functioning of the defrosting device ¹: satisfactory/unsatisfactory

Air flow volume leaving the evaporator: value measured m³/h

at a pressure of Pa

Existence of a means of supplying heat to the evaporator for setting the thermostat between 0 and
 12 °C ¹: yes/no

(d) Remarks

.....

Done at:

On:

Testing Officer

¹ Delete where applicable.
² Value indicated by the manufacturer.
³ Where applicable.
⁴ Enthalpy difference method only.

Annex 1, Appendix 3

**A. Model form of certificate of compliance of the equipment, as prescribed
in Annex 1, Appendix 1, paragraph 3**

**FORM OF CERTIFICATE FOR INSULATED, REFRIGERATED, MECHANICALLY
REFRIGERATED OR HEATED EQUIPMENT USED FOR THE INTERNATIONAL
CARRIAGE OF PERISHABLE FOODSTUFFS BY LAND**

Certificates of compliance of equipment issued before 2 January 2011 in accordance with the requirements regarding the model of the certificate in Annex 1, Appendix 3 in force until 1 January 2011 shall remain valid until their original date of expiry.

Certificates of compliance issued before the date of entry into force of the modification to item 3 of the model certificate (30 September 2015) shall remain valid until their original date of expiry.

/ EQUIPMENT ¹																					
2	XXXXXXXX ³																				
INSULATED	REFRIGERATED																				
MECHANICALLY REFRIGERATED	HEATED																				
MULTI-TEMPERATURE ⁴																					
/ CERTIFICATE ⁵ ATP XXXXXXXXX																					
<i>Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP)</i>																					
<i>Issued pursuant to the Agreement on the International Carriage of Perishable</i>																					
<i>1. / Issuing authority: XXX</i>																					
<i>2. / Equipment⁶: XXX</i>																					
<i>3. / Registration number⁷: XXXXXXXXXXXX / Vehicle identification number⁸: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i> / allotted by: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i> Insulated box: MARK, MODEL, SERIAL NUMBER, MONTH AND YEAR OF MANUFACTURE¹⁵</i>																					
<i>4. / Owner or operated by: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i>5. / Submitted by: XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i>6. / Is approved as:⁷ XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i>6.1 / With one or more thermal appliances which is (are)¹²:</i>																					
<i>6.1.1 / Independent:⁸ MARK, MODEL, REFRIGERANT, SERIAL NUMBER/YEAR OF MANUFACTURE (If any)</i>																					
<i>6.1.2 / Not independent:⁸ MARK, MODEL, REFRIGERANT, SERIAL NUMBER/YEAR OF MANUFACTURE (If any)</i>																					
<i>6.1.3 / Removable:</i>																					
<i>6.1.4 / Not removable:</i>																					
<i>7. / Basis of issue of certificate:</i>																					
<i>7.1 / This certificate is issued on the basis of:¹</i>																					
<i>7.1.1 / Tests of the equipment: XXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i>7.1.2 / A periodic inspection: XXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i>7.1.3 / Conformity with a reference item of equipment:</i>																					
<i>7.2 / Specify:</i>																					
<i>7.2.1 / The testing station: XXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i>7.2.2 / The nature of the tests:⁹ XXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i>7.2.3 / The number(s) of the report(s): XXXXXXXXXXXXXXXXXXXXXXX</i>																					
NNNNNNN (TESTING STATION) YYYY/MM/DD and NNNNNNN (TESTING STATION) YYYY/MM/DD																					
<i>7.2.4 / The K coefficient: 0.0n W/m²K</i>																					
<i>7.2.5 / The effective refrigerating capacity at an outside temperature of 30 °C and an inside temperature of:¹⁰</i>																					
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;"></td> <td style="width: 15%;">Nominal capacity</td> <td style="width: 15%;">Evap.1</td> <td style="width: 15%;">Evap.2</td> <td style="width: 15%;">Evap.3</td> </tr> <tr> <td>°C</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> </tr> <tr> <td>°C</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> </tr> <tr> <td>°C</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> </tr> </table>			Nominal capacity	Evap.1	Evap.2	Evap.3	°C	XXXX W	XXXX W	XXXX W	XXXX W	°C	XXXX W	XXXX W	XXXX W	XXXX W	°C	XXXX W	XXXX W	XXXX W	XXXX W
	Nominal capacity	Evap.1	Evap.2	Evap.3																	
°C	XXXX W	XXXX W	XXXX W	XXXX W																	
°C	XXXX W	XXXX W	XXXX W	XXXX W																	
°C	XXXX W	XXXX W	XXXX W	XXXX W																	
<i>7.3 / Number of openings and special equipment</i>																					
<i>7.3.1 / Number of doors: X / rear door X / side door(s) X</i>																					
<i>7.3.2 / Number of vents: X</i>																					
<i>7.3.3 / Hanging meat equipment: X</i>																					
<i>7.4 / Others</i>																					
<i>8. / This certificate is valid until: MONTH & YEAR</i>																					
<i>8.1 / Provided that:</i>																					
<i>8.1.1 / The insulated body and, where applicable, the thermal appliance is maintained in good condition; and</i>																					
<i>8.1.2 / No material alteration is made to the thermal appliances:</i>																					
<i>9. / Done by: XXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i>10. / Or: XXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i> YYYY/MM/DD</i>																					
<i> / The competent authority: XXXXXXXXXXXXXXXXXXXXXXX</i>																					
<i> / Responsible for the ATP: XXXXXXXXXXXXXXX</i>																					
(Officer name)																					
LOGOTYPE¹³																					
Security stamp (relief, ultraviolet, etc.)																					
Original document																					
<i>a / Not mandatory</i>																					

CERTIFIED DUPLICATE¹²
Do not print this stamp on the original Certificate
(Officer name)
(Competent or authorized authority)

These footnotes shall not be printed on the certificate itself.

The areas in grey shall be replaced by the translation in the language of the country issuing the ATP Certificate.

- ¹ *Strike out what does not apply.*
- ² *Distinguishing sign of the country, as used in international road traffic.*
- ³ *The number (figures, letters, etc.) indicating the authority issuing the certificate and the approval reference.*
- ⁴ *The test procedure for new multi-temperature equipment appears in section 7 of annex 1, appendix 2. A test procedure for in-service multi-temperature equipment has not yet been determined. Multi-temperature equipment is insulated equipment with two or more compartments for different temperatures in each compartment.*
- ⁵ *The blank certificate shall be printed in the language of the issuing country and in English, French or Russian; the various items shall be numbered as in the above model.*
- ⁶ *State type (wagon, lorry, trailer, semi-trailer, container, etc.); in the case of tank equipment for carriage of liquid foodstuffs, add the word "tank".*
- ⁷ *Enter here one or more of the descriptions listed in Appendix 4 of Annex 1, together with the corresponding distinguishing mark or marks.*
- ⁸ *Write the mark, model, refrigerant, serial number and year of manufacture of the equipment.*
- ⁹ *Measurement of the overall coefficient of heat transfer, determination of the efficiency of cooling appliances, etc.*
- ¹⁰ *Where determined in conformity with the provisions of Appendix 2, paragraph 3.2.7, of this Annex.*
- ¹¹ *The effective cooling capacity of each evaporator depends on the number of evaporators fixed at the condensing unit.*
- ¹² *In case of loss, a new Certificate can be provided or, instead of it, a photocopy of the ATP Certificate bearing a special stamp with "CERTIFIED DUPLICATE" (in red ink) and the name of the certifying officer, his signature, and the name of the competent authority or authorized body.*
- ¹³ *Security stamp (relief, fluorescent, ultraviolet, or other safety mark that certifies the origin of the certificate).*
- ¹⁴ *If applicable, mention the way the power for issuing ATP Certificates is delegated.*
- ¹⁵ *Write the mark, model, serial number of the manufacturer and month and year of manufacture of the insulated body. All the serial numbers of insulated equipment (containers) having an internal volume of less than 2m³ shall be listed. It is also acceptable to collectively list these numbers, i.e. from number ... to number*

B. Certification plate of compliance of the equipment, as provided for in Annex 1, Appendix 1, paragraph 3

1. The certification plate shall be affixed to the equipment permanently and in a clearly visible place adjacent to any other approval plate issued for official purposes. The plate, conforming to the model reproduced below, shall take the form of a rectangular, corrosion-resistant and fire-resistant plate measuring at least 160 mm by 100 mm. The following particulars shall be indicated legibly and indelibly on the plate in at least the English or French or Russian language:
 - (a) The Latin letters "ATP" followed by the words "APPROVED FOR TRANSPORT OF PERISHABLE FOODSTUFFS";
 - (b) "APPROVAL NUMBER" followed by the distinguishing sign (in international road traffic) of the State in which the approval was granted and the number (figures, letters, etc.) of the approval reference;
 - (c) "EQUIPMENT NUMBER" followed by the individual number assigned to identify the particular item of equipment (which may be the manufacturer's number);
 - (d) "ATP MARK" followed by the distinguishing mark prescribed in annex 1, appendix 4, corresponding to the class and the category of the equipment;
 - (e) "VALID UNTIL" followed by the date (month and year) when the approval of the unit of equipment expires. If the approval is renewed following a test or inspection, the subsequent date of expiry may be added on the same line.
2. The letters "ATP" and the letters of the distinguishing mark should be approximately 20 mm high. Other letters and figures should not be less than 5 mm high.



* The particulars in square brackets are given by way of example.

Annex I, Appendix 4

DISTINGUISHING MARKS TO BE AFFIXED TO SPECIAL EQUIPMENT

The distinguishing marks prescribed in appendix 1, paragraph 4 to this annex shall consist of capital Latin letters in dark blue on a white ground. The height of the letters shall be at least 100 mm for the classification marks and at least 50 mm for the expiry dates. For special equipment, such as a laden vehicle with maximum mass not exceeding 3.5 t, the height of the classification marks could likewise be 50 mm and at least 25 mm for the expiry dates.

The classification and expiry marks shall at least be affixed externally on both sides in the upper corners near the front.

The marks shall be as follows:

<u>Equipment</u>	<u>Distinguishing mark</u>
Normally insulated equipment	IN
Heavily insulated equipment	IR
Class A refrigerated equipment with normal insulation	RNA
Class A refrigerated equipment with heavy insulation	RRA
Class B refrigerated equipment with heavy insulation	RRB
Class C refrigerated equipment with heavy insulation	RRC
Class D refrigerated equipment with normal insulation	RND
Class D refrigerated equipment with heavy insulation	RRD
Class A mechanically refrigerated equipment with normal insulation	FNA
Class A mechanically refrigerated equipment with heavy insulation	FRA
Class B mechanically refrigerated equipment with heavy insulation	FRB
Class C mechanically refrigerated equipment with heavy insulation	FRC
Class D mechanically refrigerated equipment with normal insulation	FND
Class D mechanically refrigerated equipment with heavy insulation	FRD

<u>Equipment</u>	<u>Distinguishing mark</u>
Class E mechanically refrigerated equipment with heavy insulation	FRE
Class F mechanically refrigerated equipment with heavy insulation	FRF
Class A heated equipment with normal insulation	CNA
Class A heated equipment with heavy insulation	CRA
Class B heated equipment with heavy insulation	CRB
Class C heated equipment with heavy insulation	CRC
Class D heated equipment with heavy insulation	CRD

If the equipment is fitted with a removable or non-independent thermal appliance and if special conditions exist for the use of the thermal appliance, the distinguishing mark or marks shall be supplemented by the letter X in the following cases:

1. FOR REFRIGERATED EQUIPMENT:
 - Where the eutectic plates have to be placed in another chamber for freezing;
2. FOR MECHANICALLY REFRIGERATED EQUIPMENT:
 - 2.1 Where the compressor is powered by the vehicle engine;
 - 2.2 Where the refrigeration unit itself or a part is removable, which would prevent its functioning.

The date (month, year) entered under section A, item 8 in appendix 3 of this annex as the date of expiry of the certificate issued in respect of the equipment shall be quoted under the distinguishing mark or marks aforesaid.

Model:

FRC 02 - 2020

02 = month (February)) of expiry of the
2020= year) certificate

Annex 2

SELECTION OF EQUIPMENT AND TEMPERATURE CONDITIONS TO BE OBSERVED FOR THE CARRIAGE OF QUICK (DEEP)-FROZEN AND FROZEN FOODSTUFFS

1. For the carriage of the following quick (deep)-frozen and frozen foodstuffs, the transport equipment has to be selected and used in such a way that during carriage the highest temperature of the foodstuffs at any point of the load does not exceed the indicated temperature.

By that means the equipment used for the transport of quick-frozen foodstuffs shall be fitted with the device referred to in appendix 1 to this annex. If however one should proceed to the verification of the temperature of the foodstuff, this shall be done according to the procedure laid down in appendix 2 to this annex.

2. Accordingly, the temperature of the foodstuffs at any point in the load must be at or below the indicated value on loading, during carriage and on unloading.
3. Where it is necessary to open the equipment, e.g. to carry out inspections, it is essential to ensure that the foodstuffs are not exposed to procedures or conditions contrary to the objectives of this annex and those of the International Convention on the Harmonization of Frontier Controls of Goods.
4. During certain operations, such as defrosting the evaporator of mechanically refrigerated equipment, a brief rise of the temperature of the surface of the foodstuffs of not more than 3 °C in a part of the load, e.g. near the evaporator, above the appropriate temperature may be permitted.

Ice cream	-20 °C
Frozen or quick (deep)-frozen fish, fish products, molluscs and crustaceans and all other quick (deep)-frozen foodstuffs	-18 °C
All other frozen foodstuffs (except butter)	-12 °C
Butter	-10 °C

Deep-frozen and frozen foodstuffs mentioned below to be immediately further processed at destination:¹

Butter
Concentrated fruit juice

¹ *The deep-frozen and frozen foodstuffs listed, when intended for immediate further processing at destination, may be permitted gradually to rise in temperature during carriage so as to arrive at their destination at temperatures no higher than those specified by the sender and indicated in the transport contract. This temperature should not be higher than the maximum temperature authorized for the same foodstuff when refrigerated as mentioned in annex 3. The transport document shall state the name of the foodstuff, whether it is deep-frozen or frozen and that it is immediately to be further processed at destination. This carriage shall be undertaken with ATP-approved equipment without use of a thermal appliance to increase the temperature of the foodstuffs.*

Annex 2, Appendix 1

MONITORING OF AIR TEMPERATURES FOR TRANSPORT OF PERISHABLE FOODSTUFFS QUICK-FROZEN

The transport equipment shall be fitted with an instrument capable of measuring and recording air temperatures and storing the data obtained (hereinafter referred to as the instrument) to monitor the air temperatures to which quick-frozen foodstuffs intended for human consumption are subjected.

The instrument shall be verified in accordance with EN 13486 (Temperature recorders and thermometers for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream – Periodic verification) by an accredited body and the documentation shall be available for the approval of ATP competent authorities.

The instrument shall comply with standard EN 12830 (Temperature recorders for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream – Tests, performance, suitability).

Temperature recordings obtained in this manner must be dated and stored by the operator for at least one year or longer, according to the nature of the food.

Annex 2, Appendix 2

PROCEDURE FOR THE SAMPLING AND MEASUREMENT OF TEMPERATURE FOR CARRIAGE OF CHILLED, FROZEN AND QUICK-FROZEN PERISHABLE FOODSTUFFS

A. GENERAL CONSIDERATIONS

1. Inspection and measurement of temperatures stipulated in annexes 2 and 3 should be carried out so that the foodstuffs are not exposed to conditions detrimental to the safety or quality of the foodstuffs. Measuring of food temperatures should be carried out in a refrigerated environment, and with the minimum delays and minimum disruption of transport operations.
2. Inspection and measurement procedures, as referred to in paragraph 1, shall preferably be carried out at the point of loading or unloading. These procedures should not normally be carried out during transport, unless serious doubt exists about the conformity of the temperatures of the foodstuffs stipulated in annexes 2 and 3.
3. Where possible, the inspection should take account of information provided by temperature monitoring devices during the journey before selecting those loads of perishable foodstuffs for sampling and measurement procedures. Progression to temperature measurement of the food should only be undertaken where there is reasonable doubt of the temperature control during carriage.
4. Where loads have been selected, a non-destructive measurement (between-case or between-pack) should at first be used. Only where the results of the non-destructive measurement do not conform with the temperatures laid down in annexes 2 or 3 (taking into account allowable tolerances), are destructive measurements to be carried out. Where consignments or cases have been opened for inspection, but no further action has been taken, they should be resealed giving the time, date, place of inspection, and the official stamp of the inspection authority.

B. SAMPLING

5. The types of package selected for temperature measurement shall be such that their temperature is representative of the warmest point of the consignment.
6. Where it is necessary to select samples during transport whilst the consignment is loaded, two samples should be taken from the top and bottom of the consignment adjacent to the opening edge of each door or pair of doors.
7. Where samples are taken during unloading of the consignment, four samples should be chosen from any of the following locations:
 - top and bottom of the consignment adjacent to the opening edge of the doors;
 - top rear corners of the consignment (i.e. furthest away from the refrigeration unit);
 - centre of the consignment;
 - centre of the front surface of the consignment (i.e. closest to the refrigeration unit);
 - top or bottom corners of the front surface of the consignment (i.e. closest to the return air intake of the refrigeration unit).

8. In the case of chilled foods in annex 3, samples should also be taken from the coldest location to ensure that freezing has not occurred during transportation.

C. **TEMPERATURE MEASUREMENT OF PERISHABLE FOODSTUFFS**

9. The temperature measuring probe should be precooled to as close to the product temperature as possible before measurement.

I. **Chilled foods**

10. **Non-destructive measurement.** Measurement between-case or between-pack should be made with a probe with a flat head, which gives a good surface contact, low thermal mass, and high thermal conductivity. When placing the probe between the cases or food packs, there should be sufficient pressure to give a good thermal contact, and sufficient length of probe inserted to minimize conductivity errors.

11. **Destructive measurement.** A probe with a rigid, robust stem and sharpened point should be used, made from a material which is easy to clean and disinfect. The probe should be inserted into the centre of the food pack, and the temperature noted when a steady reading is reached.

II. **Frozen and quick-frozen foods**

12. **Non-destructive measurement.** Same as paragraph 10.

13. **Destructive measurement.** Temperature probes are not designed to penetrate frozen foods. Therefore it is necessary to make a hole in the product in which to insert the probe. The hole is made by a precooled product penetration instrument, which is a sharp pointed metallic instrument such as an ice punch, hand drill or an auger. The diameter of the hole should provide a close fit to that of the probe. The depth to which the probe is inserted will depend on the type of product:

- (i) Where product dimensions allow, insert the probe to a depth of 2.5 cm from the surface of the product;
- (ii) Where (i) is not possible because of the size of the product, the probe should be inserted to a minimum depth from the surface of 3 to 4 times the diameter of the probe;
- (iii) It is not possible or practical to make a hole in certain foods because of their size or composition e.g. diced vegetables. In these cases, the internal temperature of the food package should be determined by insertion of a suitable sharp-stemmed probe to the centre of the pack to measure the temperature in contact with the food.

After inserting the probe, the temperature should be read when it has reached a steady value.

D. **GENERAL SPECIFICATIONS FOR THE MEASURING SYSTEM**

14. The measuring system (probe and read-out) used in determining temperature shall meet the following specifications:

- (i) the response time should achieve 90% of the difference between the initial and final reading within three minutes;

- (ii) ¹ the system must have an accuracy of ± 0.5 °C within the measurement range -20°C to +30 °C;
- (iii) ¹ the measuring accuracy must not change by more than 0.3 °C during operation in the ambient temperature range -20°C to +30°C;
- (iv) the display resolution of the instrument should be 0.1 °C;
- (v) ¹ the accuracy of the system should be checked at regular intervals;
- (vi) the system should have a current certificate of calibration from an approved institution;
- (vii) the electrical components of the system should be protected against undesirable effects due to condensation of moisture;
- (viii) the system should be robust and shock proof.

E. ALLOWABLE TOLERANCES IN THE MEASUREMENT OF TEMPERATURE

15. Certain tolerances should be allowed in the interpretation of temperature measurements:

- (i) operational - in the case of frozen and quick-frozen foods, a brief rise of up to 3 °C on the temperature permitted in annex 2 is allowed for the surface temperature of the food;
- (ii) methodology - non-destructive measurement can give up to a maximum of 2°C difference in the reading compared to the true product temperature measurement, especially with the thickness of cardboard in case packaging. This tolerance does not apply to the destructive measurement of temperature.

¹ *The procedure will be defined.*

Annex 3

SELECTION OF EQUIPMENT AND TEMPERATURE CONDITIONS TO BE OBSERVED FOR THE CARRIAGE OF CHILLED FOODSTUFFS

1. For the carriage of the following chilled foodstuffs, the transport equipment has to be selected and used in such a way that during carriage the highest temperature of the foodstuffs at any point of the load does not exceed the indicated temperature. If, however, the verification of the temperature of the foodstuff is carried out, it shall be done according to the procedure laid down in Appendix 2 to Annex 2 to this Agreement.
2. Accordingly, the temperature of the foodstuffs at any point in the load must not exceed the temperature as indicated below on loading, during carriage and on unloading.
3. Where it is necessary to open the equipment, e.g. to carry out inspections, it is essential to ensure that the foodstuffs are not exposed to procedures or conditions contrary to the objectives of this Annex and those of the International Convention on the Harmonization of Frontier Controls of Goods.
4. The temperature control of foodstuffs specified in this Annex should be such as not to cause freezing at any point of the load.

		<i>Maximum temperature</i>
I.	Raw milk ¹	+ 6 °C
II.	Red meat ² and large game (other than red offal)	+ 7 °C
III.	Meat products, ³ pasteurized milk, butter, fresh dairy products (yoghurt, kefir, cream and fresh cheese ⁴), ready cooked foodstuffs (meat, fish, vegetables), ready to eat prepared raw vegetables and vegetable products ⁵ , concentrated fruit juice and fish products ³ not listed below	Either at + 6 °C or at temperature indicated on the label and/or on the transport documents
IV.	Game (other than large game), poultry ² and rabbits	+ 4 °C
V.	Red offal ²	+ 3 °C
VI.	Minced meat ²	Either at +2 °C or at temperature indicated on the label and/or on the transport documents
VII.	Untreated fish, molluscs and crustaceans ⁶	On melting ice or at temperature of melting ice

¹ When milk is collected from the farm for immediate processing, the temperature may rise during carriage to +10 °C.

² Any preparations thereof.

³ Except for products fully treated by salting, smoking, drying or sterilization.

⁴ "Fresh cheese" means a non-ripened (non-matured) cheese which is ready for consumption shortly after manufacturing and which has a limited conservation period.

⁵ Raw vegetables which have been diced, sliced or otherwise size reduced, but excluding those which have only been washed, peeled or simply cut in half.

⁶ Except for live fish, live molluscs and live crustaceans.

ATP

as amended on 30 September 2015

The Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) done at Geneva on 1 September 1970 entered into force on 21 November 1976.

The Agreement and its annexes have been regularly amended and updated since their entry into force by the Working Party on the Transport of Perishable Foodstuffs (WP.11) of the United Nations Economic Commission for Europe's Inland Transport Committee.

At the time of publishing, the Contracting Parties to ATP are Albania, Andorra, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Monaco, Montenegro, Morocco, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Saudi Arabia, Serbia, Slovakia, Slovenia, Spain, Sweden, Tajikistan, The former Yugoslav Republic of Macedonia, Tunisia, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America, Uzbekistan.

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ANNEX II

ATP Handbook

A helpful tool for better understanding the ATP is the ATP Handbook.

The ATP Handbook comprises the Agreement itself and its Annexes with comments added where appropriate for clarification or additional explanation of the text. Comments contained in the ATP Handbook are not legally binding for Contracting Parties of the ATP. They are, however, important for the interpretation, harmonization and application of the Agreement as they reflect the opinion of the Working Party on the Transport of Perishable Foodstuffs of the Inland Transport Committee of the Economic Commission for Europe (UNECE).

Comments are placed with the provisions of the Agreement to which they refer. Comments do not modify the provisions of the Agreement or of its Annexes but merely make their contents, meaning and scope more precise.

Comments provide a means of applying the provisions of the Agreement and of its Annexes so as to take into account the development of technology and economic requirements. They may also describe certain recommended practices.

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE
Inland Transport Committee

ATP HANDBOOK 2015

Agreement on the International Carriage
of Perishable Foodstuffs and on the Special
Equipment to be Used for such Carriage



UNITED NATIONS

FOREWORD

1. The ATP Handbook comprises the Agreement itself and its Annexes with comments added where appropriate for clarification or additional explanation of the text.
2. Comments contained in the ATP Handbook are not legally binding for Contracting Parties of the ATP. They are, however, important for the interpretation, harmonization and application of the Agreement as they reflect the opinion of the Working Party on the Transport of Perishable Foodstuffs of the Inland Transport Committee of the Economic Commission for Europe (UNECE).
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5. Comments provide a means of applying the provisions of the Agreement and of its Annexes so as to take into account the development of technology and economic requirements. They may also describe certain recommended practices.

United Nations Economic Commission for Europe (UNECE)

The United Nations Economic Commission for Europe (UNECE) is one of the five United Nations regional commissions, administered by the Economic and Social Council (ECOSOC). It was established in 1947 with the mandate to help rebuild post-war Europe, develop economic activity and strengthen economic relations among European countries, and between Europe and the rest of the world. During the Cold War, UNECE served as a unique forum for economic dialogue and cooperation between East and West. Despite the complexity of this period, significant achievements were made, with consensus reached on numerous harmonization and standardization agreements.

In the post-Cold War era, UNECE acquired not only many new member States, but also new functions. Since the early 1990s the organization has focused on analyses of the transition process, using its harmonization experience to facilitate the integration of central and eastern European countries into global markets.

UNECE is the forum where the countries of western, central and eastern Europe, Central Asia and North America – 56 countries in all – come together to forge the tools of their cooperation. That cooperation concerns economic cooperation and integration, statistics, environment, transport, trade, sustainable energy, forestry and timber, housing and land management and population. The Commission offers a regional framework for the elaboration and harmonization of conventions, norms and standards. The Commission's experts provide technical assistance to the countries of South-East Europe and the Commonwealth of Independent States. This assistance takes the form of advisory services, training seminars and workshops where countries can share their experiences and best practices.

Transport in UNECE

The UNECE Transport Division is the secretariat of the Inland Transport Committee (ITC) and the ECOSOC Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals. The ITC and its 17 working parties, as well as the ECOSOC Committee and its sub-committees are intergovernmental decision-making bodies that work to improve the daily lives of people and businesses around the world in measurable ways and with concrete actions that enhance traffic safety, environmental performance, energy efficiency and the competitiveness of the transport sector.

The ECOSOC Committee was set up in 1953 by the Secretary-General at the request of the Economic and Social Council to elaborate recommendations on the transport of dangerous goods. Its mandate was extended to the global (multisectoral) harmonization of systems of classification and labelling of chemicals in 1999. It is composed of experts from countries which possess the relevant expertise and experience in the international trade and transport of dangerous goods and chemicals. Its membership is restricted in order to reflect a proper geographical balance between all regions of the world and to ensure adequate participation of developing countries. Although the Committee is a subsidiary body of ECOSOC, the Secretary-General decided in 1963 that the secretariat services would be provided by the UNECE Transport Division.

The Inland Transport Committee is a unique intergovernmental forum that was set up in 1947 to support the reconstruction of transport connections in post-war Europe. Over the years it has specialized in facilitating the harmonized and sustainable development of inland modes of transport. The main results of this persevering and ongoing work are reflected among other things (i) in 58 United Nations conventions and many more technical regulations which are updated on a regular basis and provide an international legal framework for the sustainable development of national and international road, rail, inland water and intermodal transport, as well as the transport of dangerous goods and the construction and inspection of road motor vehicles; (ii) in the Trans-European Motorways, Trans-European Railways and the Euro-Asia Transport Links projects that facilitate multi-country coordination of transport infrastructure investment programmes; (iii) in the TIR system which is a global customs transit facilitation solution; (iv) in the tool called For Future Inland Transport Systems (ForFITS) which can assist national and local governments to monitor CO₂ emissions coming from inland transport modes and to select and design climate change mitigation policies based on their impact and adapted to local conditions; (v) in transport statistics – methods and data – that are internationally agreed on; and (vi) in studies and reports that help transport policy development by addressing timely issues based on cutting-edge research and analysis.

ITC also devotes special attention to Intelligent Transport Services, sustainable urban mobility and city logistics, as well as to increasing the resilience of transport networks and services in response to climate change adaptation and security challenges.

- iv -

FOREWORD

The Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) done at Geneva on 1 September 1970 entered into force on 21 November 1976.

The Agreement and its annexes have been regularly amended and updated since their entry into force by the Working Party on the Transport of Perishable Foodstuffs (WP.11) of the Economic Commission for Europe's Inland Transport Committee.

Territorial applicability

The ATP is an Agreement between States, and there is no overall enforcing authority. In practice, highway checks are carried out by Contracting Parties, and non-compliance may then result in legal action by national authorities against offenders in accordance with their domestic legislation. ATP itself does not prescribe any penalties. At the time of publishing, those Contracting Parties are Albania, Andorra, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Monaco, Montenegro, Morocco, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Saudi Arabia, Serbia, Slovakia, Slovenia, Spain, Sweden, Tajikistan, The former Yugoslav Republic of Macedonia, Tunisia, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America and Uzbekistan.

Additional practical information

Any query concerning the application of ATP should be directed to the relevant competent authority. Additional information may also be found on the UNECE Transport Division web site at the following link:

<http://www.unece.org/trans/main/wp11/atp.html>

This information, updated on a continuous basis, concerns:

- The status of ATP;
- Depositary notifications (e.g. new Contracting Parties, amendments or corrections to legal texts);
- Publication details (corrections, publication of new amendments);
- List and details of competent authorities and ATP Test Stations.

The text below comprises the Agreement itself and its annexes with the latest amendments which enter into force on 30 September 2015.

The amendments or corrections to the Agreement which have become applicable since the last edition of this publication are in Annex 1, paragraph 4; Annex 1, Appendix 1, paragraphs 3 and 6; Annex 1, Appendix 2, paragraphs 4.3.2, 6.3, 7 and 8; Annex 1, Appendix 3A and Appendix 3B; Annex 1, Appendix 4; and Annex 2, Appendix 1.

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**AGREEMENT ON THE INTERNATIONAL CARRIAGE OF PERISHABLE FOODSTUFFS
AND ON THE SPECIAL EQUIPMENT TO BE USED FOR SUCH CARRIAGE (ATP)**

THE CONTRACTING PARTIES,

DESIROUS of improving the conditions of preservation of the quality of perishable foodstuffs during their carriage, particularly in international trade,

CONSIDERING that the improvement of those conditions is likely to promote the expansion of trade in perishable foodstuffs,

HAVE AGREED as follows:

Chapter I

SPECIAL TRANSPORT EQUIPMENT

Article 1

For the international carriage of perishable foodstuffs, equipment shall not be designated as "insulated", "refrigerated", "mechanically refrigerated", or "heated" equipment unless it complies with the definitions and standards set forth in annex 1 to this Agreement.

Article 2

The Contracting Parties shall take the measures necessary to ensure that the equipment referred to in article 1 of this Agreement is inspected and tested for compliance with the said standards in conformity with the provisions of annex 1, appendices 1, 2, 3 and 4, to this Agreement. Each Contracting Party shall recognize the validity of certificates of compliance issued in conformity with annex 1, appendix 1, paragraph 3 to this Agreement by the competent authority of another Contracting Party. Each Contracting Party may recognize the validity of certificates of compliance issued in conformity with the requirements of annex 1, appendices 1 and 2, to this Agreement by the competent authority of a State not a Contracting Party.

Comment:

The issuing of a certificate of compliance by the competent authorities on the basis of test reports is referred to in annex 1, appendix 1, paragraph 3, but there is no indication that such reports had to be issued by a testing station in the country of registration of the equipment.

The test reports in accordance with annex 1, appendix 2 are not certificates. To avoid duplication of the test, each Contracting Party should recognize test stations from any Contracting Party, approved by the competent authority of the country concerned.

Contracting Parties may recognize the test reports, issued by testing stations in countries of non-contracting parties and approved by the competent authority of those countries.

Chapter II

USE OF SPECIAL TRANSPORT EQUIPMENT FOR THE INTERNATIONAL CARRIAGE OF CERTAIN PERISHABLE FOODSTUFFS

Article 3

1. The provisions of article 4 of this Agreement shall apply to all carriage, whether for hire or reward or for own account, carried out exclusively - subject to the provisions of paragraph 2 of this article - by rail, by road or by a combination of the two, of

- quick (deep)-frozen and frozen foodstuffs, and of
- foodstuffs referred to in annex 3 to this Agreement even if they are neither quick (deep)-frozen nor frozen,

if the point at which the goods are, or the equipment containing them is, loaded on to a rail or road vehicle and the point at which the goods are, or the equipment containing them is, unloaded from that vehicle are in two different States and the point at which the goods are unloaded is situated in the territory of a Contracting Party.

In the case of carriage entailing one or more sea crossings other than sea crossings as referred to in paragraph 2 of this article, each land journey shall be considered separately.

2. The provisions of paragraph 1 of this article shall likewise apply to sea crossings of less than 150 km on condition that the goods are shipped in equipment used for the land journey or journeys without transloading of the goods and that such crossings precede or follow one or more land journeys as referred to in paragraph 1 of this article or take place between two such land journeys.

3. Notwithstanding the provisions of paragraphs 1 and 2 of this article, the Contracting Parties need not apply the provisions of article 4 of this Agreement to the carriage of foodstuffs not intended for human consumption.

Comment:

Except in the case of the sea crossings referred to in article 3, paragraph 2, land/sea/land transport, with or without reloading of the goods at the end of the sea crossing(s) is not subject to the provisions of the Agreement if the land transport operations in question are not in themselves of an international nature.

Article 4

1. For the carriage of the perishable foodstuffs specified in annexes 2 and 3 to this Agreement, the equipment referred to in article 1 of this Agreement shall be used unless the temperatures to be anticipated throughout carriage render this requirement manifestly unnecessary for the purpose of maintaining the temperature conditions specified in annexes 2 and 3 to this Agreement. The equipment shall be so selected and used that the temperature conditions prescribed in the said annexes can be complied with throughout carriage. Furthermore, all appropriate measures shall be taken, more particularly as regards the temperature of the foodstuffs at the time of loading and as regards icing or re-icing during the journey or other necessary operations. Nevertheless, the provisions of this paragraph shall apply only in so far as they are not incompatible with international undertakings in the matter of international carriage arising for the Contracting Parties by virtue of conventions in force at the time of the entry into force of this Agreement or by virtue of conventions substituted for them.

2. If during carriage under this Agreement the provisions of paragraph 1 of this article have not been complied with,

- (a) the foodstuffs may not be disposed of in the territory of a Contracting Party after completion of carriage unless the competent authorities of that Contracting Party deem it compatible with the requirements of public health to authorize such disposal and unless such conditions as the authorities may attach to the authorization when granting it are fulfilled; and
- (b) every Contracting Party may, by reason of the requirements of public health or zooprophyllaxis and in so far as it is not incompatible with the other international undertakings referred to in the last sentence of paragraph 1 of this article, prohibit the entry of the foodstuffs into its territory or make their entry subject to such conditions as it may determine.

3. Compliance with the provisions of paragraph 1 of this article shall be required of carriers for hire or reward only in so far as they have undertaken to procure or provide services intended to ensure such compliance and if such compliance depends on the performance of those services. If other persons, whether individuals or corporate bodies, have undertaken to procure or provide services intended to ensure compliance with the provisions of this Agreement, they shall be required to ensure such compliance in so far as it depends on performance of the services they have undertaken to procure or provide.

4. During carriage which is subject to the provisions of this Agreement and for which the loading point is situated in the territory of a Contracting Party, responsibility for compliance with the requirements of paragraph 1 of this article shall rest, subject to the provisions of paragraph 3 of this article,

- in the case of transport for hire or reward, with the person, whether an individual or a corporate body, who is the consignor according to the transport document or, in the absence of a transport document, with the person, whether an individual or a corporate body, who has entered into the contract of carriage with the carrier;
- in other cases with the person, whether an individual or a corporate body, who performs carriage.

Chapter III

MISCELLANEOUS PROVISIONS

Article 5

The provisions of this Agreement shall not apply to carriage in containers classified as thermal maritime by land without transloading of the goods where such carriage is preceded or followed by a sea crossing other than a sea crossing as referred to in article 3, paragraph 2, of this Agreement.

Comment:

Land transport by container classified as a thermal maritime ISO-1496-2 container or container conforming to an equivalent standard, approved by the competent authority of an ATP Contracting Party, preceded or followed by one or more sea crossings, other than those referred to in article 3, paragraph 2, is not subject to the provisions of the Agreement.

Article 6

1. Each Contracting Party shall take all appropriate measures to ensure observance of the provisions of this Agreement. The competent administrations of the Contracting Parties shall keep one another informed of the general measures taken for this purpose.

2. If a Contracting Party discovers a breach committed by a person residing in the territory of another Contracting Party, or imposes a penalty upon such a person, the administration of the first Party shall inform the administration of the other Party of the breach discovered and of the penalty imposed.

Comment:

**QUESTIONNAIRE FOR COLLECTION OF STATISTICS
ON CHECKS CARRIED OUT TO ENSURE COMPLIANCE WITH THE ATP**

Name of Country	Date/Year
1. Number of checks made under Article 6 of ATP:	Road equipment checks:
	Railway equipment checks:
	Total:
2. Number of detected breaches	
Domestically registered equipment	Equipment registered in foreign countries⁴
Number of breaches of ATP documents ¹ :	Number of breaches of ATP documents ¹ :
Number of breaches related to thermal appliances:	Number of breaches related to thermal appliances:
Number of breaches related to the body ² :	Number of breaches related to the body ² :
Other ATP breaches ³ :	Other ATP breaches ³ :
Total breaches:	Total breaches:
3. Percentage of defective equipment:	
4. Additional information on compliance with the ATP	
Number of 1 st certificates issued: (new equipment only)	
Number of 2 nd certificates issued: (based on inspection by expert) or (based on K values by test stations)	
Number of 3 rd certificates issued: (based on inspection by expert) or (based on K values by test stations)	
Number of 4 th and following certificates: (based on inspection by expert) or	
(based on K values by test stations)	
Total ATP certificates issued:	
Total duplicate certificates issued:	
Notes:	
1/ Including ATP plates and manufacturer's plates (Annex 1, Appendix 1, paragraph 6).	
2/ Seals damaged, holes or cracks.	
3/ Temperature recorder missing, or other.	
4/ This information shall be sent in accordance with Article 6, paragraph 2.	
Signature of the competent authority	

Article 7

The Contracting Parties reserve the right to enter into bilateral or multilateral agreements to the effect that provisions applicable to special equipment and provisions applicable to the temperatures at which certain foodstuffs are required to be maintained during carriage may, more particularly by reason of special climatic conditions, be more stringent than those prescribed in this Agreement. Such provisions shall apply only to international carriage between Contracting Parties which have concluded bilateral or multilateral

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agreements as referred to in this article. Such agreements shall be transmitted to the Secretary-General of the United Nations, who shall communicate them to Contracting Parties to this Agreement which are not signatories of the said agreements.

Article 8

Failure to observe the provisions of this Agreement shall not affect either the existence or the validity of contracts entered into for the performance of carriage.

Chapter IV

FINAL PROVISIONS

Article 9

1. States members of the Economic Commission for Europe and States admitted to the Commission in a consultative capacity under paragraph 8 of the Commission's terms of reference may become Contracting Parties to this Agreement

- (a) by signing it;
- (b) by ratifying it after signing it subject to ratification; or
- (c) by acceding to it.

2. States which may participate in certain activities of the Economic Commission for Europe under paragraph 11 of the Commission's terms of reference may become Contracting Parties to this Agreement by acceding thereto after its entry into force.

3. This Agreement shall be open for signature until 31 May 1971 inclusive. Thereafter, it shall be open for accession.

4. Ratification or accession shall be effected by the deposit of an instrument with the Secretary-General of the United Nations.

Comments:

0.9-1 Signature subject to ratification, acceptance or approval

Where the signature is subject to ratification, acceptance or approval, the signature does not establish the consent to be bound. However, it is a means of authentication and expresses the willingness of the signatory state to continue the treaty-making process. The signature qualifies the signatory state to proceed to ratification, acceptance or approval. It also creates an obligation to refrain, in good faith, from acts that would defeat the object and the purpose of the treaty.

0.9-2 Ratification

Ratification defines the international act whereby a state indicates its consent to be bound to a treaty if the parties intended to show their consent by such an act. In the case of bilateral treaties, ratification is usually accomplished by exchanging the requisite instruments, while in the case of multilateral treaties the usual procedure is for the depositary to collect the ratifications of all states, keeping all parties informed of the situation. The institution of ratification grants states the necessary time-frame to seek the required approval for the treaty on the domestic level and to enact the necessary legislation to give domestic effect to that treaty.

0.9-3 Accession

"Accession" is the act whereby a state accepts the offer or the opportunity to become a party to a treaty already negotiated and signed by other states. It has the same legal effect as ratification. Accession usually occurs after the treaty has entered into force.

Article 10

1. Any State may at the time of signing this Agreement without reservation as to ratification or of depositing its instrument of ratification or accession or at any time thereafter declare by notification addressed to the Secretary-General of the United Nations that the Agreement does not apply to carriage performed in any or in a particular one of its territories situated outside Europe. If notification as aforesaid is made after the entry into force of the Agreement in respect of the notifying State the Agreement shall, ninety days after the date on which the Secretary-General has received the notification, cease to apply to carriage in the territory or territories named in that notification. New Contracting Parties acceding to ATP as from 30 April 1999 and applying paragraph 1 of this article shall not be entitled to enter any objection to draft amendments in accordance with the procedure provided for in article 18, paragraph 2.

2. Any State which has made a declaration under paragraph 1 of this article may at any time thereafter declare by notification addressed to the Secretary-General of the United Nations that the Agreement will be applicable to carriage performed in a territory named in the notification made under paragraph 1 of this article and the Agreement shall become applicable to carriage in that territory one hundred and eighty days after the date on which the Secretary-General has received that notification.

Comments:

0.10-1 Notification

The term "notification" refers to a formality through which a State or an international organisation communicates certain facts or events of legal importance. Notification is increasingly resorted to as a means of expressing final consent. Instead of opting for the exchange of documents or deposit, States may be content to notify their consent to the other party or to the depositary. However, all other acts and instruments relating to the life of a treaty may also call for notifications.

0.10-2 Declarations

Sometimes States make "declarations" as to their understanding of some matter or as to the interpretation of a particular provision. Unlike reservations, declarations merely clarify the state's position and do not purport to exclude or modify the legal effect of a treaty. Usually, declarations are made at the time of the deposit of the corresponding instrument or at the time of signature.

Article 11

1. This Agreement shall come into force one year after five of the States referred to in its article 9, paragraph 1, have signed it without reservation as to ratification or have deposited their instruments of ratification or accession.

2. With respect to any State which ratifies, or accedes to, this Agreement after five States have signed it without reservation as to ratification or have deposited their instruments of ratification or accession, this Agreement shall enter into force one year after the said State has deposited its instrument of ratification or accession.

Article 12

1. Any Contracting Party may denounce this Agreement by giving notice of denunciation to the Secretary-General of the United Nations.

2. The denunciation shall take effect fifteen months after the date on which the Secretary-General received the notice of denunciation.

Article 13

This Agreement shall cease to have effect if the number of Contracting Parties is less than five throughout any period of twelve consecutive months after its entry into force.

Article 14

1. Any State may at the time of signing this Agreement without reservation as to ratification or of depositing its instrument of ratification or accession or at any time thereafter declare by notification addressed to the Secretary-General of the United Nations that this Agreement will be applicable to all or any of the territories for the international relations of which that State is responsible. This Agreement shall be applicable to the territory or territories named in the notification as from the ninetieth day after receipt of the notice by the Secretary-General or, if on that day the Agreement has not yet entered into force, as from its entry into force.

2. Any State which has made a declaration under paragraph 1 of this article making this Agreement applicable to a territory for whose international relations it is responsible may denounce the Agreement separately in respect of that territory in conformity with article 12 hereof.

Article 15

1. Any dispute between two or more Contracting Parties concerning the interpretation or application of this Agreement shall so far as possible be settled by negotiation between them.

2. Any dispute which is not settled by negotiation shall be submitted to arbitration if any one of the Contracting Parties concerned in the dispute so requests and shall be referred accordingly to one or more arbitrators selected by agreement between those Parties. If within three months from the date of the request for arbitration, the Parties concerned in the dispute are unable to agree on the selection of an arbitrator or arbitrators, any of those Parties may request the Secretary-General of the United Nations to designate a single arbitrator to whom the dispute shall be referred for decision.

3. The decision of the arbitrator or arbitrators designated under the preceding paragraph shall be binding on the Contracting Parties concerned in the dispute.

Article 16

1. Any State may, at the time of signing, ratifying, or acceding to, this Agreement, declare that it does not consider itself bound by article 15, paragraphs 2 and 3 of this Agreement. The other Contracting Parties shall not be bound by these paragraphs with respect to any Contracting Party which has entered such a reservation.

2. Any Contracting Party which has entered a reservation under paragraph 1 of this article may at any time withdraw the reservation by notification addressed to the Secretary-General of the United Nations.

3. With the exception of the reservation provided for in paragraph 1 of this article, no reservation to this Agreement shall be permitted.

Comment:

0.16-1 Reservation

A reservation is a declaration made by a State by which it purports to exclude or alter the legal effect of certain provisions of the treaty in their application to that state. A reservation enables a State to accept a multilateral treaty as a whole by giving it the possibility not to apply certain provisions with which

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it does not want to comply. Reservations can be made when the treaty is signed, ratified, accepted, approved or acceded to. Reservations must not be incompatible with the object and the purpose of the treaty. Furthermore, a treaty might prohibit reservations or only allow for certain reservations to be made.

Article 17

1. After this Agreement has been in force for three years, any Contracting Party may, by notification addressed to the Secretary-General of the United Nations, request that a conference be convened for the purpose of revising this Agreement. The Secretary-General shall notify all Contracting Parties of the request and a revision conference shall be convened by the Secretary-General if, within a period of four months from the date of the notification sent by the Secretary-General, not less than one third of the Contracting Parties signify their assent to the request.

2. If a conference is convened in pursuance of paragraph 1 of this article, the Secretary-General shall so advise all the Contracting Parties and invite them to submit within a period of three months, the proposals which they wish the conference to consider. The Secretary-General shall circulate the provisional agenda for the conference, together with the text of such proposals, to all Contracting Parties not less than three months before the date on which the conference is to open.

3. The Secretary-General shall invite to any conference convened in pursuance of this article all the countries referred to in article 9, paragraph 1, of this Agreement, and also the countries which have become Contracting Parties under the said article 9, paragraph 2.

Comment:

0.17-1 Revision

Some treaties provide for a revision additional to an amendment (i.e., Article 109 of the Charter of the United Nations). In that case, the term "revision" refers to an overriding adoption of the treaty to changed circumstances, whereas the term "amendment" refers only to a change of singular provisions.

Article 18

1. Any Contracting Party may propose one or more amendments to this Agreement. The text of any proposed amendment shall be communicated to the Secretary-General of the United Nations, who shall communicate it to all Contracting Parties and bring it to the notice of all the other States referred to in article 9, paragraph 1, of this Agreement.

The Secretary-General may also propose amendments to this Agreement or to its annexes which have been transmitted to him by the Working Party on the Transport of Perishable Foodstuffs of the Inland Transport Committee of the Economic Commission for Europe.

2. Within a period of six months following the date on which the proposed amendment is communicated by the Secretary-General, any Contracting Party may inform the Secretary-General

- (a) that it has an objection to the amendment proposed, or
- (b) that, although it intends to accept the proposal, the conditions necessary for such acceptance are not yet fulfilled in its country.

3. If a Contracting Party sends the Secretary-General a communication as provided for in paragraph 2 (b) of this article, it may, so long as it has not notified the Secretary-General of its acceptance, submit an objection to the proposed amendment within a period of nine months following the expiry of the period of six months prescribed in respect of the initial communication.

4. If an objection to the proposed amendment is stated in accordance with the terms of paragraphs 2

and 3 of this article, the amendment shall be deemed not to have been accepted and shall be of no effect.

5. If no objection to the proposed amendment has been stated in accordance with paragraphs 2 and 3 of this article, the amendment shall be deemed to have been accepted on the date specified below:

- (a) if no Contracting Party has sent a communication to the Secretary-General in accordance with paragraph 2 (b) of this article, on the expiry of the period of six months referred to in paragraph 2 of this article;
- (b) if at least one Contracting Party has sent a communication to the Secretary-General in accordance with paragraph 2 (b) of this article, on the earlier of the following two dates:
 - the date by which all the Contracting Parties which sent such communications have notified the Secretary-General of their acceptance of the proposed amendment, subject however to the proviso that if all the acceptances were notified before the expiry of the period of six months referred to in paragraph 2 of this article the date shall be the date of expiry of that period;
 - the date of expiry of the period of nine months referred to in paragraph 3 of this article.

6. Any amendment deemed to be accepted shall enter into force six months after the date on which it was deemed to be accepted.

7. The Secretary-General shall as soon as possible inform all Contracting Parties whether an objection to the proposed amendment has been stated in accordance with paragraph 2 (a) of this article and whether one or more Contracting Parties have sent him a communication in accordance with paragraph 2 (b) of this article. If one or more Contracting Parties have sent him such a communication, he shall subsequently inform all the Contracting Parties whether the Contracting Party or Parties which have sent such a communication raise an objection to the proposed amendment or accept it.

8. Independently of the amendment procedure laid down in paragraphs 1 to 6 of this article, the annexes and appendices to this Agreement may be modified by agreement between the competent administrations of all the Contracting Parties. If the administration of a Contracting Party has stated that under its national law its agreement is contingent on special authorization or on the approval of a legislative body, the consent of the Contracting Party concerned to the modification of an annex shall not be deemed to have been given until the Contracting Party has notified the Secretary-General that the necessary authorization or approval has been obtained. The agreement between the competent administrations may provide that, during a transitional period, the old annexes shall remain in force, wholly or in part, concurrently with the new annexes. The Secretary-General shall specify the date of the entry into force of the new texts resulting from such modifications.

Comments:

0.18-1 Amendment

The term "amendment" refers to the formal alteration of treaty provisions affecting all the parties to the particular agreement. Such alterations must be effected with the same formalities that attended the original formation of the treaty. Many multilateral treaties lay down specific requirements to be satisfied for amendments to be adopted. In the absence of such provisions, amendments require the consent of all the Parties.

0.18-2 Correction of errors

If, after the authentication of a text, the signatory and Contracting States are agreed that it contains an error, it can be corrected by initialling the corrected treaty text, by executing or exchanging an instrument containing the correction or by executing the corrected text of the whole treaty by the same procedure as in the case of the original text. If there is a depositary, the depositary must communicate the proposed corrections to all signatory and contracting states. In the UN practice, the Secretary-General, in his function

as depository, informs all Parties to a treaty of the errors and the proposal to correct it. If, on the expiry of an appropriate time-limit, no objections are raised by the signatory and Contracting States, the depository circulates a process-verbal of rectification and causes the corrections to be effected in the authentic text(s).

Article 19

In addition to communicating to them the notifications provided for in articles 17 and 18 of this Agreement, the Secretary-General of the United Nations shall notify the States referred to in article 9, paragraph 1, of this Agreement and the States which have become Contracting Parties under article 9, paragraph 2, of:

- (a) signatures, ratifications and accessions under article 9;
- (b) the dates of entry into force of this Agreement pursuant to article 11;
- (c) denunciations under article 12;
- (d) the termination of this Agreement under article 13;
- (e) notifications received under articles 10 and 14;
- (f) declarations and notifications received under article 16, paragraphs 1 and 2;
- (g) the entry into force of any amendment pursuant to article 18.

Article 20

After 31 May 1971, the original of this Agreement shall be deposited with the Secretary-General of the United Nations, who shall transmit certified true copies to each of the States mentioned in article 9, paragraphs 1 and 2, of this Agreement.

IN WITNESS WHEREOF, the undersigned, being duly authorized thereto, have signed this Agreement.

DONE at Geneva, this first day of September, one thousand nine hundred and seventy, in a single copy, in the English, French and Russian languages, the three texts being equally authentic.

Annex 1

DEFINITIONS OF AND STANDARDS FOR SPECIAL EQUIPMENT¹ FOR THE CARRIAGE OF PERISHABLE FOODSTUFFS

1. **Insulated equipment.** Equipment of which the body² is built with insulating walls, doors, floor and roof, by which heat exchanges between the inside and outside of the body can be so limited that the overall coefficient of heat transfer (K coefficient), is such that the equipment is assignable to one or other of the following two categories:

I_N = <u>Normally insulated equipment</u> specified by:	a K coefficient equal to or less than $0.70 \text{ W/m}^2\text{.K}$;
I_R = <u>Heavily insulated equipment</u> specified by:	a K coefficient equal to or less than $0.40 \text{ W/m}^2\text{.K}$ and by side-walls with a thickness of at least 45 mm for transport equipment of a width greater than 2.50 m.

The definition of the K coefficient and a description of the method to be used in measuring it, are given in appendix 2 to this annex.

2. **Refrigerated equipment.** Insulated equipment which, using a source of cold (natural ice, with or without the addition of salt; eutectic plates; dry ice, with or without sublimation control; liquefied gases, with or without evaporation control, etc.) other than a mechanical or "absorption" unit, is capable, with a mean outside temperature of $+ 30^\circ\text{C}$, of lowering the temperature inside the empty body to, and thereafter maintaining it:

At $+ 7^\circ\text{C}$	maximum in the case of class A;
At $- 10^\circ\text{C}$	maximum in the case of class B;
At $- 20^\circ\text{C}$	maximum in the case of class C; and
At 0°C	maximum in the case of class D.

If such equipment includes one or more compartments, receptacles or tanks for the refrigerant, the said compartments, receptacles or tanks shall:

Be capable of being filled or refilled from the outside; and

Have a capacity in conformity with the provisions of annex 1, appendix 2, paragraph 3.1.3.

The K coefficient of refrigerated equipment of classes B and C shall in every case be equal to or less than $0.40 \text{ W/m}^2\text{.K}$.

1 Wagons, lorries, trailers, semi-trailers, containers and other similar equipment.

2 In the case of tank equipment, the term "body" means under this definition, the tank itself.

3. **Mechanically refrigerated equipment.** Insulated equipment either fitted with its own refrigerating appliance, or served jointly with other units of transport equipment by such an appliance, (fitted with either a mechanical compressor, or an "absorption" device, etc.). The appliance shall be capable, with a mean outside temperature of + 30 °C, of lowering the temperature T_i inside the empty body to, and thereafter maintaining it continuously in the following manner at:

In the case of classes A, B and C, any desired practically constant inside temperature T_i in conformity with the standards defined below for the three classes:

Class A. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i may be chosen between + 12 °C and 0 °C inclusive;

Class B. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i may be chosen between + 12 °C and - 10 °C inclusive;

Class C. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i may be chosen between + 12 °C and - 20 °C inclusive.

In the case of classes D, E and F a fixed practically constant inside temperature T_i in conformity with the standards defined below for the three classes:

Class D. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i is equal to or less than 0 °C;

Class E. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i is equal to or less than - 10 °C;

Class F. Mechanically refrigerated equipment fitted with a refrigerating appliance such that T_i is equal to or less than - 20 °C. The K coefficient of equipment of classes B, C, E and F shall in every case be equal to or less than 0.40 W/m².K.

4. **Heated equipment.** Insulated equipment, which is capable of raising the inside temperature of the empty body to, and thereafter maintaining it for not less than 12 hours without renewal of supply at, a practically constant value of not less than + 12 °C when the mean outside temperature, as indicated below:

-10 °C in the case of class A heated equipment;

-20 °C in the case of class B heated equipment;

-30° C in the case of class C heated equipment;

-40° C in the case of class D heated equipment.

Heat producing appliances shall have a capacity in conformity with the provisions of annex 1, appendix 2, paragraphs 3.3.1 to 3.3.5.

The K coefficient of equipment of classes B, C and D shall in every case be equal to or less than 0.40 W/m².K.

Annex 1, Appendix 1

PROVISIONS RELATING TO THE CHECKING OF INSULATED, REFRIGERATED, MECHANICALLY REFRIGERATED OR HEATED EQUIPMENT FOR COMPLIANCE WITH THE STANDARDS

1. Checks for conformity with the standards prescribed in this annex shall be made:
 - (a) before equipment enters into service;
 - (b) periodically, at least once every six years;
 - (c) whenever required by the competent authority.

Except in the cases provided for in appendix 2, sections 5 and 6, to this annex, the checks shall be made at a testing station designated or approved by the competent authority of the country in which the equipment is registered or recorded, unless, in the case of the check referred to in (a) above, a check has already been made on the equipment itself or on its prototype in a testing station designated or approved by the competent authority of the country in which the equipment was manufactured.

2. The methods and procedures to be used in checking for compliance with the standards are described in appendix 2 to this annex.
3. A certificate of compliance with the standards shall be issued by the competent authority of the country in which the equipment is to be registered or recorded. This certificate shall conform to the model reproduced in appendix 3 to this annex.

The certificate of compliance shall be carried on the equipment during carriage and be produced whenever so required by the control authorities. However, if a certification plate of compliance, as reproduced in appendix 3 to this annex, is fixed to the equipment, the certification plate of compliance shall be recognized as equivalent to a certificate of compliance. A certification plate of compliance may be fixed to the equipment only when a valid certificate of compliance is available. Certification plates of compliance shall be removed as soon as the equipment ceases to conform to the standards laid down in this annex.

In the case of equipment transferred to another country, which is a Contracting Party to ATP, it shall be accompanied by the following documents so that the competent authority of the country in which the equipment is to be registered or recorded can issue a certificate of compliance:

- (a) in all cases, the test report of the equipment itself or, in the case of serially produced equipment, of the reference equipment;
- (b) in all cases, the certificate of compliance issued by the competent authority of the country of manufacture or, for equipment in service, the competent authority of the country of registration. This certificate will be treated as a provisional certificate if necessary with a maximum validity of six months;
- (c) in the case of serially produced equipment, the technical specification of the equipment to be certified as issued by the manufacturer of the equipment or his duly accredited representative (this specification shall cover the same items as the descriptive pages concerning the equipment which appear in the test report and shall be drawn up in at least one of the official languages).

In the case of equipment transferred after it has been in use, the equipment may be subject to a visual inspection to confirm its identity before the competent authority of the country, in which

it is to be registered or recorded, issues a certificate of compliance.

For a batch of identical serially produced insulated equipment (containers) having an internal volume of less than 2 m³, a certificate of compliance for the batch may be issued by the competent authority. In such cases the identification numbers of all the insulated equipment, or the first and the last identification numbers of the series, shall be indicated on the certificate of compliance instead of the serial number of each individual unit. In that case, the insulated equipment listed in that certificate shall be fitted with a certification plate of compliance as described in Annex 1, Appendix 3 B issued by the competent authority.

In the case of transfer of this insulated equipment (containers) to another country which is a Contracting Party to this Agreement in order to be registered or recorded there, the competent authority of the country of the new registration or recording may provide an individual certificate of compliance based on the original certificate of compliance established for the whole batch.

Comments to paragraph 3 (c):

While the model ATP certificate is clearly defined in this paragraph, the applications for approval differ from one country to another. It would therefore be useful for a single format to be proposed for all Contracting Parties.

The test report could be drawn up in the national language of the country reissuing the document. It should also be drawn up in at least one of the three official languages of ATP.

4. Distinguishing marks and particulars shall be affixed to the equipment in conformity with the provisions of appendix 4 to this annex. They shall be removed as soon as the equipment ceases to conform to the standards laid down in this annex.
5. The insulated bodies of "insulated", "refrigerated", "mechanically refrigerated" or "heated" transport equipment and their thermal appliances shall each bear a durable manufacturer's plate firmly affixed by the manufacturer in a conspicuous and readily accessible position on a part not subject to replacement in use. It shall be able to be checked easily and without the use of tools. For insulated bodies, the manufacturer's plate shall be on the outside of the body. The manufacturer's plate shall show clearly and indelibly at least the following particulars:³

Country of manufacture or letters used in international road traffic;

Name of manufacturer or company;

Model (figures and/or letters);

Serial number;

Month and year of manufacture.

Comment: ATP checklist

The ATP checklist which appears at the end of this publication in the Section on Examples of Good Practice may serve as guidelines for verifying transport equipment used for the road transport of perishable foodstuffs. The ATP checklist includes basic information regarding the inspection of the isothermal properties of road transport equipment (certificate, certification plate, manufacturer's plate etc.) and the monitoring

³ These requirements shall apply to new plates only. A transitional period of three months shall be granted from the date of entry into force of this requirement.

of air temperatures of quick-frozen perishable foodstuffs. (ECE/TRANS/WP.11/220, para. 39)

6. (a) New equipment of a specific type serially produced may be approved by testing one unit of that type. If the unit tested meets class specification, the resulting test report shall be regarded as a Type Approval Certificate. This certificate shall expire at the end of a period of six years beginning from the date of completion of the test.

The date of expiry of test reports shall be stated in months and years.

Comment to paragraph 6 (a):

A test report is valid for six years as from the date of the finalisation of the test.

- (b) The competent authority shall take steps to verify that production of other units is in conformity with the approved type. For this purpose it may check by testing sample units drawn at random from the production series.
- (c) A unit shall not be regarded as being of the same type as the unit tested unless it satisfies the following minimum conditions:
- (i) If it is insulated equipment, in which case the reference equipment may be insulated, refrigerated, mechanically refrigerated or heated equipment,

the construction shall be comparable and, in particular, the insulating material and the method of insulation shall be identical;

Comment 1.1 *Different types of equipment, e.g. trailers, semi-trailers, may be considered as of comparable construction, if other conditions in annex 1, appendix 1, paragraph 6 (c) (i) are satisfied.*

Comment 1.2 *Using different surface materials compared to the reference equipment is allowed, if thickness of the insulating materials is not reduced and if changing the surface material does not reduce the insulating capacity of the body.*

Comment *Recessed interior and exterior fittings mentioned in a test report count as a reduction in the volume of insulating material, and the sum of these volumes may be used for any other minor modifications no matter where they are situated in the unit, as long as the following conditions are met:*

- *the thickness of the remaining insulation material is not less than that of the tested reference equipment at the locations of the fittings; and*
- *the minimum thickness of the remaining insulation material may be locally reduced but shall be at least 20mm.*

In case of modifications, screwed fittings shall be carried out so as to prevent the occurrence of humidity and icing of the modified components. (ECE/TRANS/WP.11/228, para. 68)

the thickness of the insulating material shall be not less than that of the reference equipment;

Comment 2.1 *Reducing in some parts of the body the thickness of the*

insulating material, compared to the reference equipment, and compensating the change by increasing the thickness of the insulating material in some other parts of the body, is not allowed.

the interior fittings shall be identical or simplified;

the number of doors and the number of hatches or other openings shall be the same or less; and

the inside surface area of the body shall not be as much as 20% greater or smaller;

minor and limited modifications of added or exchanged interior and exterior fittings may be permitted:⁴

if the equivalent volume of accumulated insulation material of all such modifications is less than 1/100th of the total volume of the insulating material in the insulated unit;

if the K coefficient of the tested reference equipment, corrected by a calculation of the added thermal losses, is less than or equal to the K coefficient limit of the category of the equipment; and

if such modifications of interior fittings are carried out using the same technique, particularly as concerns glued fittings.

All modifications shall be done by or be approved by the manufacturer of the insulated equipment.

Comment to paragraph 6 (c), (i):

Recessed interior and exterior fittings mentioned in a test report count as a reduction in the volume of insulating material, and the sum of these volumes may be used for any other minor modifications no matter where they are situated in the unit, as long as the following conditions are met:

the thickness of the remaining insulation material is not less than that of the tested reference equipment at the locations of the fittings; and

the minimum thickness of the remaining insulation material may be locally reduced but shall be at least 20mm.

In case of modifications, screwed fittings shall be carried out so as to prevent the occurrence of humidity and icing of the modified components. (ECE/TRANS/WP.11/228, para. 68)

(ii) If it is refrigerated equipment, in which case the reference equipment shall be refrigerated equipment,

the conditions set out under (i) above shall be satisfied;

inside circulating fans shall be comparable;

the source of cold shall be identical; and

⁴ The present provisions regarding minor and limited modifications apply to equipment manufactured after the date of their entry into force (30 September 2015).

the reserve of cold per unit of inside surface area shall be greater or equal;

(iii) If it is mechanically refrigerated equipment, in which case the reference equipment shall be either:

(a) mechanically refrigerated equipment;

- the conditions set out in (i) above shall be satisfied; and
- the effective refrigerating capacity of the mechanical refrigeration appliance per unit of inside surface area, under the same temperature conditions, shall be greater or equal; or

(b) insulated equipment which is complete in every detail but minus its mechanical refrigeration unit which will be fitted at a later date.

The resulting aperture will be filled, during the measurement of the K coefficient, with close fitting panels of the same overall thickness and type of insulation as is fitted to the front wall. In which case:

- the conditions set out in (i) above shall be satisfied; and
- the effective refrigerating capacity of the mechanical refrigeration unit fitted to insulated reference equipment shall be as defined in annex 1, appendix 2, paragraph 3.2.6.

(iv) If it is heated equipment, in which case the reference equipment may be insulated or heated equipment,

- the conditions set out under (i) above shall be satisfied;
- the source of heat shall be identical; and
- the capacity of the heating appliance per unit of inside surface area shall be greater or equal.

(d) If, in the course of the six-year period, the production series exceeds 100 units, the competent authority shall determine the percentage of units to be tested.

Comment to paragraph 6 (d):

When determining the percentage of units (bodies) to be tested, the competent authority may take into account the manufacturers procedures and quality assurance systems.

Annex I, Appendix 2

METHODS AND PROCEDURES FOR MEASURING AND CHECKING THE INSULATING CAPACITY AND THE EFFICIENCY OF THE COOLING OR HEATING APPLIANCES OF SPECIAL EQUIPMENT FOR THE CARRIAGE OF PERISHABLE FOODSTUFFS

1. DEFINITIONS AND GENERAL PRINCIPLES

- 1.1 K coefficient. The overall heat transfer coefficient (K coefficient) of the special equipment is defined by the following formula:

$$K = \frac{W}{S \cdot \Delta T}$$

where W is either the heating power or the cooling capacity, as the case may be, required to maintain a constant absolute temperature difference ΔT between the mean inside temperature T_i and the mean outside temperature T_e , during continuous operation, when the mean outside temperature T_e is constant for a body of mean surface area S.

- 1.2 The mean surface area S of the body is the geometric mean of the inside surface area S_i and the outside surface area S_e of the body:

$$S = \sqrt{S_i \cdot S_e}$$

In determining the two surface areas S_i and S_e , structural peculiarities and surface irregularities of the body, such as chamfers, wheel-arches and similar features, shall be taken into account and shall be noted under the appropriate heading in test reports; however, if the body is covered with corrugated sheet metal the area considered shall be that of the plane surface occupied, not that of the developed corrugated surface.

Temperature measuring points

- 1.3 In the case of parallelepipedic bodies, the mean inside temperature of the body (T_i) is the arithmetic mean of the temperatures measured 10 cm from the walls at the following 12 points:

- (a) The eight inside corners of the body; and
- (b) The centres of the four inside faces having the largest area.

If the body is not parallelepipedic, the 12 points of measurements shall be distributed as satisfactorily as possible having regard to the shape of the body.

- 1.4 In the case of parallelepipedic bodies, the mean outside temperature of the body (T_e) is the arithmetic mean of the temperatures measured 10 cm from the walls at the following 12 points:

- (a) The eight outside corners of the body; and
- (b) The centres of the four outside faces having the largest area.

If the body is not parallelepipedic, the 12 points of measurement shall be distributed as satisfactorily as possible having regard to the shape of the body.

- 1.5 The mean temperature of the walls of the body is the arithmetic mean of the mean outside temperature of the body and the mean inside temperature of the body:

$$\frac{T_e + T_i}{2}$$

- 1.6 Temperature measuring instruments protected against radiation shall be placed inside and outside the body at the points specified in paragraphs 1.3 and 1.4 of this appendix.

Steady state period and duration of test

- 1.7 The mean outside temperatures and the mean inside temperatures of the body, taken over a steady period of not less than 12 hours, shall not vary by more than ± 0.3 K, and these temperatures shall not vary by more than ± 1.0 K during the preceding 6 hours.

The difference between the heating power or cooling capacity measured over two periods of not less than 3 hours at the start and at the end of the steady state period, and separated by at least 6 hours, shall be less than 3 %.

The mean values of the temperatures and heating or cooling capacity over at least the last 6 hours of the steady state period will be used in K coefficient calculation.

The mean inside and outside temperatures at the beginning and the end of the calculation period of at least 6 hours shall not differ by more than 0.2 K.

2. INSULATING CAPACITY OF EQUIPMENT

Procedures for measuring the K coefficient

2.1 Equipment other than liquid-foodstuffs tanks

- 2.1.1 K coefficient shall be measured in continuous operation either by the internal cooling method or by the internal heating method. In either case, the empty body shall be placed in an insulated chamber.

Test Method

- 2.1.2 Where the internal cooling method is used, one or more heat exchangers shall be placed inside the body. The surface area of these exchangers shall be such that, if a fluid at a temperature not lower than 0 °C passes through them, the mean inside temperature of the body remains below + 10 °C when continuous operation has been established. Where the internal heating method is used, electrical heating appliances (resistors, etc.) shall be used. The heat exchangers or electrical heating appliances shall be fitted with fans having a delivery rate sufficient to obtain 40 to 70 air charges per hour related to the empty volume of the tested body, and the air distribution around all inside surfaces of the tested body shall be sufficient to ensure that the maximum difference between the temperatures of any 2 of the 12 points specified in paragraph 1.3 of this appendix does not exceed 2 K when continuous operation has been established.

- 2.1.3 Heat quantity: The heat dissipated by the electrical resistance fan heaters shall not exceed a flow of 1W/cm² and the heater units shall be protected by a casing of low emissivity. The electrical energy consumption shall be determined with an accuracy of $\pm 0.5\%$.

Test Procedure

- 2.1.4 Whatever the method employed, the mean temperature of the insulated chamber shall throughout the test be kept uniform, and constant in compliance with paragraph 1.7 of this appendix, to within ± 0.5 K, at a level such that the temperature difference between the inside of

5 To prevent frosting.

the body and the insulated chamber is $25\text{ }^{\circ}\text{C} \pm 2\text{ K}$, the average temperature of the walls of the body being maintained at $+20\text{ }^{\circ}\text{C} \pm 0.5\text{ K}$.

- 2.1.5 During the test, whether by the internal cooling method or by the internal heating method, the mass of air in the chamber shall be made to circulate continuously so that the speed of movement of the air 10 cm from the walls is maintained at between 1 and 2 metres/second.
- 2.1.6 The appliances for generating and distributing cold or heat and for measuring the quantity of cold or heat exchanged and the heat equivalent of the air-circulating fans shall be started up. Electrical cable losses between the heat input measuring instrument and the tested body shall be established by a measurement or calculation and subtracted from the total heat input measured.
- 2.1.7 When continuous operation has been established, the maximum difference between the temperatures at the warmest and at the coldest points on the outside of the body shall not exceed 2 K.
- 2.1.8 The mean outside temperature and the mean inside temperature of the body shall each be read not less than four times per hour.

2.2 Liquid-foodstuffs tanks

- 2.2.1 The method described below applies only to single-compartment or multiple-compartment tank equipment intended solely for the carriage of liquid foodstuffs such as milk. Each compartment of such tanks shall have at least one manhole and one discharge-pipe connecting socket; where there are several compartments they shall be separated from one another by non-insulated vertical partitions.
- 2.2.2 K coefficients shall be measured in continuous operation by internal heating of the empty tank in an insulated chamber.

Test method

- 2.2.3 An electrical heating appliance (resistors, etc.) shall be placed inside the tank. If the tank has several compartments, an electrical heating appliance shall be placed in each compartment. The electrical heating appliances shall be fitted with fans with a delivery rate sufficient to ensure that the difference between the maximum temperature and the minimum temperature inside each compartment does not exceed 3 K when continuous operation has been established. If the tank comprises several compartments, the difference between the mean temperature in the coldest compartment and the mean temperature in the warmest compartment shall not exceed 2 K, the temperatures being measured as specified in paragraph 2.2.4 of this appendix.
- 2.2.4 Temperature measuring instruments protected against radiation shall be placed inside and outside the tank 10 cm from the walls, as follows:
- (a) If the tank has only one compartment, measurements shall be made at a minimum of 12 points positioned as follows:

The four extremities of two diameters at right angles to one another, one horizontal and the other vertical, near each of the two ends of the tank;

The four extremities of two diameters at right angles to one another, inclined at an angle of 45° to the horizontal, in the axial plane of the tank;

Comment to paragraph 2.2.4 (a):

The layout of the placement of air temperature measuring devices inside and outside tanks with one compartment is shown in figure 1 in the section on ATP Examples of Good Practice at the end of this publication. (ECE/TRANS/WP.11/220, para. 40)

- (b) If the tank has two compartments, the measurements shall be made at least at the following points:

Near the end of the first compartment and near the partition with the second compartment, at the extremities of three radiuses forming 120° angles, one of the radiuses being directed vertically upwards.

Near the end of the second compartment and near the partition with the first compartment, at the extremities of three radiuses forming 120° angles, one of the radiuses being directed vertically downwards.

Comment to paragraph 2.2.4 (b):

The layout of the placement of air temperature measurement devices inside and outside tanks with two compartments is shown in figure 2. (ECE/TRANS/WP.11/222, para. 35)

- (c) If the tank has several compartments, the points of measurement shall be as follows:

for each of the two end compartments, at least the following:

The extremities of a horizontal diameter near the end and the extremities of a vertical diameter near the partition;

and for each of the other compartments, at least the following:

The extremities of a diameter inclined at an angle of 45° to the horizontal near one of the partitions and the extremities of a diameter perpendicular to the first and near the other partition.

Comment to paragraph 2.2.4 (c):

The layout of the placement of air temperature measuring devices inside and outside tanks with three or more compartments is shown in figure 3 in the section on ATP Examples of Good Practice at the end of this publication. (ECE/TRANS/WP.11/220, para. 40)

- (d) The mean inside temperature and the mean outside temperature of the tank shall respectively be the arithmetic mean of all the measurements taken inside and all the measurements taken outside the tank. In the case of tanks having at least two compartments, the mean inside temperature of each compartment shall be the arithmetic mean of the measurements made in the compartment, and the number of those measurements in each compartment shall be no less than four and the total number of measurements in all compartments of the tank shall be no less than twelve.

Test procedure

- 2.2.5 Throughout the test, the mean temperature of the insulated chamber shall be kept uniform, and constant in compliance with paragraph 1.7 of this appendix, at a level such that the difference in temperature between the inside of the tank and that of the insulated chamber is not less than 25 °C ± 2 K, with the average temperature of the tank walls being maintained at + 20 °C ± 0.5 K.

- 2.2.6 The mass of air in the chamber shall be made to circulate continuously so that the speed of movement of the air 10 cm from the walls is maintained at between 1 and 2 metres/second.
- 2.2.7 The appliances for heating and circulating the air and for measuring the quantity of heat exchanged and the heat equivalent of the air-circulating fans shall be started up.
- 2.2.8 When continuous operation has been established, the maximum difference between the temperatures at the warmest and at the coldest points on the outside of the tank shall not exceed 2 K.
- 2.2.9 The mean outside temperature and the mean inside temperature of the tank shall each be read not less than four times per hour.

2.3 Provisions common to all types of insulated equipment

2.3.1 Verification of the K coefficient

Where the purpose of the tests is not to determine the K coefficient but simply to verify that it is below a certain limit, the tests carried out as described in paragraphs 2.1.1. to 2.2.9 of this appendix may be stopped as soon as the measurements made show that the K coefficient meets the requirements.

2.3.2 Accuracy of measurements of the K coefficient

Testing stations shall be provided with the equipment and instruments necessary to ensure that the K coefficient is determined with a maximum margin of error of $\pm 10\%$ when using the method of internal cooling and $\pm 5\%$ when using the method of internal heating.

Comments to paragraph 2.3:

1. *Examples for the errors which are normally taken into account by the test stations are temperature, power and the surface area of the body.*

The method of calculating the error, which is usually applied, is the total admissible error ε :

$$\bullet = \sqrt{\left(\frac{\Delta S}{S}\right)^2 + \left(\frac{\Delta W}{W}\right)^2 + \left(2 \frac{\Delta T}{T_e - T_i}\right)^2}$$

or the absolute error e_m :

$$e_m = \frac{\Delta S}{S} + \frac{\Delta W}{W} + 2 \cdot \frac{\Delta T}{T_e - T_i}$$

where:

S is the mean surface area of the vehicle body (geometric mean of the internal and external surfaces);

W is the power dissipated inside the vehicle body in the steady state T_e and T_i are in the respective external and internal temperatures of the vehicle body under test.

2. *Under normal test conditions, S can be measured to 1% . However, there are cases where it is impossible to measure with this precision.*

The error of W does not exceed 1% , although certain test stations use equipment giving a greater error.

Temperature is measured with an absolute accuracy of ± 0.1 K. The measurement of a temperature difference ($T_e - T_i$) of the order of 20 K therefore gives an error of twice 0,5 %, i.e. 1%.

The total error is therefore $\varepsilon = \pm \sqrt{0.0003} = 0.017$ i.e. 1.7 %. The maximum admissible error is $e_m = 3\%$.

3. Other errors which have not been taken into consideration can have an effect on the exact value of the K coefficient. These errors are as follows:

- (a) Latent errors due to admissible variations in the internal and external temperatures, which are a function of the thermal inertia of the walls of the equipment, the temperature and time;
- (b) Errors due to the variation of air velocity at the boundary layer and its effect on the thermal resistance.

If the internal and external air velocities are of equal value, the possible error will be about 2.5 % as between 1 to 2 m/s for a mean K coefficient of 0.40 W/m².K. For a K coefficient of 0.70 W/m².K, this error will be nearly 5%. If there are significant thermal bridges, the influence of the speed and direction of the air will be greater.

4. Finally, because of the error in the estimation of the surface area of the body, an error which in practice is difficult to calculate when dealing with non standard equipment, (this estimation involving factors of a subjective nature), one could envisage the determination of the error in the measurement of the overall heat transfer per degree temperature difference:

$$\frac{W}{T_e - T_i} = K.S$$

3. EFFECTIVENESS OF THERMAL APPLIANCES OF EQUIPMENT

Procedures for determining the efficiency of thermal appliances of equipment

3.1 Refrigerated equipment

- 3.1.1 The empty equipment shall be placed in an insulated chamber whose mean temperature shall be kept uniform, and constant to within ± 0.5 K, at + 30 °C. The mass of air in the chamber shall be made to circulate as described in paragraph 2.1.5 of this appendix.
- 3.1.2 Temperature measuring instruments protected against radiation shall be placed inside and outside the body at the points specified in paragraphs 1.3 and 1.4 of this appendix.

Test procedure

- 3.1.3 (a) In the case of equipment other than equipment with fixed eutectic plates, and equipment fitted with liquefied gas systems, the maximum weight of refrigerant specified by the manufacturer or which can normally be accommodated shall be loaded into the spaces provided when the mean inside temperature of the body has reached the mean outside temperature of the body (+ 30 °C). Doors, hatches and other openings shall be closed and the inside ventilation appliances (if any) of the equipment shall be started up at maximum capacity. In addition, in the case of new equipment, a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the temperature prescribed for the class to which the equipment is presumed to belong has been reached. No

additional refrigerant shall be loaded during the test;

- (b) In the case of **equipment with fixed eutectic plates**, the test shall comprise a preliminary phase of freezing of the eutectic solution. For this purpose, when the mean inside temperature of the body and the temperature of the plates have reached the mean outside temperature (+ 30 °C), the plate-cooling appliance shall be put into operation for 18 consecutive hours after closure of the doors and hatches. If the plate-cooling appliance includes a cyclically-operating mechanism, the total duration of operation of the appliance shall be 24 hours. In the case of new equipment, as soon as the cooling appliance is stopped, a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the temperature prescribed for the class to which the equipment is presumed to belong has been reached. The solution shall not be subjected to any re-freezing operation during the test;
- (c) In the case of **equipment fitted with liquefied gas systems**, the following test procedure shall be used: when the mean inside temperature of the body has reached the mean outside temperature (+ 30 °C), the receptacles for the liquefied gas shall be filled to the level prescribed by the manufacturer. Then the doors, hatches and other openings shall be closed as in normal operation and the inside ventilation appliances (if any) of the equipment shall be started up at maximum capacity. The thermostat shall be set at a temperature not more than 2 degrees below the limit temperature of the presumed class of the equipment. Cooling of the body then shall be commenced. During the cooling of the body the refrigerant consumed is simultaneously replaced. This replacement shall be effected:

Either for a time corresponding to the interval between the commencement of cooling and the moment when the temperature prescribed for the class to which the equipment is presumed to belong is reached for the first time; or

For a duration of three hours counting from the commencement of cooling, whichever is shorter.

Beyond this period, no additional refrigerant shall be loaded during the test.

In the case of new equipment, a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the class temperature has been reached.

Provisions common to all types of refrigerated equipment

- 3.1.4 The mean outside temperature and the mean inside temperature of the body shall each be read not less often than once every 30 minutes.
- 3.1.5 The test shall be continued for 12 hours after the mean inside temperature of the body has reached the lower limit prescribed for the class to which the equipment is presumed to belong (A = + 7 °C; B = - 10 °C; C = - 20 °C; D = 0 °C) or, in the case of equipment with fixed eutectic plates, after stoppage of the cooling appliance.

Criterion of satisfaction

- 3.1.6 The test shall be deemed satisfactory if the mean inside temperature of the body does not exceed the aforesaid lower limit during the aforesaid period of 12 hours.

3.2 Mechanically refrigerated equipment

Test method

- 3.2.1 The test shall be carried out in the conditions described in paragraphs 3.1.1 and 3.1.2 of this appendix.

Test procedure

- 3.2.2 When the mean inside temperature of the body reaches the outside temperature (+ 30 °C), the doors, hatches and other openings shall be closed and the refrigerating appliance and the inside ventilating appliances (if any) shall be started up at maximum capacity. In addition, in the case of new equipment, a heating appliance with a heating capacity equal to 35% of the heat exchanged through the walls in continuous operation shall be started up inside the body when the temperature prescribed for the class to which the equipment is presumed to belong has been reached.
- 3.2.3 The mean outside temperature and the mean inside temperature of the body shall each be read not less often than once every 30 minutes.
- 3.2.4 The test shall be continued for 12 hours after the mean inside temperature of the body has reached:

Either the lower limit prescribed for the class to which the equipment is presumed to belong in the case of classes A, B and C (A = 0 °C; B = - 10 °C; C = - 20 °C); or

A level not lower than the upper limit prescribed for the class to which the equipment is presumed to belong in the case of classes D, E, and F (D = 0 °C; E = - 10 °C; F = - 20 °C).

Criterion of satisfaction

- 3.2.5 The test shall be deemed satisfactory if the refrigerating appliance is able to maintain the prescribed temperature conditions during the said 12-hour periods, with any automatic defrosting of the refrigerating unit not being taken into account.
- 3.2.6 If the refrigerating appliance with all its accessories has undergone separately, to the satisfaction of the competent authority, a test to determine its effective refrigerating capacity at the prescribed reference temperatures, the transport equipment may be accepted as mechanically refrigerated equipment without undergoing an efficiency test if the effective refrigerating capacity of the appliance in continuous operation exceeds the heat loss through the walls for the class under consideration, multiplied by the factor 1.75.

Comment to paragraph 3.2.6:

The proposed provision concerning the use of a multiplier factor of 1.75 when determining the refrigerating capacity of the appliance to be installed on a body, is to be applicable whether or not the body was fitted with an appliance when the K coefficient was measured. If during the insulation test the body was not equipped with an appliance, it would be advisable to ensure that the K coefficient of that body when equipped with an appliance does not exceed the class limits, in order to allow for the variations that might occur with equipment of differing lengths or types.

- 3.2.7 If the mechanically refrigerating unit is replaced by a unit of a different type, the competent authority may:

- (a) require the equipment to undergo the determinations and verifications prescribed in paragraphs 3.2.1 to 3.2.4; or
- (b) satisfy itself that the effective refrigerating capacity of the new mechanically refrigerating unit is, at the temperature prescribed for equipment of the class concerned, at least equal to that of the unit replaced; or
- (c) satisfy itself that the effective refrigerating capacity of the new mechanically refrigerating unit meets the requirements of paragraph 3.2.6.

3.3 Heated equipment

Test method

3.3.1 The empty equipment shall be placed in an insulated chamber whose temperature shall be kept uniform and constant at as low a level as possible. The atmosphere of the chamber shall be made to circulate as described in paragraph 2.1.5 of this appendix.

3.3.2 Temperature measuring instruments protected against radiation shall be placed inside and outside the body at the points specified in paragraphs 1.3 and 1.4 of this appendix.

Test procedure

3.3.3 Doors, hatches and other openings shall be closed and the heating equipment and the inside ventilating appliances (if any) shall be started up at maximum capacity.

3.3.4 The mean outside temperature and the mean inside temperature of the body shall each be read not less often than once every 30 minutes.

3.3.5 The test shall be continued for 12 hours after the difference between the mean inside temperature and the mean outside temperature of the body has reached the level corresponding to the conditions prescribed for the class to which the equipment is presumed to belong. In the case of new equipment, the above temperature difference shall be increased by 35 per cent.

Criterion of satisfaction

3.3.6 The test shall be deemed satisfactory if the heating appliance is able to maintain the prescribed temperature difference during the 12 hours aforesaid.

4. PROCEDURE FOR MEASURING THE EFFECTIVE REFRIGERATING CAPACITY W_o OF A UNIT WHEN THE EVAPORATOR IS FREE FROM FROST

4.1 General principles

4.1.1 When attached to either a calorimeter box or the insulated body of a unit of transport equipment, and operating continuously, this capacity is:

$$W_o = W_j + U \cdot \Delta T$$

where U is the heat leakage of the calorimeter box or insulated body, Watts/°C.

ΔT is the difference between the mean inside temperature T_i and the mean outside temperature T_e of the calorimeter or insulated body (K),

W_j is the heat dissipated by the fan heater unit to maintain each temperature difference in equilibrium.

4.2 Test method

4.2.1 The refrigeration unit is either fitted to a calorimeter box, or the insulated body of a unit of transport equipment.

In each case, the heat leakage is measured at a single mean wall temperature prior to the capacity test. An arithmetical correction factor, based upon the experience of the testing station, is made to take into account the average temperature of the walls at each thermal equilibrium during the determination of the effective refrigerating capacity.

It is preferable to use a calibrated calorimeter box to obtain maximum accuracy.

Measurements and procedure shall be as described in paragraphs 1.1 to 2.1.8 above; however, it is sufficient to measure U the heat leakage only, the value of this coefficient being defined by the following relationship:

$$U = \frac{W}{\Delta T_m}$$

where:

W is the heating power (in watts) dissipated by the internal heater and fans;

ΔT_m is the difference between the mean internal temperature T_i and the mean external temperature T_o ;

U is the heat flow per degree of difference between the air temperature inside and outside the calorimeter box or unit of transport equipment measured with the refrigeration unit fitted.

The calorimeter box or unit of transport equipment is placed in a test chamber. If a calorimeter box is used, $U \cdot \Delta T$ should be not more than 35% of the total heat flow W_o .

The calorimeter box or unit of transport equipment shall be heavily insulated.

Comment to paragraph 4.2.1:

The U factor of a calorimeter box is usually measured without the refrigeration unit fitted to the aperture. In the case of a unit of transport equipment, measurement of U may be made with or without the refrigeration unit fitted to the insulated body, in the absence of a refrigeration unit an insulated panel is fitted to the aperture.

4.2.2 Instrumentation

Test stations shall be equipped with instruments to measure the U value to an accuracy of $\pm 5\%$. Heat transfer through air leakage should not exceed 5% of the total heat transfer through the calorimeter box or through the insulated body of the unit of transport equipment. The refrigerating capacity shall be determined with an accuracy of $\pm 5\%$.

The instrumentation of the calorimeter box or unit of transport equipment shall conform to paragraphs 1.3 and 1.4 above. The following are to be measured:

(a) *Air temperatures:* At least four thermometers uniformly distributed at the inlet to the evaporator;

At least four thermometers uniformly distributed at the outlet to the evaporator;

At least four thermometers uniformly distributed at the air inlet(s) to the refrigeration unit;

The thermometers shall be protected against radiation.

The accuracy of the temperature measuring system shall be ± 0.2 K;

- (b) *Energy consumption:* Instruments shall be provided to measure the electrical energy or fuel consumption of the refrigeration unit.
The electrical energy and fuel consumption shall be determined with an accuracy of $\pm 0.5\%$;

Comment to paragraph 4.2.2 (b):

1. *This procedure describes the measurement method for determining the fuel consumption of vehicle powered refrigeration units, or in other words the increase in diesel engine fuel consumption when the refrigeration unit is on.*

2. *Three standards have been introduced and used to determine the increase in fuel consumption as a result of the operation of the refrigeration unit:*

- *Standard diesel engine with standard specific fuel consumption: $c_s = 165$ g/(kW. h).*
- *Standard vehicle alternator efficiency: $\varepsilon = 50$ %.*
- *Standard diesel fuel specific density: $\rho = 836$ g/l.*

3. *The most frequent arrangement is assumed: the refrigeration compressor or a special electric generator supplying the refrigeration unit is driven from the vehicle engine crankshaft (usually by a belt drive). Using a suitable design of power pack in the test station, the torque τ [N.m] and operating rotational speed n [s^{-1}] are measured and the input power P_1 [W] on the shaft of the compressor or generator is calculated.*

$$P_1 [W] = 2\pi n\tau \quad \dots \text{ where } \pi = 3.141593$$

4. *There are also vehicle-powered units taking in addition electric current from the standard (or auxiliary) vehicle alternator, or from vehicle batteries, usually to drive electric fans and blowers. Regarding the shaft power P_2 [W] of a standard or auxiliary alternator determined from electric measurement, the efficiency of such vehicle alternators has to be considered (usually 24 V dc, 100 A to 150 A). Alternator efficiency ε for these calculations is postulated at 50 % (see the second of the three standards mentioned above). Accordingly, if P_{fans} is the total electric input needed to drive the fans, the alternator shaft input is:*

$$P_2 = 2 \times P_{fans}$$

5. *In this case the total input power P [W] that the vehicle engine has to deliver to the refrigeration unit consists of the compressor input P_1 and of the alternator input P_2 for the fans:*

$$P = P_1 + P_2$$

6. *If P [W] is the total refrigeration unit input power at specific operating conditions, then the fuel consumption by weight C_{fw} [g/h] of the tested refrigeration unit can be calculated as:*

$$C_{fw} [g/h] = P \times c_s = 0.165 \times P.$$

7. *The consumption by weight (measured in g/h) can be converted to consumption by volume (measured in l/h) if the specific density ρ of the diesel fuel is known. This density varies*

from 830 kg/m^3 (winter) to 842 kg/m^3 (summer). The standard (mean) value of the specific density $\rho = 836 \text{ kg/m}^3 = 836 \text{ g/l}$ has been used for the purposes of this procedure (see the third of the standards mentioned above).

$$C_{fvol} [l/h] = C_{fw} / 836$$

8. It is beneficial to introduce specific fuel consumption; it is the quantity which can be used to compare the economy of units with different refrigeration capacities. Specific fuel consumption c_{fvol} (consumption by volume reduced to 1 kW of refrigeration capacity Q) is defined in this way:

$$c_{fvol} [l/(h \cdot kW)] = 1000 C_{fvol} / Q$$

- (c) *Speed of rotation:* Instruments shall be provided to measure the speed of rotation of the compressors and circulating fans or to allow these speeds to be calculated where direct measurement is impractical.

The speed of rotation shall be measured to an accuracy of $\pm 1\%$;

- (d) *Pressure:* High precision pressure gauges (accurate to $\pm 1\%$) shall be fitted to the condenser and evaporator and to the compressor inlet when the evaporator is fitted with a pressure regulator.

4.2.3 Test conditions

- (i) The average air temperature at the inlet(s) to the refrigeration unit shall be maintained at $30 \text{ }^\circ\text{C} \pm 0.5 \text{ K}$.

The maximum difference between the temperatures at the warmest and at the coldest points shall not exceed 2 K.

- (ii) Inside the calorimeter box or the insulated body of the unit of transport equipment (at the air inlet to the evaporator): there shall be three levels of temperature between $-25 \text{ }^\circ\text{C}$ and $+12 \text{ }^\circ\text{C}$ depending on the characteristics of the unit, one temperature level being at the minimum prescribed for the class requested by the manufacturer with a tolerance of $\pm 1 \text{ K}$.

The mean inside temperature shall be maintained within a tolerance of $\pm 0.5 \text{ K}$. During the measurement of refrigerating capacity, the heat dissipated within the calorimeter box or the insulated body of the unit of transport equipment shall be maintained at a constant level with a tolerance of $\pm 1\%$.

When presenting a refrigeration unit for test, the manufacturer shall supply:

- Documents describing the unit to be tested;
- A technical document outlining the parameters that are most important to the functioning of the unit and specifying their allowable range;
- The characteristics of the equipment series tested; and
- A statement as to which prime mover(s) shall be used during testing.

4.3 Test procedure

4.3.1 The test shall be divided into two major parts, the cooling phase and the measurement of the effective refrigerating capacity at three increasing temperature levels.

- (a) Cooling phase; the initial temperature of the calorimeter box or transport equipment shall be $30\text{ }^{\circ}\text{C} \pm 3\text{ K}$. It shall then be lowered to the following temperatures: $-25\text{ }^{\circ}\text{C}$ for $-20\text{ }^{\circ}\text{C}$ class, $-13\text{ }^{\circ}\text{C}$ for $-10\text{ }^{\circ}\text{C}$ class or $-2\text{ }^{\circ}\text{C}$ for $0\text{ }^{\circ}\text{C}$ class;
- (b) Measurement of effective refrigerating capacity, at each internal temperature level.

A first test to be carried out, for at least four hours at each level of temperature, under control of the thermostat (of the refrigeration unit) to stabilize the heat transfer between the interior and exterior of the calorimeter box or unit of transport equipment.

A second test shall be carried out without the thermostat in operation in order to determine the maximum refrigerating capacity, with the heating power of the internal heater producing an equilibrium condition at each temperature level as prescribed in paragraph 4.2.3.

The duration of the second test shall be not less than four hours.

Before changing from one temperature level to another, the box or unit shall be manually defrosted.

If the refrigeration unit can be operated by more than one form of energy, the tests shall be repeated accordingly.

If the compressor is driven by the vehicle engine, the test shall be carried out at both the minimum speed and at the nominal speed of rotation of the compressor as specified by the manufacturer.

If the compressor is driven by the vehicle motion, the test shall be carried out at the nominal speed of rotation of the compressor as specified by the manufacturer.

4.3.2 The same procedure shall be followed for the enthalpy method described below, but in this case the heat power dissipated by the evaporator fans at each temperature level shall also be measured.

This method may, alternatively, be used to test reference equipment. In this case, the effective refrigerating capacity is measured by multiplying the mass flow (m) of the refrigerant liquid by the difference in enthalpy between the refrigerant vapour leaving the unit (h_o) and the liquid at the inlet to the unit (h_i).

To obtain the effective refrigerating capacity, the heat generated by the evaporator fans (W_f) is deducted. It is difficult to measure W_f if the evaporator fans are driven by an external motor, in this particular case the enthalpy method is not recommended. When the fans are driven by internal electric motors, the electrical power is measured by appropriate instruments with an accuracy of $\pm 3\%$, with refrigerant flow measurement being accurate to $\pm 3\%$.

The heat balance is given by the formula:

$$W_o = (h_o - h_i) m - W_f$$

Appropriate methods are described in standards ISO 917, BS 3122, DIN, NEN, etc. An electric heater is placed inside the equipment in order to obtain the thermal equilibrium.

4.3.3 Precautions

As the tests for effective refrigerating capacity are carried out with the thermostat of the refrigeration unit disconnected, the following precautions shall be observed:

If the equipment has a hot gas injection system, it shall be inoperative during the test;

with automatic controls of the refrigeration unit which unload individual cylinders (to tune the capacity of the refrigeration unit to motor output) the test shall be carried out with the number of cylinders appropriate for the temperature.

4.3.4 Checks

The following should be verified and the methods used indicated on the test report:

- (i) the defrosting system and the thermostat are functioning correctly;
- (ii) the rate of air circulation is that specified by the manufacturer.

If the air circulation of a refrigeration unit's evaporator fans is to be measured, methods capable of measuring the total delivery volume shall be used. Use of one of the relevant existing standards, i.e. BS 848, ISO 5801, AMCA 210-85, AMCA 210-07, DIN 24163, NFE 36101, NF X10.102, DIN 4796 is recommended;

- (iii) the refrigerant used for tests is that specified by the manufacturer.

4.4 **Test result**

- 4.4.1 The refrigeration capacity for ATP purposes is that relating to the mean temperature at the inlet(s) of the evaporator. The temperature measuring instruments shall be protected against radiation.

5. **CHECKING THE INSULATING CAPACITY OF EQUIPMENT IN SERVICE**

For the purpose of checking the insulating capacity of each piece of equipment in service as prescribed in appendix 1, paragraphs 1 (b) and 1 (c), to this annex, the competent authorities may:

Apply the methods described in paragraphs 2.1.1 to 2.3.2 of this appendix; or

Appoint experts to assess the fitness of the equipment for retention in one or other of the categories of insulated equipment. These experts shall take the following particulars into account and shall base their conclusions on information as indicated below.

5.1 **General examination of the equipment**

This examination shall take the form of an inspection of the equipment to determine the following:

- (i) the durable manufacturer's plate affixed by the manufacturer;
- (ii) the general design of the insulating sheathing;
- (iii) the method of application of insulation;
- (iv) the nature and condition of the walls;

- (v) the condition of the insulated compartment;
- (vi) the thickness of the walls;

and to make all appropriate observations concerning the effective insulating capacity of the equipment. For this purpose the experts may cause parts of the equipment to be dismantled and require all documents they may need to consult (plans, test reports, specifications, invoices, etc.) to be placed at their disposal.

Comment to paragraph 5.1:

Changes in the K-coefficient during the service life of insulated bodies depend on the following factors:

- (a) Nature of the insulating material;*
- (b) Nature of the covering layers (glass-fibre reinforced plastics or metal);*
- (c) Construction of the body;*
- (d) Number of doors and hatches permitted in the approval tests;*
- (e) Conditions of use (carriage of fresh produce or frozen or quick (deep) - frozen products).*

5.2 Examination for air-tightness (not applicable to tank equipment)

The inspection shall be made by an observer stationed inside the equipment, which shall be placed in a brightly-illuminated area. Any method yielding more accurate results may be used.

5.3 Decisions

- (i) If the conclusions regarding the general condition of the body are favourable, the equipment may be kept in service as insulated equipment of its initial class for a further period of not more than three years. If the conclusions of the expert or experts are not acceptable, the equipment may be kept in service only following a satisfactory measurement of K coefficient according to the procedure described in paragraphs 2.1.1 to 2.3.2 of this appendix; it may then be kept in service for a further period of six years.
- (ii) In the case of heavily insulated equipment, if the conclusions of an expert or experts show the body to be unsuitable for keeping in service in its initial class but suitable for continuing in service as normally insulated equipment, then the body may be kept in service in an appropriate class for a further three years. In this case, the distinguishing marks (as in appendix 4 of this annex) shall be changed appropriately.
- (iii) If the equipment consists of units of serially-produced equipment of a particular type satisfying the requirements of appendix 1, paragraph 6, to this annex and belonging to one owner, then in addition to an inspection of each unit of equipment the K coefficient of not less than 1% of the number of units involved, may be measured in conformity with the provisions of sections 2.1, 2.2 and 2.3 of this appendix. If the results of the examinations and measurements are acceptable, all the equipment in question may be kept in service as insulating equipment of its initial class for a further period of six years.

Comment to paragraph 5.3:

Some countries consider 0.40 to be the maximum K-value for classes B, C, E and F also by re-approval, and others are of the opinion that re-approval is done by fulfilling paragraphs 5 and 6.

Re-approval can be carried out either by a test station ensuring the maximum K-value for classes B, C, E and F is less than 0.40 W/m².K and 0.70 W/m².K for classes A and D or by fulfilling paragraphs 5 and 6.

6. VERIFYING THE EFFECTIVENESS OF THERMAL APPLIANCES OF EQUIPMENT IN SERVICE

To verify as prescribed in appendix I, paragraphs 1 (b) and 1 (c), to this annex the effectiveness of the thermal appliance of each item of refrigerated, mechanically refrigerated or heated equipment in service, the competent authorities may:

Apply the methods described in sections 3.1, 3.2 and 3.3 of this appendix; or

Appoint experts to apply the particulars described in sections 5.1 and 5.2 of this appendix when applicable as well as the following provisions:

6.1 Refrigerated equipment other than equipment with fixed eutectic accumulators

It shall be verified that the inside temperature of the empty equipment, previously brought to the outside temperature, can be brought to the limit temperature of the class to which the equipment belongs, as prescribed in this annex, and maintained below the said limit temperature for a period t

$$\text{such that } t \geq \frac{12\Delta T}{\Delta T'} \quad \text{in which}$$

ΔT is the difference between + 30 °C and the said limit temperature, and

$\Delta T'$ is the difference between the mean outside temperature during the test and the class limit temperature, the outside temperature being not lower than + 15 °C.

If the results are acceptable, the equipment may be kept in service as refrigerated equipment of its initial class for a further period of not more than three years.

6.2 Mechanically refrigerated equipment

(i) Equipment constructed from 2 January 2012

It shall be verified that, when the outside temperature is not lower than + 15 °C, the inside temperature of the empty equipment can be brought to the class temperature within a maximum period (in minutes), as prescribed in the table below:

Outside temperature	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	°C
Class C, F	360	350	340	330	320	310	300	290	280	270	260	250	240	230	220	210	min
Class B, E	270	262	253	245	236	228	219	211	202	194	185	177	168	160	151	143	min
Class A, D	180	173	166	159	152	145	138	131	124	117	110	103	96	89	82	75	min

The inside temperature of the empty equipment must have been previously brought to the outside temperature.

If the results are acceptable, the equipment may be kept in service as mechanically refrigerated equipment of its initial class for a further period of not more than three years.

(ii) Transitional provisions applicable to equipment in service

For equipment constructed prior to the date given in 6.2 (i), the following provisions shall apply:

It shall be verified that, when the outside temperature is not lower than +15° C, the inside temperature of the empty equipment, which has been previously brought to the outside temperature, can be brought within a maximum period of six hours:

In the case of equipment in classes A, B or C, to the minimum temperature, as prescribed in this annex;

In the case of equipment in classes D, E or F, to the limit temperature, as prescribed in this annex.

If the results are acceptable, the equipment may be kept in service as mechanically refrigerated equipment of its initial class for a further period of not more than three years.

Comment to paragraph 6.2 (ii):

Failure to pass the efficiency test is in many cases due to lack of maintenance. To prevent unnecessary burden and additional costs for the owner-operator due to retests, it is strongly recommended that the thermal appliance be maintained properly and checked for correct functioning prior to the efficiency test. (ECE/TRANS/WP.11/220, para. 44)

6.3 Heated equipment

It shall be verified that the difference between the inside temperature of the equipment and the outside temperature which governs the class to which the equipment belongs as prescribed in this annex (a difference of 22 K in the case of class A, 32 K in the case of class B, 42 K in the case of class C and 52 K in the case of class D) can be achieved and be maintained for not less than 12 hours. If the results are acceptable, the equipment may be kept in service as heated equipment of its initial class for a further period of not more than three years.

6.4 Temperature measuring points

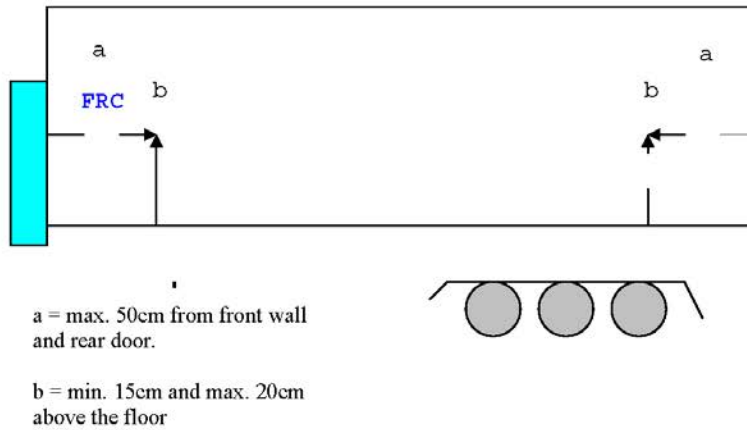
Temperature measuring points protected against radiation shall be placed inside the body and outside the body.

For measuring the inside temperature of the body (T_i), at least 2 temperature measuring points shall be placed inside the body at a maximum distance of 50cm from the front wall, 50cm from the rear door at a height of a minimum of 15 cm and a maximum of 20 cm above the floor area.

For measuring the outside temperature of the body (T_o), at least 2 temperature measuring points shall be placed at a distance of at least 10 cm from an outer wall of the body and at least 20 cm from the air inlet of the condenser unit.

The final reading should be from the warmest point inside the body and the coldest point outside.

Comment to paragraph 6.4 - Figure showing the positioning of the instruments



6.5 Provisions common to refrigerated, mechanically refrigerated and heated equipment

- (i) If the results are not acceptable, refrigerated, mechanically refrigerated or heated equipment may be kept in service in its initial class only if it passes at a testing station the tests described in sections 3.1, 3.2 and 3.3 of this appendix; it may then be kept in service in its initial class for a further period of six years.
- (ii) If the equipment consists of units of serially-produced refrigerated, mechanically refrigerated or heated equipment of a particular type satisfying the requirements of appendix 1, paragraph 6, to this annex and belonging to one owner, then in addition to an inspection of the thermal appliances to ensure that their general condition appears to be satisfactory, the effectiveness of the cooling or heating appliances of not less than 1% of the number of units may be determined at a testing station in conformity with the provisions of sections 3.1, 3.2 and 3.3 of this appendix. If the results of the examinations and of the determination of effectiveness are acceptable, all the equipment in question may be kept in service in its initial class for a further period of six years.

7. PROCEDURE FOR MEASURING THE CAPACITY OF MECHANICAL MULTI-TEMPERATURE REFRIGERATION UNITS AND DIMENSIONING MULTI-COMPARTMENT EQUIPMENT

7.1 Definitions

- (a) Multi-compartment equipment: Equipment with two or more insulated compartments for maintaining a different temperature in each compartment;
- (b) Multi-temperature mechanical refrigeration unit: Mechanical refrigeration unit with compressor and common suction inlet, condenser and two or more evaporators set at different temperatures in the various compartments of multi-compartment equipment;
- (c) Host unit: Refrigeration unit with or without an integral evaporator;
- (d) Unconditioned compartment: a compartment considered to have no evaporator or for which the evaporator is inactive for the purposes of dimensioning calculations and certification;
- (e) Multi-temperature operation: Operation of a multi-temperature mechanical refrigeration

unit with two or more evaporators operating at different temperatures in multi-compartment equipment;

- (f) Nominal refrigerating capacity: Maximum refrigerating capacity of the refrigeration unit in mono-temperature operation with two or three evaporators operating simultaneously at the same temperature;
- (g) Individual refrigerating capacity ($P_{ind-evap}$): The maximum refrigerating capacity of each evaporator in solo operation with the host unit;
- (h) Effective refrigerating capacity ($P_{eff-frozen-evap}$): The refrigerating capacity available to the lowest temperature evaporator when two or more evaporators are each operating in multi-temperature mode, as prescribed in paragraph 7.3.5.

7.2 Test procedure for multi-temperature mechanical refrigeration units

7.2.1 General procedure

The test procedure shall be as defined in section 4 of this appendix.

The host unit shall be tested in combination with different evaporators. Each evaporator shall be tested on a separate calorimeter, if applicable.

The nominal refrigerating capacity of the host unit in mono-temperature operation, as prescribed in paragraph 7.2.2, shall be measured with a single combination of two or three evaporators including the smallest and largest.

The individual refrigerating capacity shall be measured for all evaporators, each in mono-temperature operation with the host unit, as prescribed in paragraph 7.2.3.

This test shall be conducted with two or three evaporators including the smallest, the largest and, if necessary, a mid-sized evaporator.

If the multi-temperature unit can be operated with more than two evaporators:

- The host unit shall be tested with a combination of three evaporators: the smallest, the largest and a mid-sized evaporator.
- In addition, on demand of the manufacturer, the host unit can be tested optionally with a combination of two evaporators: the largest and smallest.

The tests are done in independent mode and stand by.

7.2.2 Determination of the nominal refrigerating capacity of the host unit

The nominal refrigerating capacity of the host unit in mono-temperature operation shall be measured with a single combination of two or three evaporators operating simultaneously at the same temperature. This test shall be conducted at -20°C and at 0°C.

The air inlet temperature of the host unit shall be +30°C.

The nominal refrigerating capacity at -10°C shall be calculated by linear interpolation from the capacities at -20°C and 0°C.

7.2.3 Determination of the individual refrigerating capacity of each evaporator

The individual refrigerating capacity of each evaporator shall be measured in solo operation with the host unit. The test shall be conducted at -20°C and 0°C. The air inlet temperature of the refrigeration unit shall be +30°C.

The individual refrigerating capacity at -10°C shall be calculated by linear interpolation from the capacities at 0°C and -20°C.

7.2.4 Test of the remaining effective refrigerating capacities of a set of evaporators in multi-temperature operation at a reference heat load

The remaining effective refrigerating capacity shall be measured for each tested evaporator at -20°C with the other evaporator(s) operating under control of a thermostat set at 0°C with a reference heat load of 20% of the individual refrigerating capacity at -20°C of the evaporator in question. The air inlet temperature of the host unit shall be +30°C.

For multi-temperature refrigeration units with more than one compressor such as cascade systems or units with two-stage compression systems, where the refrigerating capacities can be simultaneously maintained in the frozen and chilled compartments, the measurement of the effective refrigerating capacity, shall be done at one additional heat load.

7.3 **Dimensioning and certification of refrigerated multi-temperature equipment**

7.3.1 General procedure

The refrigerating capacity demand of multi-temperature equipment shall be based on the refrigerating capacity demand of mono-temperature equipment as defined in this appendix.

For multi-compartment equipment, a K coefficient less than or equal to 0.40 W/m².K for the outer body as a whole shall be approved in accordance with subsections 2 to 2.2 of this appendix.

The insulation capacities of the outer body walls shall be calculated using the K coefficient of the body approved in accordance with this Agreement. The insulation capacities of the internal dividing walls shall be calculated using the K coefficients in the table in paragraph 7.3.7.

For issuance of an ATP certificate:

- The nominal refrigerating capacity of the multi-temperature refrigeration unit shall be at least equal to the heat loss through the internal dividing and outer body walls of the equipment as a whole multiplied by the factor 1.75 as specified in paragraph 3.2.6 of this appendix.
- In each compartment, the calculated remaining effective refrigerating capacity at the lowest temperature of each evaporator in multi-temperature operation shall be greater than or equal to the maximum refrigeration demand of the compartment in the most unfavourable conditions, as prescribed in paragraphs 7.3.5 and 7.3.6, multiplied by the factor 1.75 as specified in paragraph 3.2.6 of this appendix.

7.3.2 Conformity of the entire body

The outer body shall have a K value $K \leq 0.40 \text{ W/m}^2 \cdot \text{K}$.

The internal surface of the body shall not vary by more than 20 %.

The equipment shall conform to:

$$P_{\text{nominal}} > 1.75 * K_{\text{body}} * S_{\text{body}} * \Delta T$$

Where:

P_{nominal} is the nominal refrigerating capacity of the multi-temperature refrigeration unit,

K_{body} is the K value of the outer body,

S_{body} is the internal surface of the full body,

ΔT is the difference in temperature between outside and inside the body.

7.3.3 Determination of the refrigerating demand of chilled evaporators

With the bulkheads in given positions, the refrigerating capacity demand of each chilled evaporator is calculated as follows:

$$P_{\text{chilled demand}} = (S_{\text{chilled-comp}} - \Sigma S_{\text{bulk}}) * K_{\text{body}} * \Delta T_{\text{ext}} + \Sigma (S_{\text{bulk}} * K_{\text{bulk}} * \Delta T_{\text{int}})$$

Where:

K_{body} is the K value given by an ATP test report for the outer body,

$S_{\text{chilled-comp}}$ is the surface of the chilled compartment for the given positions of the bulkheads,

S_{bulk} are the surfaces of the bulkheads,

K_{bulk} are the K values of the bulkheads given by the table in paragraph 7.3.7,

ΔT_{ext} is the difference in temperatures between the chilled compartment and +30°C outside the body,

ΔT_{int} is the difference in temperatures between the chilled compartment and other compartments. For unconditioned compartments a temperature of +20°C shall be used for calculations.

7.3.4 Determination of the refrigerating demand of frozen compartments

With the bulkheads in given positions, the refrigerating capacity demand of each frozen compartment is calculated as follows:

$$P_{\text{frozen demand}} = (S_{\text{frozen-comp}} - \Sigma S_{\text{bulk}}) * K_{\text{body}} * \Delta T_{\text{ext}} + \Sigma (S_{\text{bulk}} * K_{\text{bulk}} * \Delta T_{\text{int}})$$

Where:

K_{body} is the K value given by an ATP test report for the outer body,

$S_{\text{frozen-comp}}$ is the surface of the frozen compartment for the given positions of the bulkheads,

S_{bulk} are the surfaces of the bulkheads,

K_{bulk} are the K values of the bulkheads given by the table in paragraph 7.3.7,

ΔT_{ext} is the difference in temperatures between the frozen compartment and +30 °C outside the body,

ΔT_{int} is the difference in temperatures between the frozen compartment and other compartments. For insulated compartments a temperature of +20°C shall be used for calculations.

7.3.5 Determination of the effective refrigerating capacity of frozen evaporators

The effective refrigerating capacity, in given positions of the bulkheads, is calculated as follows:

$$P_{\text{eff-frozen-evap}} = P_{\text{ind-frozen-evap}} * [1 - \Sigma (P_{\text{eff-chilled-evap}} / P_{\text{ind-chilled-evap}})]$$

Where:

$P_{\text{eff-frozen-evap}}$ is the effective refrigerating capacity of the frozen evaporator with a given configuration,

$P_{\text{ind-frozen-evap}}$ is the individual refrigeration capacity of the frozen evaporator at -20 °C,

$P_{\text{eff-chilled-evap}}$ is the effective refrigeration capacity of each chilled evaporator in the given configuration as defined in paragraph 7.3.6,

$P_{\text{ind-chilled-evap}}$ is the individual refrigerating capacity at -20 °C for each chilled evaporator.

This calculation method is only approved for multi-temperature mechanical refrigeration units with a single one-stage compressor. For multi-temperature refrigeration units with more than one compressor such as cascade systems or units with two-stage compression systems, where the refrigerating capacities can be simultaneously maintained in the frozen and the chilled compartments, this calculation method shall not be used, because it will lead to an underestimation of the effective refrigerating capacities. For this equipment, the effective refrigerating capacities shall be interpolated between the effective refrigerating capacities measured with two different heat loads given in the tests reports as prescribed in 7.2.4.

7.3.6 Conformity declaration

The equipment is declared in conformity in multi-temperature operation if, for each position of the bulkheads, and each distribution of temperature in the compartments:

$$P_{\text{eff-frozen-evap}} \geq 1.75 * P_{\text{frozen demand}}$$

$$P_{\text{eff-chilled-evap}} \geq 1.75 * P_{\text{chilled demand}}$$

Where:

$P_{\text{eff-frozen-evap}}$ is the effective refrigeration capacity of the considered frozen evaporator at the class temperature of the compartment in the given configuration,

$P_{\text{eff-chilled-evap}}$ is the effective refrigeration capacity of the considered chilled evaporator at the class temperature of the compartment in the given configuration,

$P_{\text{frozen demand}}$ is the refrigerating demand of the considered compartment at the class temperature of the compartment in the given configuration as calculated according to 7.3.4,

$P_{\text{chilled demand}}$ is the refrigerating demand of the considered compartment at the class temperature of the compartment in the given configuration as calculated according to 7.3.3.

It shall be considered that all the positions of the bulkheads have been dimensioned if the wall positions from the smallest to the largest compartment sizes are checked by iterative methods whereby no input step change in surface area is greater than 20 %.

7.3.7 Internal dividing walls

Thermal losses through internal dividing walls shall be calculated using the K coefficients in the following table.

	<i>K coefficient – [W/m².K]</i>		<i>Minimum foam thickness [mm]</i>
	<i>Fixed</i>	<i>Removable</i>	
Longitudinal – alu floor	2.0	3.0	25
Longitudinal – GRP floor	1.5	2.0	25
Transversal – alu floor	2.0	3.2	40
Transversal – GRP floor	1.5	2.6	40

K coefficients of movable dividing walls include a safety margin for specific ageing and unavoidable thermal leakages.

For specific designs with additional heat transfer caused by additional thermal bridges compared to a standard design, the partition K coefficient shall be increased.

7.3.8 The requirements of section 7 shall not apply to equipment produced before the entry into force of the requirements and having undergone equivalent tests as multi-temperature equipment. Equipment produced before the entry into force of this section may be operated in international transport but may only be transferred from one country to another with the agreement of the competent authorities of the countries concerned.

8. TEST REPORTS

A test report of the type appropriate to the equipment tested shall be drawn up for each test in conformity with one or other of the models 1 to 10 hereunder.

MODEL No. 1 A

Test Report

Prepared in conformity with the provisions of the Agreement on the International Carriage of
Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP)

Test report No.....

Section 1

Specifications of the equipment (equipment other than tanks for the carriage of liquid foodstuffs)

Approved testing station/expert: ^{1/}

Name

Address

Type of equipment: ^{2/}

Make.....Registration number.....Serial number.....

Date of first entry into service

Tare ^{3/}kg Carrying capacity ^{3/}kg

Body:

Make and type Identification number

Built by

Owned or operated by

Submitted by.....

Date of construction

Principal dimensions:

Outside: length..... m, width m, height..... m

Inside: length m, width m, height..... m

Total floor area of body..... m²

Usable internal volume of body m³

MODEL No. 1 A (cont'd)

Total inside surface area S_i of body m²

Total outside surface area S_e of body.....m²

Mean surface area: $S = \sqrt{S_i \cdot S_e}$ m²

Specifications of the body walls: ^{4/}

Top

Bottom

Sides

Structural peculiarities of body: ^{5/}

Number,) of doors

positions) of vents

and dimensions) of ice-loading apertures.....

Accessories ^{6/}

K coefficient = W/m².K

1/ Delete as necessary (experts only in the case of tests carried out under ATP annex 1, appendix 2, sections 5 or 6).

2/ Wagon, lorry, trailer, semi-trailer, container, etc.

3/ State source of information.

4/ Nature and thickness of materials constituting the body walls, from the interior to the exterior, mode of construction, etc.

5/ If there are surface irregularities, show how S_i and S_e were determined.

6/ Meat bars, flettner fans, etc.

MODEL No. 1 B

Test Report

prepared in conformity with the provisions of the Agreement on the International Carriage of
Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP)

Test report No.....

Section 1

Specifications of tanks for the carriage of liquid foodstuffs

Approved testing station/expert: ^{1/}

Name

Address

Type of tank: ^{2/}

Make Registration number..... Serial number

Date of first entry into service

Tare ^{3/} kg Carrying capacity ^{3/} kg

Tank:

Make and type Identification number

Built by

Owned or operated by

Submitted by

Date of construction

Principal dimensions:

Outside: length of cylinder m, major axis m, minor axis m

Inside: length of cylinder m, major axis m, minor axis m

Usable internal volume m³

MODEL No. 1 B (cont'd)

Internal volume of each compartment	m ³
Total inside surface area S _i of tank	m ²
Inside surface area of each compartment S _{i1}, S _{i2},	m ²
Total outside surface area S _e of tank	m ²
Mean surface area of tank: $S = \sqrt{S_i \cdot S_e}$	m ²
Specifications of the tank walls: ^{4/}	
Structural peculiarities of the tank: ^{5/}	
Number, dimensions and description of manholes	
Description of manhole covers	
Number, dimensions and description of discharge piping	
Number and description of tank cradles	
Accessories	

- 1/ Delete as necessary (experts only in the case of tests carried out under ATP annex 1, appendix 2, sections 5 or 6).
- 2/ Wagon, lorry, trailer, semi-trailer, container, etc.
- 3/ State source of information.
- 4/ Nature and thickness of materials constituting the tank walls, from the interior to the exterior, mode of construction, etc.
- 5/ If there are surface irregularities, show how S_i and S_e were determined.

MODEL No. 2 A

Section 2

Measurement in accordance with ATP, annex 1, appendix 2, sub-section 2.1, of the overall coefficient of heat transfer of equipment other than tanks for liquid foodstuffs

Testing method: inside cooling/inside heating ^{1/}

Date and time of closure of equipment's doors and other openings:

Averages obtained for hours of continuous operation
(from a.m./p.m. to a.m./p.m.):

(a) Mean outside temperature of body: $T_e = \dots\dots\dots \text{ }^\circ\text{C} \pm \dots\dots\dots \text{K}$

(b) Mean inside temperature of body: $T_i = \dots\dots\dots \text{ }^\circ\text{C} \pm \dots\dots\dots \text{K}$

(c) Mean temperature difference achieved: $\Delta T = \dots\dots\dots \text{K}$

Maximum temperature spread:

Outside bodyK

Inside bodyK

Mean temperature of walls of body $\frac{T_e + T_i}{2}$ $^\circ\text{C}$

Operating temperature of heat exchanger ^{2/} $^\circ\text{C}$

Dew point of atmosphere outside body during continuous operation ^{2/}
..... $^\circ\text{C} \pm \dots\dots\dots \text{K}$

Total duration of testh

Duration of continuous operation.....h

Power consumed in exchangers: W_1 W

Power absorbed by fans: W_2 W

Overall coefficient of heat transfer calculated by the formula:

Inside-cooling test ^{1/} $K = \frac{W_1 - W_2}{S \cdot \Delta T}$

Inside-heating test ^{1/} $K = \frac{W_1 + W_2}{S \cdot \Delta T}$

$K = \dots\dots\dots \text{ W/m}^2\text{.K}$

MODEL No. 2 A (cont'd)

Maximum error of measurement with test used%

Remarks: ^{2/}
.....

(To be completed only if the equipment does not have thermal appliances:)

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP annex 1, appendix 3, valid for a period of not more than six years, with the distinguishing mark IN/IR^{1/}.

However, this report shall be valid as a certificate of type approval within the meaning of ATP annex 1, appendix 1, paragraph 6 (a) only for a period of not more than six years, that is until

Done at:

on
Testing Officer

^{1/} Delete as necessary.
^{2/} For inside-cooling test only.
^{3/} If the body is not parallelepipedic, specify the points at which the outside and inside temperatures were measured.

MODEL No. 2 B

Section 2

Measurement, in accordance with ATP annex 1, appendix 2, sub-section 2.2, of the overall coefficient of heat transfer of tanks for liquid foodstuffs

Testing method: inside heating

Date and time of closure of equipment's openings.....

Mean values obtained for hours of continuous operation

(froma.m./p.m. to a.m./p.m.):

(a) Mean outside temperature of tank: $T_e = \dots\dots\dots C \pm \dots\dots\dots K$

(b) Mean inside temperature of tank:

$$T_i = \frac{\sum S_{in} . T_{in}}{\sum S_{in}} = \dots\dots\dots ^\circ C \pm \dots\dots\dots K$$

(c) Mean temperature difference achieved: $\Delta T \dots\dots\dots K$

Maximum temperature spread:

Inside tankK

Inside each compartmentK

Outside tankK

Mean temperature of tank walls $^\circ C$

Total duration of testh

Duration of continuous operationh

Power consumed in exchangers: $W_1 \dots\dots\dots W$

Power absorbed by fans: $W_2 \dots\dots\dots W$

Overall coefficient of heat transfer calculated by the formula:

$$K = \frac{W_1 + W_2}{S . \Delta T}$$

$K = \dots\dots\dots W/m^2.K$

MODEL No. 2 B (cont'd)

Maximum error of measurement with test used%

Remarks: ^{1/}
.....
.

(To be completed only if the equipment does not have thermal appliances:)

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP annex 1, appendix 3, valid for a period of not more than six years, with the distinguishing mark IN/IR. ^{2/}

However, this report shall be valid as a certificate of type approval within the meaning of ATP annex 1, appendix 1, paragraph 6 (a) only for a period of not more than six years, that is until

Done at:.....

on: Testing Officer

^{1/} If the tank is not parallelepipedic, specify the points at which the outside and inside temperatures were measured.
^{2/} Delete as necessary.

MODEL No. 3

Section 2

Expert field check of the insulating capacity of equipment in service in accordance with ATP annex 1, appendix 2, section 5

The check was based on test report No..... dated
issued by approved testing station expert (name and address)

Condition when checked:

Top.....

Side walls

End wall.....

Bottom

Doors and openings

Seals

Cleaning drainholes

Air tightness

K coefficient of the equipment when new (as shown in the previous test report) W/m².K

Remarks:

According to the above test results the equipment may be recognized by means of a certificate in accordance with ATP annex 1, appendix 3, valid for not more than three years, with the distinguishing mark IN/IR.^{1/}

Done at

on:
Testing Officer

^{1/} Delete as necessary.

MODEL No. 4 A

Section 3

Determination of the efficiency of cooling appliances of refrigerated equipment using ice or dry ice by an approved testing station in accordance with ATP annex 1, appendix 2, sub-section 3.1, except 3.1.3 (b) and 3.1.3 (c)

Cooling appliance:

Description of cooling appliance

Nature of refrigerant

Nominal refrigerant filling capacity specified
by manufacturerkg

Actual filling of refrigerant used for testkg

Drive independent/dependent/mains-operated ^{1/}

Cooling appliance removable/not removable ^{1/}

Manufacturer

Type, serial number

Year of manufacture

Filling device (description, where situated;
attach drawing if necessary)

.....

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fansW

Delivery ratem³/h

Dimensions of ducts: cross-section m², lengthm

Air intake screen; description ^{1/}

^{1/} Delete if not applicable.

MODEL No. 4 A (cont'd)

Automatic devices

Mean temperatures at beginning of test:

Inside °C ±K

Outside °C ±K

Dew point in test chamber °C ±K

Power of internal heating systemW

Date and time of closure of equipment's doors and other openings

Record of mean inside and outside temperatures of body and/or curve showing variation
of these temperatures with time

Remarks:
.....

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP annex 1, appendix 3, valid for a period of not more than six years, with the distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP annex 1, appendix 1, paragraph 6 (a) only for a period of not more than six years, that is until

Done at:

on:

Testing Officer

MODEL No. 4 B

Section 3

Determination of the efficiency of cooling appliances of refrigerated equipment with eutectic plates
by an approved testing station in accordance with ATP annex 1, appendix 2, sub-section 3.1,
except 3.1.3 (a) and 3.1.3 (c)

Cooling appliance:

Description

Nature of eutectic solution

Nominal eutectic solution filling capacity specified
by manufacturer kg

Latent heat at freezing temperature stated by manufacturer kJ/kg at °C

Cooling appliance removable/not removable ^{1/}

Drive independent/dependent/mains-operated ^{1/}

Manufacturer

Type, serial number

Year of manufacture

Eutectic plates: Make Type

Dimensions and number of plates, where situated;
distance from walls (attach drawing)

Total cold reserve stated by manufacturer for freezing
temperature of kJ to °C

Inside ventilation appliances (if any):

Description

Automatic devices

^{1/} Delete if not applicable.

MODEL No. 4 B (cont'd)

Mechanical refrigerator (if any):

Make Type No.
 Where situated
 Compressor: Make Type
 Type of drive
 Nature of refrigerant
 Condenser
 Refrigerating capacity stated by the manufacturer for the specified freezing temperature and an outside temperature of + 30 °C W

Automatic devices:

Make Type
 Defrosting (if any)
 Thermostat
 LP pressostat
 HP pressostat
 Relief valve
 Others

Accessory devices:

Electrical heating devices of the door joint:
 Capacity by linear metre of the resistor W/m
 Linear length of the resistor m

Mean temperatures at beginning of test:

Inside °C ± K
 Outside °C ± K
 Dew point in test chamber °C ± K

MODEL No. 4 B (cont'd)

Power of internal heating systemW

Date and time of closure of equipment's
doors and openings

Period of accumulation of cold h

Record of mean inside and outside temperatures of body
and/or curve showing variation of these temperatures
with time

.....

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP annex 1, appendix 3, valid for a period of not more than six years, with the distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP annex 1, appendix 1, paragraph 6 (a) only for a period of not more than six years, that is until

Done at:

on:

Testing Officer

MODEL No. 4 C

Section 3

Determination of the efficiency of cooling appliances of refrigerated equipment using liquefied gases by an approved testing station in accordance with ATP annex 1, appendix 2, sub-section 3.1, except 3.1.3 (a) and 3.1.3 (b)

Cooling appliance:

Description

Drive independent/dependent/mains-operated ^{1/}

Cooling appliance removable/not removable ^{1/}

Manufacturer

Type, serial number

Year of manufacture

Nature of refrigerant

Nominal refrigerant filling capacity specified
by manufacturerkg

Actual filling of refrigerant used for testkg

Description of tank

Filling device (description, where situated)

Inside ventilation appliances:

Description (number, etc.)

Power of electric fansW

Delivery ratem³/h

Dimensions of ducts: cross-section m², lengthm

Automatic devices

^{1/} Delete if not applicable.

MODEL No. 4 C (cont'd)

Mean temperatures at beginning of test:

Inside °C ±K

Outside °C ±K

Dew point in test chamber °C ±K

Power of internal heating systemW

Date and time of closure of equipment's
doors and openings

Record of mean inside and outside temperatures of body and/or curve showing
variation of these temperatures with time

.....
.

Remarks:.....
.....

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP annex 1, appendix 3, valid for a period of not more than six years, with the distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP annex 1, appendix 1, paragraph 6 (a), only for a period of not more than six years, that is until

Done at:

on:

Testing Officer

MODEL No. 5

Section 3

Determination of the efficiency of cooling appliances of mechanically refrigerated equipment
by an approved testing station in accordance with ATP annex 1, appendix 2, sub-section 3.2

Mechanical refrigerating appliances:

Drive independent/dependent/mains-operated ^{1/}

Mechanical refrigerating appliances removable/not removable ^{1/}

Manufacturer

Type, serial number

Year of manufacture

Nature of refrigerant and filling capacity

Effective refrigerating capacity stated by manufacturer for an outside temperature of + 30 °C
and an inside temperature of:

0 °C W

-10 °C W

-20 °C W

Compressor:

Make Type

Drive: electric/thermal/hydraulic ^{1/}

Description

Make Type power kW ... atrpm

Condenser and evaporator

Motor element of fan(s): make type number

power kW at.....rpm

^{1/} Delete if not applicable.

MODEL No. 5 (cont'd)

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fansW

Delivery ratem³/h

Dimensions of ducts: cross-section m², lengthm

Automatic devices:

Make Type

Defrosting (if any)

Thermostat

LP pressostat

HP pressostat

Relief valve

Others

Mean temperatures at beginning of test:

Inside temperature °C ±K

Outside temperature °C ±K

Dew point in test chamber °C ±K

Power of internal heating systemW

Date and time of closure of equipment's
doors and other openings

Record of mean inside and outside temperatures of body and/or curve showing variation
of these temperatures with time

.....

MODEL No. 5 (cont'd)

Time between beginning of test and attainment
of prescribed mean inside temperature of bodyh

Remarks:
.....

According to the above test results, the equipment may be recognized by means of a certificate in
accordance with ATP annex 1, appendix 3, valid for a period of not more than six years, with the
distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP annex
1, appendix 1, paragraph 6 (a), only for a period of not more than six years, that is until

Done at:

on:

Testing Officer

MODEL No. 6

Section 3

Determination of the efficiency of heating appliances of heated equipment by an approved testing station in accordance with ATP annex 1, appendix 2, sub-section 3.3

Heating appliance:

Description

Drive independent/dependent/mains-operated ^{1/}

Heating appliance removable/not removable ^{1/}

Manufacturer

Type, serial number

Year of manufacture

Where situated

Overall area of heat exchange surfacesm²

Effective power rating as specified by manufacturerkW

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fansW

Delivery ratem³/h

Dimensions of ducts: cross-section m², lengthm

Mean temperatures at beginning of test:

Inside temperature °C ±K

Outside temperature °C ±K

Date and time of closure of equipment's doors and other openings

^{1/} Delete if not applicable.

MODEL No. 6 (cont'd)

Record of mean inside and outside temperatures of body and/or
curve showing variation of these temperatures with time

.....

Time between beginning of test and attainment of prescribed
mean inside temperature of body

Where applicable, mean heating output during test to
maintain prescribed temperature difference ^{2/} between
inside and outside of body

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in
accordance with ATP annex 1, appendix 3, valid for a period of not more than six years, with the
distinguishing mark

However, this report shall be valid as a certificate of type approval within the meaning of ATP annex
1, appendix 1, paragraph 6 (a), only for a period of not more than six years, that is until

Done at:

on:

Testing Officer

^{2/} Increased by 35% for new equipment.

MODEL No. 7

Section 3

Expert field check of the efficiency of cooling appliances of refrigerated equipment in service in accordance with ATP annex 1, appendix 2, sub-section 6.1

The check was conducted on the basis of report No.....
dated, issued by approved
testing station/expert (name, address)

Cooling appliance:

Description

Manufacturer

Type, serial number

Year of manufacture

Nature of refrigerant

Nominal refrigerant filling capacity
specified by manufacturerkg

Actual filling of refrigerant used for testkg

Filling device (description, where situated)

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fansW

Delivery ratem³/h

Dimensions of ducts: cross-section m², lengthm

Condition of cooling appliance and ventilation appliances

Inside temperature attained°C

At an outside temperature of°C

MODEL No. 7 (cont'd)

Inside temperature of the equipment before the refrigerating appliance is started°C

Total running time of the refrigerating unith

Time between beginning of test and attainment of prescribed
mean inside temperature of body h

Check on operation of thermostat

For refrigerated equipment with eutectic plates:

Period of operation of the cooling appliance for freezing
of the eutectic solutionh

Period during which inside air temperature is maintained
after the appliance is switched offh

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in
accordance with ATP annex 1, appendix 3, valid for a period of not more than three years, with the
distinguishing mark

Done at:

on:

Testing Officer

MODEL No. 8

Section 3

Expert field check of the efficiency of cooling appliances of mechanically refrigerated equipment in service in accordance with ATP annex 1, appendix 2, sub-section 6.2

The check was conducted on the basis of report No..... dated
issued by approved testing station/expert (name, address)

Mechanical refrigerating appliances:

Manufacturer

Type, serial number

Year of manufacture

Description

Effective refrigerating capacity specified by manufacturer for an outside temperature of +30 °C and an inside temperature of

0 °C W

- 10 °C W

- 20 °C W

Nature of refrigerant and filling capacity kg

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fans W

Delivery rate m³/h

Dimensions of ducts: cross-section m², length m

Condition of mechanical refrigerating appliance and inside ventilation appliances

MODEL No. 8 (cont'd)

Inside temperature attained°C

At an outside temperature of°C

and with a relative running time of%

Running time h

Check on operation of thermostat

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP annex 1, appendix 3 valid for a period of not more than three years, with the distinguishing mark

Done at:

on:

Testing Officer

MODEL No. 9

Section 3

Expert field check of the efficiency of heating appliances of heated equipment in service in accordance with ATP annex 1, appendix 2, sub-section 6.3

The check was conducted on the basis of report No. dated
issued by approved testing station/expert (name, address)
.....

Mode of heating:

Description
Manufacturer
Type, serial number
Year of manufacture
Where situated
Overall area of heat exchange surfacesm²
Effective power rating as specified by manufacturerkW

Inside ventilation appliances:

Description (number of appliances, etc.)
Power of electric fansW
Delivery ratem³/h

Dimensions of ducts: cross-section m², length m

Condition of heating appliance and inside ventilation appliances
.....
.....

Inside temperature attained°C

MODEL No. 9 (cont'd)

At an outside temperature of°C

and with a relative running time of%

Running timeh

Check on operation of thermostat

Remarks:

.....

According to the above test results, the equipment may be recognized by means of a certificate in accordance with ATP annex 1, appendix 3, valid for a period of not more than three years, with the distinguishing mark

Done at:

on:

Testing Officer



Results of measurements and refrigerating performance

(Mean temperature of the air to the inlet(s) of the refrigeration unit °C)

MODEL No.10 (cont'd)

	Speed of Rotation			Power of internal fan heater	Power absorbed by the unit cooler fan	Fuel or electrical power consumption	Mean temperature around the body	Internal temperature		Effective refrigerating capacity
	Fans ^{2/}	Alternator ^{2/}	Compressor ^{2/}					Mean	Inlet to evaporator	
	rpm	rpm	rpm	W	W	W or l/hr	°C	°C	°C	W
Nominal
Minimal

MODEL No. 10 (cont'd)

(b) Test method and results:

Test method ^{1/}: heat balance method/enthalpy difference method

In a calorimeter box of mean surface area = m²
measured value of the U-coefficient of a box fitted with a refrigeration unit:..... W/°C,
at a mean wall temperature of°C.

In an item of transport equipment:
measured value of the U-coefficient of an item of transport equipment fitted with a
refrigeration unit:W/°C,
at a mean wall temperature of°C.

Method employed for the correction of the U-coefficient of the body as a function of the mean wall
temperature of the body:
.....
.....

Maximum errors of determination of:

U-coefficient of the body
refrigerating capacity of the unit

(c) Checks

Temperature regulator: Setting Differential°C

Functioning of the defrosting device ^{1/}: satisfactory/unsatisfactory

Air flow volume leaving the evaporator: value measuredm³/h
at a pressure ofPa

Existence of a means of supplying heat to the evaporator for setting the thermostat between 0 and
12 °C ^{1/}: yes/no

(d) Remarks

.....
.....
.....

Done at:

On:

Testing Officer

- ^{1/} Delete where applicable.
^{2/} Value indicated by the manufacturer.
^{3/} Where applicable.
^{4/} Enthalpy difference method only.

Annex 1, Appendix 3

A. **Model form of certificate of compliance of the equipment, as prescribed in annex 1, appendix 1, paragraph 3**

**FORM OF CERTIFICATE FOR INSULATED, REFRIGERATED, MECHANICALLY
REFRIGERATED OR HEATED EQUIPMENT USED FOR THE INTERNATIONAL
CARRIAGE OF PERISHABLE FOODSTUFFS BY LAND**

Certificates of compliance of equipment issued before 2 January 2011 in accordance with the requirements regarding the model of the certificate in Annex 1, Appendix 3 in force until 1 January 2011 shall remain valid until their original date of expiry.

Certificates of compliance issued before the date of entry into force of the modification to item 3 of the model certificate (30 September 2015) shall remain valid until their original date of expiry.



	/ EQUIPMENT ¹																									
2	XXXXXXXX ³	INSULATED	REFRIGERATED	MECHANICALLY REFRIGERATED	HEATED	MULTI- TEMPERATURE ⁴																				
	/ CERTIFICATE ⁵	ATP XXXXXXXXX																								
<i>Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP)</i>																										
<i>Issued pursuant to the Agreement on the International Carriage of Perishable</i>																										
<i>Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP)</i>																										
1.	/ Issuing authority:		XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
2.	/ Equipment ⁶ :		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
3.	/ Registration number ⁷ :		XXXXXXXXXX		/ Vehicle identification number ⁸ XXXXXXXXXXXXXXXXXXXXXXX																					
	/ allotted by:		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
4.	Insulated box MARK, MODEL, SERIAL NUMBER, MONTH AND YEAR OF MANUFACTURE: ¹⁵		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
	Owner or operated by:		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
5.	/ Submitted by:		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
6.	/ Is approved as: ⁷		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
6.1	/ With one or more thermal appliances which is (are) ¹⁴ :		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
6.1.1	/ Independent: ⁸ MARK, MODEL, REFRIGERANT, SERIAL NUMBER/YEAR OF MANUFACTURE (If any)		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
6.1.2	/ Not independent: ⁸ MARK, MODEL, REFRIGERANT, SERIAL NUMBER/YEAR OF MANUFACTURE (If any)		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
6.1.3	/ Removable:		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
6.1.4	/ Not removable:		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.	/ Basis of issue of certificate:		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.1	/ This certificate is issued on the basis of: ¹		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.1.1	/ Tests of the equipment;		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.1.2	/ conformity with a reference item of equipment;		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.1.3	/ A periodic inspection.		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.2	/ Specify:		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.2.1	/ The testing station:		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.2.2	/ The nature of the tests: ⁹		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.2.3	/ The number(s) of the report(s):		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
7.2.4	NNNNNNN (TESTING STATION) YYYY/MM/DD and NNNNNNN (TESTING STATION) YYYY/MM/DD																									
7.2.5	/ The K coefficient: 0.00 W/m ² K		<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td style="width:5%;"></td> <td style="width:15%;">Nominal capacity</td> <td style="width:15%;">Evap.1</td> <td style="width:15%;">Evap.2</td> <td style="width:15%;">Evap.3</td> </tr> <tr> <td>°C</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> </tr> <tr> <td>°C</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> </tr> <tr> <td>°C</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> <td>XXXX W</td> </tr> </table>					Nominal capacity	Evap.1	Evap.2	Evap.3	°C	XXXX W	XXXX W	XXXX W	XXXX W	°C	XXXX W	XXXX W	XXXX W	XXXX W	°C	XXXX W	XXXX W	XXXX W	XXXX W
	Nominal capacity	Evap.1	Evap.2	Evap.3																						
°C	XXXX W	XXXX W	XXXX W	XXXX W																						
°C	XXXX W	XXXX W	XXXX W	XXXX W																						
°C	XXXX W	XXXX W	XXXX W	XXXX W																						
7.3	/ Number of openings and special equipment		X																							
7.3.1	/ Number of doors: X		/ rear door		X / side door(s) X																					
7.3.2	/ Number of vents: X																									
7.3.3	/ Hanging meal equipment: X																									
7.4	/ Others:																									
8.	/ This certificate is valid until:		MONTH & YEAR																							
8.1	/ Provided that:																									
8.1.1	/ The insulated body and, where applicable, the thermal appliance is maintained in good condition; and																									
8.1.2	/ No material alteration is made to the thermal appliances;																									
9.	/ Done by:		<div style="border: 1px solid red; padding: 5px; text-align: center;"> CERTIFIED DUPLICATE¹² Do not print this stamp on the original Certificate (Officer name) (Competent or authorized authority) </div>																							
10.	/ On:		<div style="border: 1px solid black; padding: 5px; text-align: center;"> LOGOTYPE¹³ Security stamp (relief, ultraviolet, etc.) Original document </div>																							
	/ The competent authority		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
	/ Responsible for the ATP		XXXXXXXXXXXXXXXXXXXXXXXXXXXX																							
			(Officer name)																							
a	/ Not mandatory																									

These footnotes shall not be printed on the certificate itself

The areas in grey shall be replaced by the translation in the language of the country issuing the ATP Certificate.

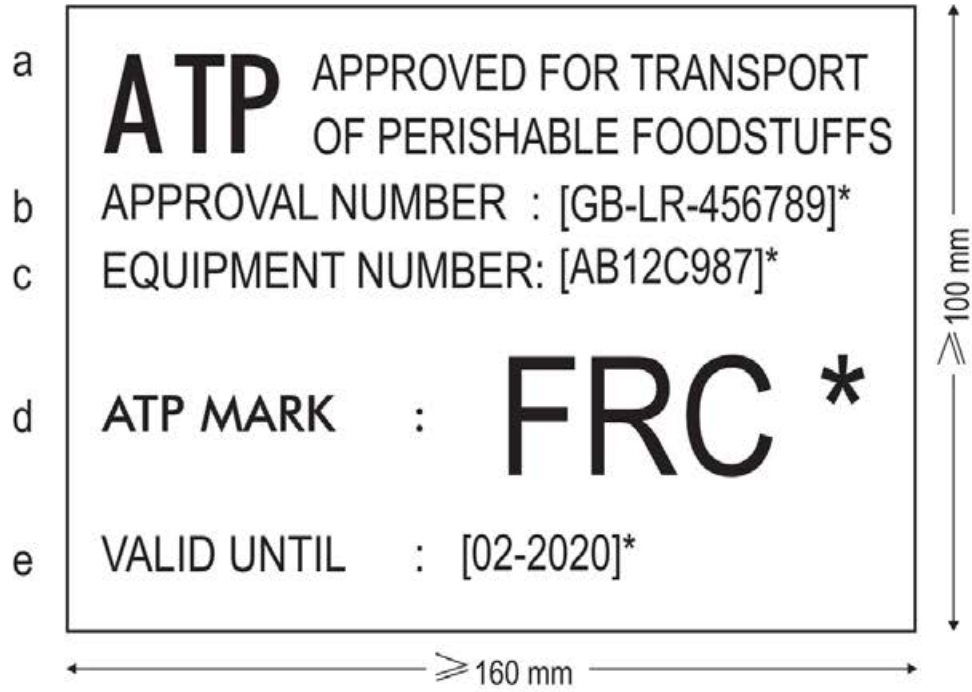
- 1/ Strike out what does not apply.*
- 2/ Distinguishing sign of the country, as used in international road traffic.*
- 3/ The number (figures, letters, etc.) indicating the authority issuing the certificate and the approval reference.*
- 4/ The test procedure for new multi-temperature equipment appears in section 7 of annex 1, appendix 2. A test procedure for in-service multi-temperature equipment has not yet been determined. Multi-temperature equipment is insulated equipment with two or more compartments for different temperatures in each compartment.*
- 5/ The blank certificate shall be printed in the language of the issuing country and in English, French or Russian; the various items shall be numbered as in the above model.*
- 6/ State type (wagon, lorry, trailer, semi-trailer, container, etc.); in the case of tank equipment for carriage of liquid foodstuffs, add the word "tank".*
- 7/ Enter here one or more of the descriptions listed in Appendix 4 of Annex 1, together with the corresponding distinguishing mark or marks.*
- 8/ Write the mark, model, refrigerant, serial number and year of manufacture of the equipment.*
- 9/ Measurement of the overall coefficient of heat transfer, determination of the efficiency of cooling appliances, etc.*
- 10/ Where determined in conformity with the provisions of Appendix 2, paragraph 3.2.7, of this Annex.*
- 11/ The effective cooling capacity of each evaporator depends on the number of evaporators fixed at the condensing unit.*
- 12/ In case of loss, a new Certificate can be provided or, instead of it, a photocopy of the ATP Certificate bearing a special stamp with "CERTIFIED DUPLICATE" (in red ink) and the name of the certifying officer, his signature, and the name of the competent authority or authorized body.*
- 13/ Security stamp (relief, fluorescent, ultraviolet, or other safety mark that certifies the origin of the certificate).*
- 14/ If applicable, mention the way the power for issuing ATP Certificates is delegated.*
- 15/ Write the mark, model, serial number of the manufacturer and month and year of manufacture of the insulated body. All the serial numbers of insulated equipment (containers) having an internal volume of less than 2m³ shall be listed. It is also acceptable to collectively list these numbers, i.e. from number ... to number*

Comment to item 8.1.2 in the model certificate of compliance:

The replacement of components of the thermal appliance does not constitute a material alteration, in as much as replacement components do not reduce the quality of the appliance performance.

B. CERTIFICATION PLATE OF COMPLIANCE OF THE EQUIPMENT, AS PROVIDED FOR IN ANNEX 1, APPENDIX 1, PARAGRAPH 3

1. The certification plate shall be affixed to the equipment permanently and in a clearly visible place adjacent to any other approval plate issued for official purposes. The plate, conforming to the model reproduced below, shall take the form of a rectangular, corrosion-resistant and fire-resistant plate measuring at least 160 mm by 100 mm. The following particulars shall be indicated legibly and indelibly on the plate in at least the English or French or Russian language:
 - (a) the Latin letters "ATP" followed by the words "APPROVED FOR TRANSPORT OF PERISHABLE FOODSTUFFS";
 - (b) "APPROVAL NUMBER" followed by the distinguishing sign (in international road traffic) of the State in which the approval was granted and the number (figures, letters, etc.) of the approval reference;
 - (c) "EQUIPMENT NUMBER" followed by the individual number assigned to identify the particular item of equipment (which may be the manufacturer's number);
 - (d) "ATP MARK" followed by the distinguishing mark prescribed in annex 1, appendix 4, corresponding to the class and the category of the equipment;
 - (e) "VALID UNTIL" followed by the date (month and year) when the approval of the unit of equipment expires. If the approval is renewed following a test or inspection, the subsequent date of expiry may be added on the same line.
2. The letters "ATP" and the letters of the distinguishing mark should be approximately 20 mm high. Other letters and figures should not be less than 5 mm high.



* The particulars in square brackets are given by way of example.

Annex I, Appendix 4

DISTINGUISHING MARKS TO BE AFFIXED TO SPECIAL EQUIPMENT

The distinguishing marks prescribed in appendix 1, paragraph 4 to this annex shall consist of capital Latin letters in dark blue on a white ground. The height of the letters shall be at least 100 mm for the classification marks and at least 50 mm for the expiry dates. For special equipment, such as a laden vehicle with maximum mass not exceeding 3.5 t, the height of the classification marks could likewise be 50 mm and at least 25 mm for the expiry dates.

The classification and expiry marks shall at least be affixed externally on both sides in the upper corners near the front.

The marks shall be as follows:

<u>Equipment</u>	<u>Distinguishing mark</u>
Normally insulated equipment	IN
Heavily insulated equipment	IR
Class A refrigerated equipment with normal insulation	RNA
Class A refrigerated equipment with heavy insulation	RRA
Class B refrigerated equipment with heavy insulation	RRB
Class C refrigerated equipment with heavy insulation	RRC
Class D refrigerated equipment with normal insulation	RND
Class D refrigerated equipment with heavy insulation	RRD
Class A mechanically refrigerated equipment with normal insulation	FNA
Class A mechanically refrigerated equipment with heavy insulation	FRA
Class B mechanically refrigerated equipment with heavy insulation	FRB
Class C mechanically refrigerated equipment with heavy insulation	FRC
Class D mechanically refrigerated equipment with normal insulation	FND
Class D mechanically refrigerated equipment with heavy insulation	FRD

<u>Equipment</u>	<u>Distinguishing mark</u>
Class E mechanically refrigerated equipment with heavy insulation	FRE
Class F mechanically refrigerated equipment with heavy insulation	FRF
Class A heated equipment with normal insulation	CNA
Class A heated equipment with heavy insulation	CRA
Class B heated equipment with heavy insulation	CRB
Class C heated equipment with heavy insulation	CRC
Class D heated equipment with heavy insulation	CRD

If the equipment is fitted with a removable or non-independent thermal appliance and if special conditions exist for the use of the thermal appliance, the distinguishing mark or marks shall be supplemented by the letter X in the following cases:

1. FOR REFRIGERATED EQUIPMENT:

Where the eutectic plates have to be placed in another chamber for freezing;

2. FOR MECHANICALLY REFRIGERATED EQUIPMENT:

2.1 Where the compressor is powered by the vehicle engine;

2.2 Where the refrigeration unit itself or a part is removable, which would prevent its functioning.

The date (month, year) entered under section A, item 8 in appendix 3 of this annex as the date of expiry of the certificate issued in respect of the equipment shall be quoted under the distinguishing mark or marks aforesaid.

Model:

02 = month (February)) of expiry of the
2020= year) certificate

<p>FRC 0 - 2020</p>

Annex 2

SELECTION OF EQUIPMENT AND TEMPERATURE CONDITIONS TO BE OBSERVED FOR THE CARRIAGE OF QUICK (DEEP)-FROZEN AND FROZEN FOODSTUFFS

1. For the carriage of the following quick (deep)-frozen and frozen foodstuffs, the transport equipment has to be selected and used in such a way that during carriage the highest temperature of the foodstuffs at any point of the load does not exceed the indicated temperature.

By that means the equipment used for the transport of quick-frozen foodstuffs shall be fitted with the device referred to in appendix 1 to this annex. If however one should proceed to the verification of the temperature of the foodstuff, this shall be done according to the procedure laid down in appendix 2 to this annex.

2. Accordingly, the temperature of the foodstuffs at any point in the load must be at or below the indicated value on loading, during carriage and on unloading.
3. Where it is necessary to open the equipment, e.g. to carry out inspections, it is essential to ensure that the foodstuffs are not exposed to procedures or conditions contrary to the objectives of this annex and those of the International Convention on the Harmonization of Frontier Controls of Goods.
4. During certain operations, such as defrosting the evaporator of mechanically refrigerated equipment, a brief rise of the temperature of the surface of the foodstuffs of not more than 3 °C in a part of the load, e.g. near the evaporator, above the appropriate temperature may be permitted.

Ice cream -20 °C

Frozen or quick (deep)-frozen fish, fish products,
molluscs and crustaceans and all other
quick (deep)-frozen foodstuffs -18 °C

All other frozen foodstuffs (except butter) -12 °C

Butter -10 °C

Deep-frozen and frozen foodstuffs mentioned below to be
immediately further processed at destination: ^{1/}

Butter

Concentrated fruit juice

^{1/} The deep-frozen and frozen foodstuffs listed, when intended for immediate further processing at destination, may be permitted gradually to rise in temperature during carriage so as to arrive at their destination at temperatures no higher than those specified by the sender and indicated in the transport contract. This temperature should not be higher than the maximum temperature authorized for the same foodstuff when refrigerated as mentioned in annex 3. The transport document shall state the name of the foodstuff, whether it is deep-frozen or frozen and that it is immediately to be further processed at destination. This carriage shall be undertaken with ATP-approved equipment without use of a thermal appliance to increase the temperature of the foodstuffs.

Annex 2, Appendix 1

MONITORING OF AIR TEMPERATURES FOR TRANSPORT OF PERISHABLE FOODSTUFFS QUICK-FROZEN

The transport equipment shall be fitted with an instrument capable of measuring and recording air temperatures and storing the data obtained (hereinafter referred to as the instrument) to monitor the air temperatures to which quick-frozen foodstuffs intended for human consumption are subjected.

The instrument shall be verified in accordance with EN 13486 (Temperature recorders and thermometers for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream – Periodic verification) by an accredited body and the documentation shall be available for the approval of ATP competent authorities.

The instrument shall comply with standard EN 12830 (Temperature recorders for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream – Tests, performance, suitability).

Temperature recordings obtained in this manner must be dated and stored by the operator for at least one year or longer, according to the nature of the food.

Comments to Annex 2, Appendix 1:

1. *The measuring instrument must measure air temperature in transport equipment with an accuracy of at least ± 1 °C.*
2. *The measuring instrument must allow for measuring air temperature and recording/logging the measured value of the air temperature:*
 - *At least once every 5 minutes if the duration of the journey does not exceed 24 hours;*
 - *At least once every 15 minutes if the duration of the journey is between 24 hours and 7 days;*
 - *At least once every 60 minutes if the duration of the journey exceeds 7 days.*
3. *The recording instrument should make it possible to determine whether the instrument or its components for the measurement and recording and storage of the values of air temperatures have shut down during the carriage of quick-frozen perishable foodstuffs. (ECE/TRANS/WP.11/222, para. 37).*
4. *Where it is possible, the measuring instrument should be placed inside the body of the transport equipment in the area with the highest air temperature in accordance with the requirements of annex 2, paragraph 2 of ATP:*
 - *In the case of upper cold air distribution systems, near (to the left or right of) the bottom of the doorway furthest away from the refrigeration unit;*
 - *In the case of lower cold air distribution systems, in the middle of the portion above the doorway furthest away from the refrigeration unit;*
5. *The instrument shall be adequately protected to avoid damage caused by moving parts of equipment or contact with cargo items during loading and unloading or shifting or partial or complete collapse of stacks of cargo during carriage.*

No means of protection of the instruments (e.g. protective housing or placement of the measuring instrument in a protective housing in a recess in a wall of the transport equipment, if any) should affect the accuracy of the air temperature measurements inside the transport equipment.

(ECE/TRANS/WP.11/226, para. 46)

Annex 2, Appendix 2

PROCEDURE FOR THE SAMPLING AND MEASUREMENT OF TEMPERATURE FOR CARRIAGE OF CHILLED, FROZEN AND QUICK-FROZEN PERISHABLE FOODSTUFFS

A. GENERAL CONSIDERATIONS

1. Inspection and measurement of temperatures stipulated in annexes 2 and 3 should be carried out so that the foodstuffs are not exposed to conditions detrimental to the safety or quality of the foodstuffs. Measuring of food temperatures should be carried out in a refrigerated environment, and with the minimum delays and minimum disruption of transport operations.
2. Inspection and measurement procedures, as referred to in paragraph 1, shall preferably be carried out at the point of loading or unloading. These procedures should not normally be carried out during transport, unless serious doubt exists about the conformity of the temperatures of the foodstuffs stipulated in annexes 2 and 3.
3. Where possible, the inspection should take account of information provided by temperature monitoring devices during the journey before selecting those loads of perishable foodstuffs for sampling and measurement procedures. Progression to temperature measurement of the food should only be undertaken where there is reasonable doubt of the temperature control during carriage.
4. Where loads have been selected, a non-destructive measurement (between-case or between-pack) should at first be used. Only where the results of the non-destructive measurement do not conform with the temperatures laid down in annexes 2 or 3 (taking into account allowable tolerances), are destructive measurements to be carried out. Where consignments or cases have been opened for inspection, but no further action has been taken, they should be resealed giving the time, date, place of inspection, and the official stamp of the inspection authority.

B. SAMPLING

5. The types of package selected for temperature measurement shall be such that their temperature is representative of the warmest point of the consignment.
6. Where it is necessary to select samples during transport whilst the consignment is loaded, two samples should be taken from the top and bottom of the consignment adjacent to the opening edge of each door or pair of doors.
7. Where samples are taken during unloading of the consignment, four samples should be chosen from any of the following locations:
 - top and bottom of the consignment adjacent to the opening edge of the doors;
 - top rear corners of the consignment (i.e. furthest away from the refrigeration unit);
 - centre of the consignment;
 - centre of the front surface of the consignment (i.e. closest to the refrigeration unit);
 - top or bottom corners of the front surface of the consignment (i.e. closest to the return air intake of the refrigeration unit).
8. In the case of chilled foods in annex 3, samples should also be taken from the coldest location to ensure that freezing has not occurred during transportation.

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C. TEMPERATURE MEASUREMENT OF PERISHABLE FOODSTUFFS

9. The temperature measuring probe should be precooled to as close to the product temperature as possible before measurement.

I. Chilled foods

10. Non-destructive measurement. Measurement between-case or between-pack should be made with a probe with a flat head, which gives a good surface contact, low thermal mass, and high thermal conductivity. When placing the probe between the cases or food packs, there should be sufficient pressure to give a good thermal contact, and sufficient length of probe inserted to minimize conductivity errors.
11. Destructive measurement. A probe with a rigid, robust stem and sharpened point should be used, made from a material which is easy to clean and disinfect. The probe should be inserted into the centre of the food pack, and the temperature noted when a steady reading is reached.

II. Frozen and quick-frozen foods

12. Non-destructive measurement. Same as paragraph 10.
13. Destructive measurement. Temperature probes are not designed to penetrate frozen foods. Therefore it is necessary to make a hole in the product in which to insert the probe. The hole is made by a precooled product penetration instrument, which is a sharp pointed metallic instrument such as an ice punch, hand drill or an auger. The diameter of the hole should provide a close fit to that of the probe. The depth to which the probe is inserted will depend on the type of product:
- (i) Where product dimensions allow, insert the probe to a depth of 2.5 cm from the surface of the product;
 - (ii) Where (i) is not possible because of the size of the product, the probe should be inserted to a minimum depth from the surface of 3 to 4 times the diameter of the probe;
 - (iii) It is not possible or practical to make a hole in certain foods because of their size or composition e.g. diced vegetables. In these cases, the internal temperature of the food package should be determined by insertion of a suitable sharp-stemmed probe to the centre of the pack to measure the temperature in contact with the food.

After inserting the probe, the temperature should be read when it has reached a steady value.

D. GENERAL SPECIFICATIONS FOR THE MEASURING SYSTEM

14. The measuring system (probe and read-out) used in determining temperature shall meet the following specifications:
- (i) the response time should achieve 90% of the difference between the initial and final reading within three minutes;
 - (ii) ^{1/} the system must have an accuracy of ± 0.5 °C within the measurement range - 20 °C to + 30 °C;

^{1/} The procedure will be defined.

- (iii) ^{1/} the measuring accuracy must not change by more than 0.3 °C during operation in the ambient temperature range – 20 °C to + 30 °C;
- (iv) the display resolution of the instrument should be 0.1 °C;
- (v) ^{1/} the accuracy of the system should be checked at regular intervals;
- (vi) the system should have a current certificate of calibration from an approved institution;
- (vii) the electrical components of the system should be protected against undesirable effects due to condensation of moisture;
- (viii) the system should be robust and shock proof.

E. ALLOWABLE TOLERANCES IN THE MEASUREMENT OF TEMPERATURE

15. Certain tolerances should be allowed in the interpretation of temperature measurements:

- (i) operational - in the case of frozen and quick-frozen foods, a brief rise of up to 3 °C on the temperature permitted in annex 2 is allowed for the surface temperature of the food;
- (ii) methodology - non-destructive measurement can give up to a maximum of 2 °C difference in the reading compared to the true product temperature measurement, especially with the thickness of cardboard in case packaging. This tolerance does not apply to the destructive measurement of temperature.

^{1/} *The procedure will be defined.*

Annex 3

SELECTION OF EQUIPMENT AND TEMPERATURE CONDITIONS TO BE OBSERVED FOR THE CARRIAGE OF CHILLED FOODSTUFFS

1. For the carriage of the following chilled foodstuffs, the transport equipment has to be selected and used in such a way that during carriage the highest temperature of the foodstuffs at any point of the load does not exceed the indicated temperature. If, however the verification of the temperature of the foodstuff is carried out, it shall be done according to the procedure laid down in Appendix 2 to Annex 2 to this Agreement.
2. Accordingly, the temperature of the foodstuffs at any point in the load must not exceed the temperature as indicated below on loading, during carriage and on unloading.
3. Where it is necessary to open the equipment, e.g. to carry out inspections, it is essential to ensure that the foodstuffs are not exposed to procedures or conditions contrary to the objectives of this Annex and those of the International Convention on the Harmonization of Frontier Controls of Goods.
4. The temperature control of foodstuffs specified in this Annex should be such as not to cause freezing at any point of the load.

	<u>Maximum temperature</u>
I. Raw milk ¹	+ 6° C
II. Red meat ² and large game (other than red offal)	+ 7° C
III. Meat products, ³ pasteurized milk, fresh dairy products (yoghurt, kefir, cream and fresh cheese ⁴), ready cooked foodstuffs (meat, fish, vegetables), ready to eat prepared raw vegetables and vegetable products ⁵ concentrated fruit juice and fish products ³ not listed below	either at + 6° C or at temperature indicated on the label and/or on the transport documents
IV. Game (other than large game), poultry ² and rabbits	+ 4° C
V. Red offal ²	+ 3° C
VI. Minced meat ²	either at +2° C or at temperature indicated on the label and/or on the transport documents
VII. Untreated fish, molluscs and crustaceans ⁶	on melting ice or at temperature of melting ice

¹ When milk is collected from the farm for immediate processing, the temperature may rise during carriage to + 10° C.

² Any preparations thereof.

³ Except for products fully treated by salting, smoking, drying or sterilization.

⁴ 'Fresh cheese' means a non-ripened (non-matured) cheese which is ready for consumption shortly after manufacturing and which has a limited conservation period.

⁵ Raw vegetables which have been diced, sliced or otherwise size reduced, but excluding those which have only been washed, peeled or simply cut in half.

⁶ Except for live fish, live molluscs and live crustaceans.

ATP Examples of Good Practice (Not an official part of the ATP)

GUIDELINES FOR VERIFICATION OF TRANSPORT EQUIPMENT
 USED FOR ROAD TRANSPORT OF PERISHABLE FOODSTUFFS

INSPECTION OF ISOTHERMAL PROPERTIES OF ROAD TRANSPORT EQUIPMENT

Transport equipment has to be equipped with a valid certificate or a certification plate and a distinguishing mark.
 Examples of the most important identification data:

1


Certificate No.

2

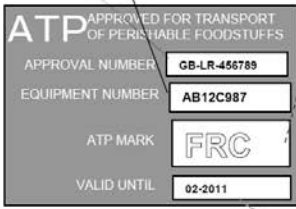
Serial No. of equipment

3


Classification mark



ATP CERTIFICATE
front page



CERTIFICATION PLATE




4 DISTINGUISHING MARK

5

Stamp of ATP competent /
authorized authority

Certificate validity



Distinguishing mark

Certification plate

MANUFACTURER'S PLATE

Country of manufacture or letters used in international road traffic

Name of manufacturer or company

Model (figures and/or letters)

Serial number

Month and year of manufacture

placed on the thermal appliance

MANUFACTURER'S PLATE

Country of manufacture or letters used in international road traffic

Name of manufacturer or company

Model (figures and/or letters)

Serial number

Month and year of manufacture

placed on the insulated body of "insulated", "refrigerated", "mechanically refrigerated" or "heated" transport equipment
* optional

MONITORING OF AIR TEMPERATURES FOR TRANSPORT OF QUICK-FROZEN PERISHABLE FOODSTUFFS

The transport equipment must be fitted with a suitable recording instrument to monitor, at frequent and regular intervals, the air temperatures to which quick-frozen foodstuffs intended for human consumption are subjected.

CHECK: Do the measuring instruments comply with standards EN 12830 and EN 13486? **YES / NO**
 Is the calibration certificate valid? **YES / NO**

Temperature recordings obtained in this manner must be dated and stored by the operator for at least one year or longer, according to the nature of the food. Measuring instruments shall comply with the provisions of this Appendix one year after the date of entry into force of the above provision. Measuring instruments already installed, but which do not conform to the above standards before this date, can continue to be used until 31 December 2009.

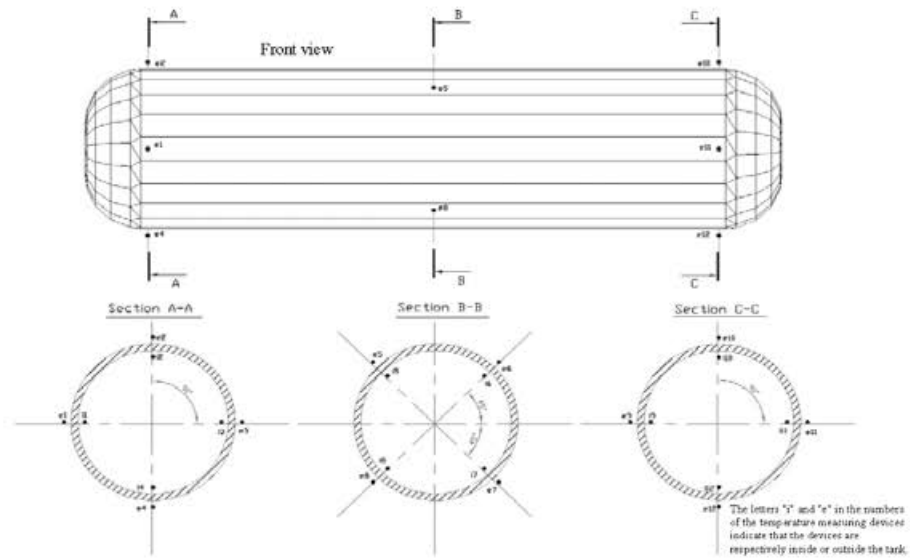


Figure 1 Placement of devices for measuring air temperature inside and outside a tank with one compartment.

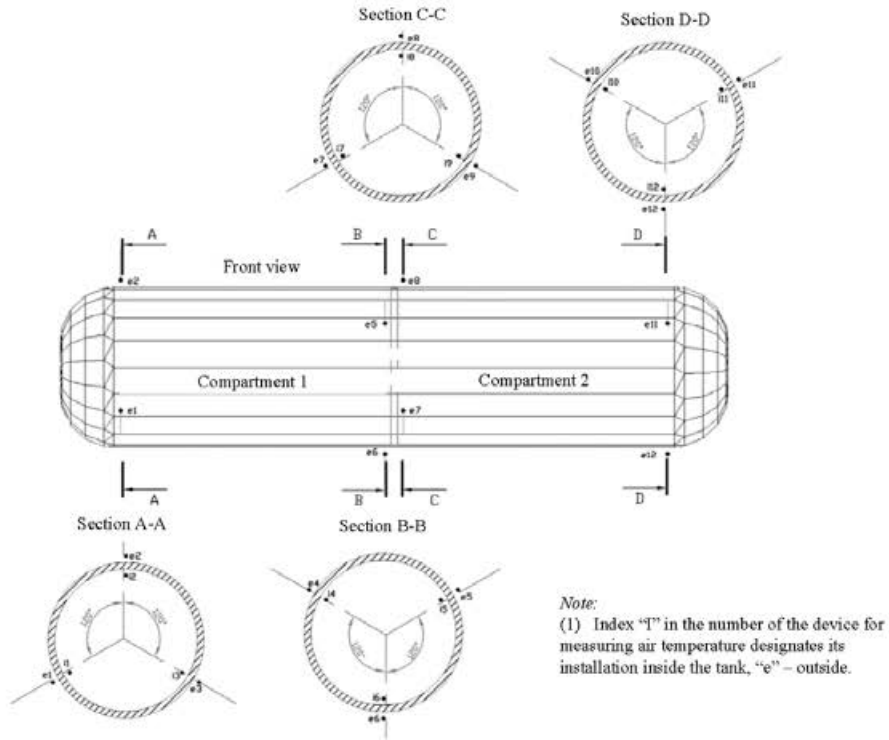


Figure 2 Placement of devices for measuring air temperature inside and outside a tank with two compartments.

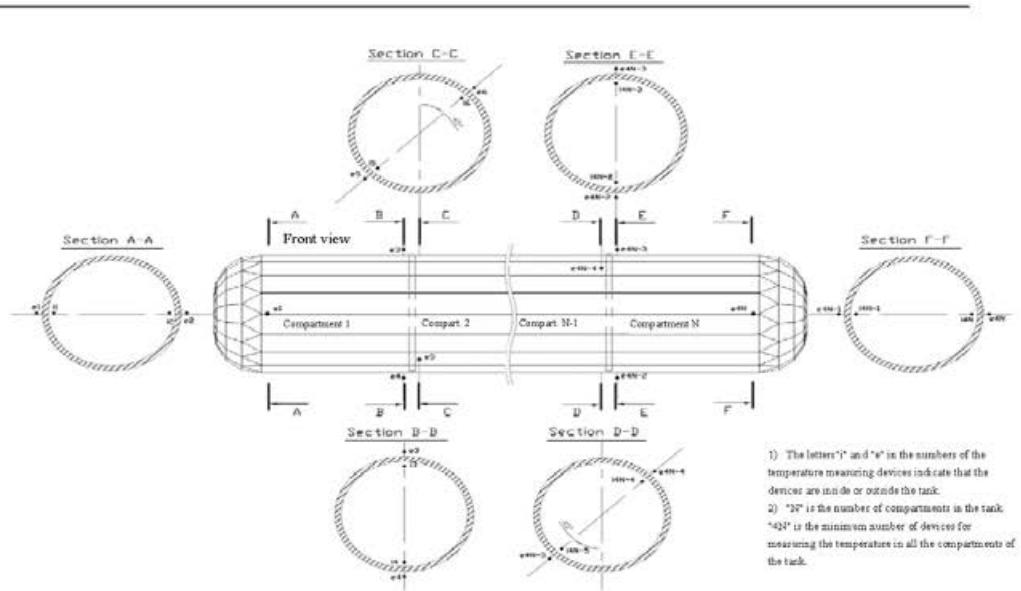


Figure 3 Placement of devices for measuring temperatures inside and outside tanks with three or more compartments.



ATP

as amended on 30 September 2015

The Agreement on the International Carriage of Perishable Foodstuffs and on the Special Equipment to be Used for such Carriage (ATP) done at Geneva on 1 September 1970 entered into force on 21 November 1976.

The Agreement and its annexes have been regularly amended and updated since their entry into force by the Working Party on the Transport of Perishable Foodstuffs (WP.11) of the United Nations Economic Commission for Europe's Inland Transport Committee.

At the time of publishing, the Contracting Parties to ATP are Albania, Andorra, Austria, Azerbaijan, Belarus, Belgium, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Georgia, Germany, Greece, Hungary, Ireland, Italy, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Luxembourg, Monaco, Montenegro, Morocco, Netherlands, Norway, Poland, Portugal, Republic of Moldova, Romania, Russian Federation, Saudi Arabia, Serbia, Slovakia, Slovenia, Spain, Sweden, Tajikistan, The former Yugoslav Republic of Macedonia, Tunisia, Turkey, Ukraine, United Kingdom of Great Britain and Northern Ireland, United States of America, Uzbekistan.

ANNEX III

List of Competent Authorities and Test Stations



United Nations
Economic Commission for Europe



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Country	Authority issuing certificates of compliance		Testing stations		Address to contact
	Road	Railway	Road	Railway	
ALBANIA	Albanian Transport and Infrastructure Ministry, General Politics Department Address: Sheshi Skenderbej Nr.5, Tirana, ALBANIA Tel: +355 4 2380770 Fax: +355 4 2232389 email: Artan.Milaj@transporti.gov.al				Albanian Transport and Infrastructure Ministry, General Politics Department Address: Sheshi Skenderbej Nr.5, Tirana, ALBANIA Tel: +355 4 2380770 Fax: +355 4 2232389 email: Artan.Milaj@transporti.gov.al
ANDORRA	Mr. Ramon Reguant, sousdirecteur Ministère de l'Economie, chargé des Transports Camí de la Grau, s/n Ed. Prat del Rull AD500 ANDORRA LA VELLA Tel. + 376 875 700 Fax: + 376 875 662 E-mail: d.i.t@andorra.ad www.transportpublic.ad				
AUSTRIA	Road/Rail RTA Rail Tec Arsenal Fahrzeugversuchsanlage GmbH Paukerwerkstrasse 3 A-1210 Wien Tel.: +431 256 80810 Fax: +431 256 8081600 Web: www.rta.co.at		Road/Rail RTA Rail Tec Arsenal Fahrzeugversuchsanlage GmbH Paukerwerkstrasse 3 A-1210 Wien Tel: +431 256 80810 Fax: +431 256 8081600 Web: www.rta.co.at		Manfred Kreitmayer, Tel.: + 43 1 256 8081307 Fax: + 431 256 8081600 E mail: manfred.kreitmayer@rta.co.at

Last update: 2 November 2015



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Country	Authority issuing certificates of compliance	Testing stations		Address to contact
Road	Railway	Road	Railway	
AZERBAIJAN	<p>Ministry of Transport of the Republic of Azerbaijan 1054 Tbilisi Avenue, Baku Azerbaijan, AZ 1122 Tel: (+994 12) 430 99 32 Fax: (+994 12) 431 72 66 E-mail: azer.aliyev@mintrans.az Web site: www.mintrans.az</p> <p>State Maritime Administration of the Republic of Azerbaijan 2B Khanlar Street, Baku, Azerbaijan, AZ 1003 Tel: (+994 12) 497 44 05 Fax: (+994 12) 497 44 06 E-mail: info@ardda.gov.az Website: www.ardda.gov.az</p>			<p>Ministry of Transport of the Republic of Azerbaijan 1054 Tbilisi Avenue, Baku Azerbaijan, AZ 1122 Tel: (+994 12) 430 99 32 Fax: (+994 12) 431 72 66 E-mail: azer.aliyev@mintrans.az Web site: www.mintrans.az</p> <p>State Maritime Administration of the Republic of Azerbaijan 2B Khanlar Street, Baku, Azerbaijan, AZ 1003 Tel: (+994 12) 497 44 05 Fax: (+994 12) 497 44 06 E-mail: info@ardda.gov.az Website: www.ardda.gov.az</p>
BELARUS	<p>Belarussian Research Institute of Transport "Transteknika" Ministry of Transport and Communications of the Republic of Belarus</p> <p>Platonova str. 22 220005 Minsk Republic of Belarus</p> <p>Tel. +37517 331 65 46 Tel. +37517 292 45 65 Fax. +37517 292 40 74 E-mail: belniit@open.by E-mail: belniit8@open.by</p>	<p>Minsk Elektromechanical Plant Vologradskaya str. 6 220012 Minsk Republic of Belarus</p> <p>Tel. +37517 267 06 91 Fax. +37517 267 23 22 E-mail: memz@memzplant.com</p>		<p>Ministry of Transport and Communications of the Republic of Belarus</p> <p>Chicherina str. 21 220029 Minsk Republic of Belarus</p> <p>Tel. +37517 259 79 21 Fax. +37517 292 83 91 E-mail: office@mintrans.mtk.by E-mail: uvs@mintrans.mtk.by</p> <p>Belarussian Research Institute of Transport "Transteknika" Ministry of Transport and Communications of the Republic of Belarus Platonova str. 22 220005 Minsk Republic of Belarus</p> <p>Tel. +37517 331 65 46 Tel. +37517 292 45 65 Fax. +37517 292 40 74 E-mail: belniit@open.by E-mail: belniit8@open.by</p>

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Country	Authority issuing certificates of compliance	Testing stations		Address to contact
Road	Railway	Road	Railway	
BELGIUM	Service Public Fédéral Mobilité et Transports Direction générale Transport Routier et Sécurité Routière Direction Certification et Surveillance Rue du Progrès, 56 1210 Bruxelles Tel : (+32) 02/277.39.02 Email : vehicle@mobilit.fgov.be	Belgium has not got its own test station. Belgium recognizes test reports established by test stations officially designated by the competent authorities of Parties to ATP		Service Public Fédéral (SPF) Mobilité et Transports (voir autorité délivrant les attestations de conformité) Institut Belge pour la Sécurité Routière Chaussée de Haecht 1405 B. 1130 Bruxelles Tel.: +32 2 244 15 11 Fax: +32 2 216 43 42 Ministère de la Santé publique et de l'Environnement Inspection des Denrées alimentaires Cité administrative de l'Etat Quartier Vésale B 1010 Bruxelles Tel.: +322 210 48 58 Tx: 25 768 MVGSP F Fax: +322 210 49 67
BOSNIA AND HERZEGOVINA	Competent authority: Ministry of Communications and Transport Trg BiH 1 71000 Sarajevo Tel.: +387 33 284 750 Fax: +387 33 284 751 Email: transport@mkt.gov.ba Internet: www.mkt.gov.ba On behalf of the competent authority and pursuant to the ATP Agreement, the authorised body for the supervision of testing and inspection of vehicles for the transport of perishable foodstuffs is: "CENTAR MOTOR" d.o.o. Obilazna cesta b.b. 88220 Siroki Brijeg Tel.: +387 39 702 950 +387 39 702 951 Fax: +387 39 702 957 Email: info@centar-motor.com Internet: www.centar-motor.com	"TESTING CENTAR" d.o.o. ATP testing station Bisce polje b.b. 88100 Mostar Tel.: +387 36 445 703 Fax: +387 36 445 705 Email: info@testing-centar.com Internet: www.testing-centar.com		Competent authority: Ministry of Communications and Transport Trg BiH 1 71000 Sarajevo Tel.: +387 33 284 750 Fax: +387 33 284 751 Email: transport@mkt.gov.ba Internet: www.mkt.gov.ba On behalf of the competent authority and pursuant to the ATP Agreement, the authorised body for the supervision of testing and inspection of vehicles for the transport of perishable foodstuffs is "CENTAR-MOTOR" d.o.o. Obilazna cesta b.b. 88220 Siroki Brijeg Tel.: +387 39 702 950 +387 39 702 951 Fax: +387 39 702 957 Email: info@centar-motor.com Internet: www.centar-motor.com

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Country	Authority issuing certificates of compliance		Testing stations		Address to contact
	Road	Railway	Road	Railway	
BULGARIA					
	Bulgarian Food Safety Agency "Pencho Slaveykov" Blvd 15A 1606 Sofia Tel: +359 2 915 98 20 Fax: +359 2 954 95 93 E-mail: bfsa@bfsa.bg				Bulgarian Food Safety Agency "Pencho Slaveykov" Blvd 15A 1606 Sofia Tel: +359 2 915 98 20 Fax: +359 2 954 95 93 E-mail: bfsa@bfsa.bg
CROATIA (updated 5 February 2014)	Competent authority: Ministry of Maritime Affairs, Transport and Infrastructure Prisaavlje 14 10 000 Zagreb Tel: +385 01 6169 417 Fax: +385 01 6195 941 Internet: http://www.mppi.hr/ On behalf of the competent authority the certificates will be issued by the following officially authorised body: Center for Vehicles of Croatia Capraška 6 10 000 Zagreb Tel: +385 01 4833 444 Fax: +385 01 4833 610 Internet: http://www.cvh.hr/		Center for Vehicles of Croatia Vehicle Testing Department Sisačka 39c 10 410 Velika Gorica Tel: +385 01 6379 200 Fax: +385 01 6379 233 Internet: http://www.cvh.hr/		- Ministry of Maritime Affairs, Transport and Infrastructure Prisaavlje 14 10 000 Zagreb Tel: +385 01 6169 417 Fax: +385 01 6195 941 E-mail: yjekoslav.bolanca@mppi.hr Center for Vehicle of Croatia Vehicle Testing Department Tel: +385 01 6379 200 Fax: +385 01 6379 233 E-mail: cvh@cvh.hr

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ROAD - RAIL - URBAN TRANSPORT



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Country	Authority issuing certificates of compliance	Testing stations		Address to contact
Road	Railway	Road	Railway	
CZECH REPUBLIC	Ministry of Transport nábr. L. Svobody 12 CZ-11015 Prague 1 Tel.: +420 22 51 31 271 Fax: +420 22 51 31 117 Email: lubos.rajdl@mdcr.cz	INGERSOLL – RAND Equipment Manufacturing Czech Republic s.r.o. Engineering and Technology Centre Prague Florianova 2460 253 01 Hostivice Tel.: +420 257 109 111 Fax: +420 251 562 187 Email: info@irc.cz The Czech Republic has not got its own test station for railways. The certificate is issued by the Ministry of Transport on the basis of tests realized in test stations of Contracting Parties to the ATP.		Ministry of Transport nábr. L. Svobody 12 CZ-11015 Prague Tel.: +420 22 51 31 271 Fax: +420 22 51 31 117 INGERSOLL – RAND Czech Republic s.r.o. Institut de recherché sur les techniques de réfrigération - Prague Florianova 2460 253 01 Hostivice Tel.: +420 257 109 111 Fax: +420 251 562 187 Web: www.ingersoll-rand.cz
DENMARK	ATP-materielkontrollen Maglegaardsvej 2 DK-4000 Roskilde Tel.: +45 7220 2950 Fax: +45 7220 2745 E-mail: ATP@TEKNOLOGISK.DK	"ATP-materielkontrollen" functions as Denmark's testing laboratory only at the administrative level. On the basis of test reports from ATP testing laboratories abroad, "ATP-materielkontrol" issues ATP type approvals		For <u>any problems</u> concerning the practical approval of ATP equipment please contact "ATP-materielkontrollen" Maglegaardsvej 2 DK-4000 Roskilde Tel.: +45 7220 2950 Fax: +45 7220 2745 E-mail: ATP@TEKNOLOGISK.DK <u>Other problems</u> please contact: Danish Veterinary and Food Administration Moerkhoej Bygade 19 DK-2860 Soeborg Tel. +45 72 27 65 00 Fax +45 72 27 65 01 Email fvst@fvst.dk

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Country	Authority issuing certificates of compliance		Testing stations		Address to contact
	Road	Railway	Road	Railway	
ESTONIA	Technical Department Type Approval and Certification Division Estonian Road Administration Pärnu mnt 463a 10916 Tallinn Tel: + 372 636 1132; Fax: + 372 636 1133 www.mnt.ee		OÜ EUROSERT Ülenurme vald Soinaste küla 61701 TARTUMAA Estonia Tel.: +372 51 55 628 Fax: +372 73 62 310 http://www.eurosert.ee/en/ ATP SERT Ltd Rae vald Sinikivi tee 1, Lehmja küla 75310 HARJUMAA Estonia Tel.: +372 60 04 901 Fax.: +372 66 04 916 e-mail: atp@atpsert.ee		
FINLAND	Natural Resources Institute Finland Measurement and Standardization Vakolantie 55 FI - 03400 Vihti, Finland Tel. +358 29 532 6000 Internet: www.luke.fi/en/ NOTE : Competent authority in Finland (but not issuing certificates) Elintarviketurvallisuusvirasto Evira (Finnish Food Safety Authority Evira) Control Department/Product Safety Unit Mustialankatu 3, FI - 00790 Helsinki, Finland Tel. +358 20 7724 244 Fax. +358 20 7724 277 E-mail: Internet: www.evira.fi		Natural Resources Institute Finland Measurement and Standardization Vakolantie 55 FI - 03400 Vihti, Finland Tel. +358 29 532 6000 Internet: www.luke.fi/en/ Elintarviketurvallisuusvirasto Evira (Finnish Food Safety Authority Evira) Control Department/Product Safety Unit Mustialankatu 3, FI - 00790 Helsinki, Finland Tel. +358 20 7724 244 Fax. +358 20 7724 277 E-mail: Internet: www.evira.fi		Testing and certificates: Natural Resources Institute Finland Measurement and Standardization Vakolantie 55 FI - 03400 Vihti, Finland Tel. +358 29 532 6000 E-mail: atp-todistukset@luke.fi (certificates) Email: atp-testaus@luke.fi (testing) Internet: www.luke.fi/en/ Hygiene questions etc: Elintarviketurvallisuusvirasto Evira (Finnish Food Safety Authority Evira) Control Department/Product Safety Unit Mustialankatu 3, FI - 00790 Helsinki, Finland Tel. +358 20 7724 244 Fax. +358 20 7724 277 E-mail: Internet: www.evira.fi

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Country	Authority issuing certificates of compliance	Testing stations		Address to contact
Road	Railway	Road	Railway	
FRANCE	<p>Cemafroid SAS 5, avenue des Prés CS 20 029 F-94266 FRESNES cedex</p> <p>Tel.: +33 1 49 84 84 84 Fax: +33 1 46 89 28 79 E-mail: thomas.suquet@cemafroid.fr www.cemafroid.fr</p> <p>Par délégation du Ministère de l'agriculture, de l'agroalimentaire et de la forêt Direction générale de l'alimentation Service de l'alimentation Sous-direction de la sécurité sanitaire des aliments</p> <p>251, rue de Vaugirard F-75732 Paris cedex 15</p> <p>Tel.: +33 1 49 55 84 21 Fax: +33 1 49 55 56 80 E-mail: betd.sdssa.deal@agriculture.gouv.fr</p>	<p><u>Road and container railway</u></p> <p>Cemafroid SAS: www.cemafroid.fr</p> <p>◆ Station d'essais d'engins de transport sous température dirigée (groupes-camions-conteneurs) 5, avenue des Prés CS 20 029 F-94266 FRESNES cedex</p> <p>Tel.: +33 1 49 84 84 84 Fax: +33 1 46 89 28 79 E-mail: thomas.suquet@cemafroid.fr</p> <p>◆ Station d'essais d'engins de transport sous température dirigée (wagons- citernes-camions-conteneurs) 50 avenue de Verdun 33612 Cestas cedex</p> <p>Tel.: +33 5 56 07 40 00 Fax: +33 5 56 04 89 52 E-mail: nicolas.boudet@cemafroid.fr</p>	<p>Cemafroid SAS 5, avenue des Prés CS 20 029 F-94266 FRESNES cedex</p> <p>Tel.: +33 1 49 84 84 84 (standard) Tel.: +33 1 49 84 84 76 (secretariat) Fax: +33 1 46 89 28 79</p> <p>E-mail: thomas.suquet@cemafroid.fr www.cemafroid.fr</p>	
GEORGIA	INFORMATION REQUESTED			

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Country	Authority issuing certificates of compliance	Testing stations		Address to contact
Road	Railway	Road	Railway	
GERMANY				
	<u>Railway, Road and Container</u>	<u>Road and Container and Railways</u>		
	The certificate will be issued by the following competent testing stations:			
	TÜV SÜD Industrie Service ATP-INCERT-Station Ridlerstrasse 57 80339 MUNICH Tel.: +49 89 5190-3167 Fax: +49 89 5155-1071 E-Mail: atp-cert@tuev-sued.de	TÜV SÜD Industrie Service ATP-Test-Station Ridlerstrasse 57 80339 MUNICH Tel.: +49 89 5190-3140 Fax: +49 89 5155-1071 E-Mail: atp-pruefstelle@tuev-sued.de		Bundesministerium für Verkehr und digitale Infrastruktur (BMVI) Referat G 22 Invalidenstr. 44 10115 Berlin Germany Tel: +49 30 18300-2632 Fax: +49 30 18300-1922
	DNV GL SE ATP Certification Brooktorkai 18 D 20457 Hamburg Germany Tel.: + (49- 40) 36149- 8635 Fax: + (49- 40) 36149 1818 Email: atp@dnvgl.com	DNV GL SE ATP Certification Brooktorkai 18 D 20457 Hamburg Germany Tel.: + (49- 40) 36149- 8635 Fax: + (49- 40) 36149 1818 Email: atp@dnvgl.com		
	KISC KÄLTE-Information-Solution-Consulting Schrempf + Kreß Partnerschaft Dr.-Seitz-Straße 11b 82418 Murau Tel.: +49 8841 40259 Fax: +49 3222 98013333 E-Mail: ATP@KISCnet.com	EDAG Engineering + Design AG Reesbergstraße 1 36039 Fulda Tel.: +49 661 6000-101 Fax: +49 661 6000-223 E-Mail: info@edag.de		
		KISC KÄLTE-Information-Solution-Consulting Schrempf + Kreß Partnerschaft Dr.-Seitz-Straße 11b 82418 Murau Tel.: +49 8841 40259 Fax: +49 3222 98013333 E-Mail: ATP@KISCnet.com		

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Country	Authority issuing certificates of compliance		Testing stations		Address to contact
	Road	Railway	Road	Railway	
GREECE	<p><u>Authority for the issuance of 6 and 3 year duration ATP certificates:</u></p> <p>National Technical University of Athens Mechanical Engineering Department Thermal Section Dr. -Ing. Sotiris Chatzidakis ATP Testing Laboratory a. Test station Zografou University Campus b. Test station Lavrion Technological Park 9 Heroon Polytechniou Str. GR-15780 ATHENS NTUA Zografou Campus</p> <p>Tel.: +30 210 772 3742 Fax: +30 210 772 3676 E-mail: atplabor@central.ntua.gr</p> <p><u>Authority exclusively for the issuance of 3 year duration ATP certificates:</u></p> <p>Aristotle University of Thessaloniki Polytechnical School Department of Chemical Engineering Laboratory of General Chemical Technology 540 06 Thessaloniki</p> <p>Tel: +30 2310 996177 Fax: +30 2310 996177 E-mail: mlulas@eng.auth.gr</p>		<p>National Technical University of Athens Mechanical Engineering Department Thermal Section Dr. -Ing. Sotiris Chatzidakis</p> <p>ATP Testing Laboratory a. Test station Zografou University Campus b. Test station Lavrion Technological Park</p> <p>9 Heroon Polytechniou Str. GR-15780 ATHENS NTUA Zografou Campus</p> <p>Tel.: +30 210 772 3742 Fax: +30 210 772 3676 E-mail: atplabor@central.ntua.gr</p>		<p>Hellenic Ministry of Economy, Infrastructure, Maritime Affairs and Tourism General Division of Road Safety Division of Road Traffic and Safety Department of Road Safety of Transport of Dangerous Goods and Perishable Foods</p> <p>Anastaseos 2 & Tsigante 101 91 Papagou Greece Tel: +30 210 6508 123 Tel: +30 210 6508 513 Tel: +30 210 6508 514 Fax: +30 210 6508 493</p> <p>Emails: c.evangelatou@yme.gov.gr j.achladianakis@yme.gov.gr a.letros@yme.gov.gr</p>
HUNGARY	<p>Közlekedési Főfelügyelet (General Inspection of Transport) H-1067 Budapest, Teréz körút 96</p>		<p>MÁV Északi Vontatási Főnökség ATP mérőállomás (Hungarian Railways North Hauling Directorate ATP Testing Station) H- 1045 Budapest, Elem utca 5-7</p>		<p>Ministry of Economy and Transport, Railway Department H-1400 BUDAPEST, Dob. u. 75-81</p> <p>Tel.: +36 1 322 94 47 Fax: +36 1 322 34 29</p>

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Country Authority issuing certificates of compliance		Testing stations		Address to contact
Road	Railway	Road	Railway	
<p>IRELAND</p> <p>Applications for the testing, examination and certification of equipment to be used in the international carriage of perishable foodstuffs should, in the first instance, be addressed to: NSAI (National Safety Authority of Ireland) Glasnevin Dublin 9 Tel.: +1 807 3800 Fax: +1 807 3838</p>		<p>CRT (Cambridge Refrigeration Technology) 140 Newmarket Road Cambridge CB5 8HE United Kingdom Tel.: +44 1 223 365101 Fax: +44 1 223 461522 is an approved testing station for the purposes of ATP</p> <p>Test reports are forwarded to NSAI to arrange for the issue of certificates of compliance or certification plates where the equipment complies with ATP.</p>		<p>NSAI (National Safety Authority of Ireland) Glasnevin Dublin 9 Tel.: +1 807 3800 Fax: +1 807 3838</p>
<p>ITALY</p> <p>Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Direzione Generale per la Motorizzazione – Div 2 Via Giuseppe Caraci, 36 I-00157 Roma (Italy) Tel.: +39 06 415 8 6164 Fax: +39 06 415 8 6165</p> <p>Directeur: Dott. Ing. Vito di Santo</p>		<p>Veicoli Stradali Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Superiore Ricerche e Prove Autoveicoli e Dispositivi Via di Settebagni 333 00138 ROMA Tel.: +39 06-872881 Fax: +39 0687133903</p>		(See those indicated)
		<p>Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Prove Autoveicoli di Milano Via Marco Ulpio Traiano, 40 20149 MILANO Tel.: +39 023271246 Fax: +39 0239210023</p>		
		<p>Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Prove Autoveicoli di Verona Strada della Genovese 29 37135 VERONA Tel.: +39 045-8550572 Fax: +39 0458550471</p>		

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Country	Authority issuing certificates of compliance	Testing stations		Address to contact
		Road	Railway	
ITALY (cont'd)		Road	Railway	
		Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Prove Autoveicoli di Verona Sede di Codroipo Via Beano 33033 CODROIPO (UD) Tel.: +39 0432905616 /0458550541 Fax: +39 0458550471 (Verona)		
		Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Prove Autoveicoli di Bologna Sede di Forli-Cesena Piazzale G. Agnelli, 100 47020 PIEVESESTINA (FO) Tel.: +39 0547313112 Fax: +39 0547317812		
		Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Prove Autoveicoli di Pescara Via Fonte Vecchia,3 65010 VILLA RASPA DI SPOLTORE(PE) Tel.: +39 085-417701 Fax: +39 085-4177060		
		Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Prove Autoveicoli di Napoli Contra Silicelle 80021 AFRAGOLA (NA) Tel.: +39 081-8604611 Fax: +39 0818527419		
		Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Prove Autoveicoli di Bari Strada Prov. Modugno-Palese-Zona Ind. 70123 BARI Tel.: +39 080-5312772 Fax: +39 080-5312779		

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Country	Authority issuing certificates of compliance		Testing stations		Address to contact
	Road	Railway	Road	Railway	
ITALY (cont'd)			Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Prove Autoveicoli di Catania SS 114 Promosole, 33 95121 CATANIA Tel.: +39 095592547 Fax: +39 09571390093		
			Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri C.S.R.P.A.D. di Roma Strada Stalate 554 km 1,600 09125 CAGLIARI (CA) Tel.: +39 070 240 195/ 070 240 198 Fax: +39 070 240 998		
			Ministero delle Infrastrutture e dei Trasporti Dipartimento dei Trasporti Terrestri Centro Prove Autoveicoli di Torino Strada Cerosa, 27 1036 SETTIMO TORINESE Tel.: +39 011 8953992 Fax: +39 011 8982232		
			CNR-ITC Cede di Padova Stazione di Prova ATP Corso Stati Uniti 4 35127 PADOVA Tel.: +39 049-829 5734 Fax: +39 049 829 5728		
			C.S.I. S.p.a. Viale Lombardia 20 20021 BOLLATE (MI) Tel.: +39 02-3883301 Fax: +39 02-3503940		

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Country	Authority issuing certificates of compliance	Testing stations		Address to contact
Road	Railway	Road	Railway	
ITALY (cont'd)		RFI S.p.A. Istituto Sperimentale Via di Portonaccio, 175 00159 ROMA Tel: +39 06-43263502 Fax: +39 06-43263265 E-mail: g.florio@rfi.it lsallusti@rfi.it		
KAZAKHSTAN	INFORMATION REQUESTED			
KYRGYZSTAN	INFORMATION REQUESTED			
LATVIA	Inspectorate of Latvian Centre of Control and Certification of Vehicles Aleksandra Grina bulvaris 13-7 LV-1002 Riga Tel.: + 371 925 2423	Inspectorate of Latvian Centre of Control and Certification of Vehicles Kisezera 7 LV-1026 Riga Tel./Fax: +371 75 17150 E-mail: lalsc@delfi.lv Web: www.lalsc.lv		Julijs Vaituzs Deputy Director of Department of Road Transport Ministry of Transport of the Republic of Latvia Tel.: +371 702 8302 Fax: + 371 702 8304 Email: Vaituzs@sam.gov.lv
LITHUANIAN REPUBLIC	State Road Transport Inspectorate at the Ministry of Transport and Communications Švitrigailos str. 42/31 LT-2600 Vilnius Tel.: +370 5 278 56 02 Fax: +370 5 213 22 70 Email: vkti@vkti.lt	State Machines Testing Station Neries str. 4 Domeikava LT-4302 Kaunas District Tel.: +370 37 47 73 20 +370 37 47 72 58 Fax: +370 37 47 72 15 Email: violskri@takas.lt		

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Country	Authority issuing certificates of compliance		Testing stations		Address to contact
	Road	Railway	Road	Railway	
LUXEMBOURG	Société nationale de Contrôle technique, SARL, B.P. 23 L-5201 Sandweiler		Luxembourg does not currently have any officially recognized stations. ATP certificates are issued on the basis of reports prepared by recognized testing stations in one of the State Parties to ATP.		Société Nationale de Contrôle Technique, SARL, B.P. 23 L-5201 Sandweiler
MOLDOVA	National Agency for Road Transport Republic of Moldova, MD 2068 Chisinau, str. Alecu Russo 1 Tel: 00 373 22 498 810 Fax: 00 373 22 220 567 E-mail: anta@anta.gov.md				National Agency for Road Transport Republic of Moldova, MD 2068 Chisinau, str. Alecu Russo 1 Tel: 00 373 22 498 810 Fax: 00 373 22 220 567 E-mail: anta@anta.gov.md
MONACO	INFORMATION NOT YET COMMUNICATED				
MONTENEGRO	INFORMATION REQUESTED				
MOROCCO	Ministère de l'agriculture rue Ahmed Cherkaoui, Agdal Rabat Maroc Tel.: +212 (37) 68 13 66 Email: soumia.elhajji@yahoo.fr				Ministère de l'agriculture rue Ahmed Cherkaoui, Agdal Rabat Maroc Tel.: +212 (37) 68 13 66 Email: soumia.elhajji@yahoo.fr

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Country	Authority issuing certificates of compliance		Testing stations		Address to contact
	Road	Railway	Road	Railway	
NETHERLANDS	RDW Vehicle Approval and Information Vehicle Approval Division Europaweg 205 Zoetermeer P.O. box 777 2700 AT Zoetermeer Tel.: +31 598 393 330 (switchboard)		Wageningen UR Food & Biobased Research Bornse Weiden 9 6708 WG Wageningen Tel.: +31 317 480 084 (switchboard) Tel.: +31 317 480 960 (direct) Fax: +31 317 483 011 http://www.wageningenur.nl/en/show/ATP-test-facility-for-temperature-controlled-transport.htm		RDW Vehicle Approval and Information Vehicle Technology Division P.O. Box 777 2700 AT Zoetermeer Tel.: +31 79 345 83 02 Tel.: +31 79 345 80 93 (direct) L.looijesteijn@rdw.nl Wageningen UR Food & Biobased Research P.O. Box 17 6700 AA Wageningen Tel.: +31 317 480 084 (switchboard) Tel.: +31 317 480 960 (direct) Fax: +31 317 483 011 edo.wissink@wur.nl
			NORWAY Norwegian Food Control Authority Head office P.O. Box 383 N-2381 Brumunddal Norway Tel.: +47 23 21 68 00 E-mail: postmottak@mattilsynet.no Internet: www.mattilsynet.no		

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Country Authority issuing certificates of compliance		Testing stations		Address to contact
Road	Railway	Road	Railway	
POLAND Ministry of Infrastructure and Development Department of Road Transport 4/6 Chalubinskiego St. PL-00-928 Warsaw Tel.: +48 22 630 12 40 Fax: +48 22 630 12 02 E-mail: sekretariatD2TD@mjr.gov.pl		Refrigeration Center "COCH" in Cracow PL-30-133 Krakow 116 Juliusza Lea St. Tel.: +48 12 637 09 33 Fax: +48 12 637 37 24 Poznan University of Technology Institute of Machines and Motor Vehicles PL -60-965 Poznan, 3 Piotrowo St. Tel.: +48 61 66 52 236 Fax: +48 61 66 52 736		Mr. J. SCHNOTALE Refrigeration Center "COCH" PL-30-133 Krakow 116 Juliusza Lea St. Tel.: +48.60 68 06.268 Fax: +48.12.637.37.24 E-mail: pwschnot@cyf-kr.edu.pl Mr. Krzysztof BIENCZAK Expert in ATP University of Technology Piotrowo Street 3 PL-60 965 POZNAN Tel.: +48 61 647 58 88 Fax: +48 61 647 58 89 E-mail: krzysztof.bienczak@put.poznan.pl
PORTUGAL ISQ – LABET Zona Industrial de Castelo Branco Apartado 1112 P-6000-997 CASTELO BRANCO Tel. +(351) 272 322 336 Fax +(351) 272 322 335		PORTUGAL ISQ – LABET Zona Industrial de Castelo Branco Apartado 1112 P-6000-997 CASTELO BRANCO Tel. +(351) 272 322 336 Fax +(351) 272 322 335		Telmo Nobre E-mail: tnobre@isq.pt Vasco Pires E-mail: vmpires@isq.pt ISQ – LABET Zona Industrial de Castelo Branco Apartado 1112 P-6000-997 CASTELO BRANCO Tel. +(351) 272 322 336 Fax +(351) 272 322 335

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Country	Authority issuing certificates of compliance	Testing stations		Address to contact
Road	Railway	Road	Railway	
ROMANIA	<p>Competent authority: Ministry of Transport Dinicu Golescu Blvd, 38, district 1 Code 010873 Bucharest Tel: +40 (021) 315 48 43 Fax: +40 (021) 313 99 54 Website: www.mt.ro</p> <p>The certificates for road vehicles will be issued by the:</p> <p>Registrul Auto Român (R.A.R. – Romanian Automobile Register) Calea Griviței No 391 A, district 1 Code 010719 Bucharest</p> <p>Tel: +4021 318 17 30 Fax: +4021 318 17 54 Website: www.rarom.ro</p>	<p>Romania has not got its own test station. Romania recognises test reports issued by test stations officially designated by the competent authorities of ATP contracting parties.</p>		<p>Ministry of Transport Dinicu Golescu Blvd, 38, district 1 Code 010873 Bucharest Tel: +40 (021) 315 48 43 Fax: +40 (021) 313 99 54 Website: www.mt.ro</p> <p>Registrul Auto Român (R.A.R. – Romanian Automobile Register) Calea Griviței No 391 A, district 1 Code 010719 Bucharest</p> <p>Tel: +4021 318 17 30 Fax: +4021 318 17 54 Website: www.rarom.ro</p>
RUSSIAN FEDERATION	<p>Ministry of Transport of the Russian Federation</p> <p>Address: 109012, Moscow, Rozhdestvenka St., 1, building 1 Teletype: 111879 "Lotus" Phone: +7 (495) 626-1000 Fax: +7 (495) 626-9128, +7 (495) 626-9038 Telegraph: AT/TX 207512 CSSC RU E-Mail: info@mintrans.ru Web: http://mintrans.ru</p> <p>Certificates of conformity are issued FOR ROAD TRANSPORT by the Federal State Institution "Agency of automobile transport" (FSI "Rosavtotrans") Ministry of Transport of the Russian Federation</p> <p>Address: 125480, Moscow, Geroev Panfilovtsev St., 24 Phone: +7 (495) 496-85-83. +7 (495) 496-85-92 E-Mail: info@rosavtotransport.ru Web: http://rosavtotransport.ru/</p>	<p>FOR ROAD TRANSPORT</p> <p>Limited liability company «TERMOGARANT» LLC «TERMOGARANT»</p> <p>First Leninskaya St., 76a village Gubino, Orekhovo-Zuevsky borough, 142635, Russia, Moscow region</p> <p>Phone: +7 (903)2057120 E-Mail: termogaran-atp@mail.ru</p>		<p>Ministry of Transport of the Russian Federation</p> <p>Address: 109012, Moscow, Rozhdestvenka St., 1, building 1 Teletype: 111879 "Lotus" Phone: +7 (495) 626-1000 Fax: +7 (495) 626-9128, +7 (495) 626-9038 Telegraph: AT/TX 207512 CSSC RU E-Mail: info@mintrans.ru Web: http://mintrans.ru</p> <p>Federal State Institution "Agency of automobile transport" (FSI "Rosavtotrans") Ministry of Transport of the Russian Federation</p> <p>Address: 125480, Moscow, Geroev Panfilovtsev St., 24 Phone: +7 (495) 496-85-83. +7 (495) 496-85-92 E-Mail: info@rosavtotransport.ru Web: http://rosavtotransport.ru/</p>

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Country	Authority issuing certificates of compliance		Testing stations		Address to contact
	Road	Railway	Road	Railway	
SERBIA	<p>Minister of Construction, Transportation and Infrastructure Nemanjina 11 11000 Belgrade</p> <p>Tel.: +381 11 361-9833 Fax: +381 11 361-7632 Internet: www.mic.gov.rs</p> <p>On behalf of the competent authority, the certificates will be issued by the following officially authorized body:</p> <p>University of Belgrade Faculty of Mechanical Engineering CIAH Laboratory Kraljice Marije 16 11120 Belgrade Tel.: +381 11 330-2487 Fax: +381 11 337-0854 e-mail: vpopovic@mas.bg.ac.rs Internet: http://ciah.mas.bg.ac.rs/</p>		<p>University of Belgrade Faculty of Mechanical Engineering CIAH Laboratory Kraljice Marije 16 11120 Belgrade Tel.: +381 11 330-2487 Fax: +381 11 337-0854 e-mail: vpopovic@mas.bg.ac.rs Internet: http://ciah.mas.bg.ac.rs/</p>		<p>Minister of Construction, Transportation and Infrastructure Nemanjina 22-26 11000 Belgrade Tel.: +381 11 361-9833 Fax: +381 11 371-7632 Internet: www.mgsi.gov.rs</p> <p>University of Belgrade Faculty of Mechanical Engineering CIAH Laboratory Kraljice Marije 16 11120 Belgrade Tel.: +381 11 330-2487 Fax: +381 11 337-0854 e-mail: vpopovic@mas.bg.ac.rs Internet: http://ciah.mas.bg.ac.rs/</p>
SLOVAKIA	<p>Ministry of Transport, Posts and Telecommunications</p> <p>P.O. Box 100 Nam. Slobody 6 SK - 810 05 Bratislava</p> <p>Tel.: +421 2 594 94 716 Fax: +421 2 524 42 202</p> <p>Email: stefan.sabanos@telecom.gov.sk</p>		<p>TECHNICKY SKUSOBNY USTAV PIESTANY TSU PIESTANY</p> <p>Krajinska cesta 2929/9 921 01 PIESTANY Slovak Republic</p> <p>Tel.: +421 33 7957 202 Fax: +421 33 7957 235 Email: atp@tsu.sk</p> <p>Slovak Republic has not got its own test stations for railway transport.</p>		<p>Ministry of Transport, Posts and Telecommunications P.O. Box 100 Nam. Slobody 6 SK - 810 05 Bratislava</p> <p>Tel.: +421 2 594 94 716 Fax: +421 2 524 42 202</p> <p>E-mail: stefan.sabanos@telecom.gov.sk</p> <p>TSU PIESTANY Krajinska cesta 2929/9 921 01 PIESTANY Slovak Republic Tel.: +421 33 7957 202 Fax: +421 33 7957 235 Email: atp@tsu.sk</p>

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Country	Authority issuing certificates of compliance	Testing stations		Address to contact
Road	Railway	Road	Railway	
SLOVENIA	Javna agencija Republike Slovenije za varnost prometa (Slovenian Traffic Safety Agency) Kotnikova 19a 1000 Ljubljana Republic of Slovenia Tel: + 386 1 400 84 30 Fax: + 386 1 400 84 17 E-mail: info@avp-rs.si Homepage: www.avp.gov.si	LOTRIČ d.o.o Selca 163 4277 Selca Republic of Slovenia Tel: + 386 4 51 70 700 Fax: + 386 4 51 70 707 E-mail: info@lotric.si Homepage: www.lotric.si		Javna agencija Republike Slovenije za varnost prometa (Slovenian Traffic Safety Agency) Kotnikova 19a 1000 Ljubljana Republic of Slovenia Tel: + 386 1 400 84 30 Fax: + 386 1 400 84 17 E-mail: info@avp-rs.si Homepage: www.avp.gov.si LOTRIČ d.o.o Selca 163 4277 Selca Republic of Slovenia Tel: + 386 4 51 70 700 Fax: + 386 4 51 70 707 E-mail: info@lotric.si Homepage: www.lotric.si

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Country		Authority issuing certificates of compliance		Testing stations		Address to contact	
Road	Railway	Road	Railway				
SPAIN		For testing approvals Túnel de Frio del Ministerio de Industria, Turismo y Comercio. Carretera de Andalucía km 15,700 28906 GETAFE (Madrid) Tel.: +34 91 691 82 03 emunoz@etsii.upm.es tuneldefrio@hotmail.com		Ministerio de Fomento Secretaría de la Comisión para la Coordinación del Transporte de Mercancías Perecederas Despacho A-674.1 Paseo de la Castellana, 67 28071 MADRID Tel.: +34 91 597 75 87 Fax.: +34 91 597 50 27 E-mail: mosquera@fomento.es			
Other Authorized bodies: <ul style="list-style-type: none"> • ATISAE • INTECA • INGEIN • APPLUS-NORCONTROL • SGS TECNOS • EUROCONTROL S.A. • SOCOTEC IBERIA • CONCERTI, S.L. • ECA - BUREAU VERITAS • TÜV NORD - ACISA - CUALICONTROL • LABCER • MARSANS INGERIEROS, S.L. • TÜV RHEINLAND - ICICT 		Túnel del Frio de Linares. Avenida Primero de Mayo, s/n PARQUE EMPRESARIAL LINAREJOS 23700 LINARES, JAÉN - SPAIN. Tel: +34 95 364 94 20 E-mail: martadelara@cetemct.es E-mail: corporativo@cetemct.es					

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Country Authority issuing certificates of compliance		Testing stations		Address to contact
Road	Railway	Road	Railway	
<p>SWEDEN</p> <p>AB Svensk Bilprovning Daniel Bengtsson Besiktningssingenjör Kastellg. 3 SE 254 66 Helsingborg Tel.dir: +4610 702 00 85 SMS/MMS: +4670-0020367 Tel switchboard: +4610-702 00 00 E-post: daniel.bengtsson@bilprovingen.se</p> <p>Internet : www.bilprovingen.se</p>		<p>SP Technical Research Institute of Sweden Energy Technology Geron Johansson Box 857 S-501 15 Borås Sweden</p> <p>Tel.: +46 (0) 10 516 50 00 (switchboard) +46 (0) 10 516 55 10 (direct line) Fax: +46 (0) 33 13 19 79</p> <p>E-mail: geron.johansson@sp.se Internet: www.sp.se</p> <p>AB Svensk Bilprovning Daniel Bengtsson Besiktningssingenjör Kastellg. 3 SE 254 66 Helsingborg Tel.dir: +4610 702 00 85 SMS/MMS: +4670-0020367 Tel switchboard: +4610-702 00 00 E-post: daniel.bengtsson@bilprovingen.se</p>		<p>AB Svensk Bilprovning Att.: Patrick Jonsson Tekniskt ansvarig besiktningssingenjör Hjalmar Petris väg 26 SE 352 46 Växjö</p> <p>Tel: +4610 7028738 Mobile: +4676 8033403 fax: +4610 7028731 E-post: patrick.jonsson@bilprovingen.se</p> <p>Swedish Food Agency (Livsmedelsverket) P.O. Box 622 SE 751 26 Tel +4618 175500 (switchboard) E-mail: livsmedelsverket@livsmedelsverket.se</p>
TAJIKISTAN INFORMATION REQUESTED				
THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA				<p>Ms. Julijana Jankulovska Transport Division, Ministry of Transport and Communications St. Crvena Skopska Opstina No. 4, 1000 Skopje Republic of Macedonia Tel: +389 (0)2 314 58 40 + 389 (0)71 237 308 E-mail: julijana.jankulovska@mtc.gov.mk</p>

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Country	Authority issuing certificates of compliance		Testing stations		Address to contact
	Road	Railway	Road	Railway	
TUNISIA	INFORMATION REQUESTED				
TURKEY	Ministry of Transport, Maritime Affairs and Communications Directorate General for Dangerous Goods and Combined Transport Gazi Mustafa Kemal Bulvari, No. 128/A, 06570, Maltepe-Ankara Tel: +90312 203 22 91 Fax: +90312 231 51 89 Web: www.tnkt.gov.tr		Testing stations are to be determined.		Ministry of Transport, Maritime Affairs and Communications Directorate General for Dangerous Goods and Combined Transport Gazi Mustafa Kemal Bulvari, No. 128/A, 06570, Maltepe-Ankara Tel: +90312 203 10 00-3945 Fax: +90312 231 51 89 Email: bsuloglu@udtb.gov.tr
UKRAINE	Competent authority - Ministry of Infrastructure 14 Peremohy Avenue, KYIV, 03113 Tel: +380 44 4616528 Fax: +380 44 4863625 Web: www.mintrans.gov.ua Working department (road transport) - State Road Transport Research Institute 57 Peremohy Avenue, KYIV, 03113 Tel: +380 44 4563030 Fax: +380 44 4556791 Web: www.insat.org.ua		Testing stations are still to be determined.		Ministry of Infrastructure 14 Peremohy Avenue, KYIV, 03113 Tel: +380 44 4616528 Fax: +380 44 4863625 e-mail: reiter@mtu.gov.ua State Road Transport Research Institute (road transport) 57 Peremohy Avenue, KYIV, 03113 Tel./fax: +380 44 2010838 e-mail: info@insat.org.ua ; agorpinuk@insat.org.ua
UNITED KINGDOM	Cambridge Refrigeration Technology 140 Newmarket Road Cambridge CB5 8HE Tel.: +44 1 223 365101 Fax: +44 1 223 461522 http://www.crtech.co.uk		The Refrigerated Vehicle Test Centre (RV TC) 140 Newmarket Road Cambridge CB5 8HE Tel.: +44 1 223 365101 Fax: +44 1 223 461522		G N CUMMING VOSA Unit 8, Woodlands Court Ashridge Road Almondsbury Business Park Bristol BS32 4LB Office + 44 (0) 1454 453379 Fax: + 44 (0) 1454 453394

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Country Authority issuing certificates of compliance		Testing stations		Address to contact
Road	Railway	Road	Railway	
UNITED STATES OF AMERICA ATP Manager U.S. Department of Agriculture Agriculture Marketing Service Transportation and Marketing Program Transportation Services Division 1400 Independence Ave SW 4534-S Washington, DC 20250-0266 Tel.: +1 202 720 0035 Fax: +1 202 690 2451 E-mail: brian.mcgregor@ams.usda.gov		Road + Containers Great Dane Trailers, Inc. P.O. Box 67 Savannah, Georgia 31402-0067 USA Tel.: +1 912 644-2100 Fax: +1 912 644-2166 E-mail: customer_service@greatdanetrailers.com		
UZBEKISTAN INFORMATION REQUESTED				

Other useful address:

International Institute of Refrigeration (IIR)
 177, Bd Malesherbes
 F-75017 PARIS
 (France)
 Tel.: +33 1 42 27 32 35
 Fax: +33 1 47 63 17 98, <http://www.iifiir.org/>