

**Economic and Social Council**

Distr.: General
8 July 2014
English
Original: Russian

Economic Commission for Europe**Inland Transport Committee****Working Party on the Transport of Perishable Foodstuffs****Seventieth session**

Geneva, 7–10 October 2014

Item 5 (a) of the provisional agenda

Proposals for amendments to ATP: Pending proposals

Amendments to article 1; Annex 1; and Annex 1, Appendices 1, 2, 3 and 4 of ATP, in connection with the introduction of additional provisions on the classification, checking and certification, as well as marking of special equipment that is both mechanically refrigerating and heating

Transmitted by the Russian Federation

*Summary***Executive summary:**

Annex 1 of ATP mentions four categories of special equipment for the carriage of perishable foodstuffs:

Insulated equipment with only an insulating body, including doors, floor and roof;

Refrigerated equipment, which, in addition to the insulating body, has a source of cold, other than a mechanical or “absorption” unit;

Mechanically refrigerated equipment, which is the same as above, except that the source of cold is a mechanical or “absorption” unit;

Heated equipment, which, in addition to having an insulating body, is capable of raising the inside temperature of the empty body and thereafter maintaining it when the outside temperature is much lower.



There is actually a large group of special equipment that is a combination of the latter two ATP categories. The standards and requirements of ATP are not sufficiently developed for this group of special equipment in terms of either classification, the checks and certification required for specific categories of special equipment, or the appropriate marking.

To bring ATP up-to-date and to reduce costs, it is proposed to introduce a new category of special equipment — mechanically refrigerated and heated equipment — into ATP.

Action to be taken: Propose for discussion by the Working Party changes and additions to Annex 1; and Annex 1, Appendices 1, 2, 3, and 4 of ATP, in connection with the introduction of additional provisions for the classification, checking and certification, as well as marking, of special equipment that is both mechanically refrigerated equipment and heated equipment.

Related documents: None.

Introduction

1. The four categories of special equipment mentioned in ATP reflect the main methods for generating heat or cold during the carriage of perishable foodstuffs. However, there is no mention of any combination of the separate categories in a single type of special equipment.

2. In practice, equipment that combines mechanically refrigerated equipment and heated equipment is widely used for the carriage of perishable foodstuffs.

3. Such combined equipment is typically not simply a combination of two independent units — refrigerated and heated — in one body, but rather an intrinsically integrated refrigerating-heating unit with a common automation and operating system.

The development of technology for generating heat and cold has led to the appearance of equipment in which air inside the cargo space is heated not by electrical heating appliances, but by a refrigeration unit used in so-called reverse-cycle pump mode. In such equipment, it is completely impossible to separate the production of heat from that of cold either by the equipment used or by the way it is generated. Heat and cold are generated using the same equipment and the same method.

Thus, combined mechanically refrigerated and heated equipment represents a new category of special equipment which is widespread in practice, but is not specified in ATP.

4. Under the existing classification of special equipment in ATP, combined mechanically refrigerated and heated equipment has to be certified separately in two different categories, as mechanically refrigerated equipment and as heated equipment.

This approach has a number of important shortcomings in comparison with the introduction of a new specific category of special equipment:

The use of two test procedures or expert checks instead of one;

The issuance of two ATP certificates instead of one;

The unresolved issue of the use of ATP plates and the corresponding symbols on the body of the special equipment.

5. Previously, at the sixty-ninth session of the Working Party, the Russian Federation presented an unofficial document which outlined its position on the matter and indicated the extent and nature of the changes to ATP that would be necessary. No comments on the proposal were received from those Working Party members present, and so the Russian Federation was invited to prepare a formal document for the seventieth session.

6. In this connection, the Russian Federation has drawn up an official proposal, containing amendments and additions to the text of Annex 1; and Annex 1, Appendices 1, 2, 3, and 4 of ATP, with a view to introducing a new category of mechanically refrigerated and heated equipment, including checking and certification, as well as marking.

The Russian version of ATP in force at the time of writing, as amended on 23 September 2013, together with the amendments adopted at the sixty-ninth session of the Working Party, has been used as the basis for this proposal.

7. In drawing up the official document to be submitted, the following chapters of Annex 1, Appendix 2, of ATP were excluded from the review:

Chapter 4, which deals with the procedure for measuring the effective refrigerating capacity W_0 of a unit when the evaporator is free from frost, because of its specific nature and the fact that it can be used without change for both the existing category of mechanically refrigerated equipment and the proposed category of mechanically refrigerated and heated equipment;

Chapter 8, which deals with mechanical multi-temperature refrigeration units and multi-compartment equipment.

Multi-compartment equipment is not currently used in the Russian Federation, and the Russian experts do not have sufficient information on it or on the relevant checking and certification methods to be able to propose appropriate amendments to ATP. We propose to explore this issue with the competent experts from other States in which multi-compartment equipment is used.

Proposals

8. Amend article 1 of ATP as follows:

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

9. Add the following to Annex 1 of ATP:

“5. Mechanically refrigerated and heated 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.), and heating (fitted with electric heaters, etc.) or refrigerating-heating units capable both of lowering the temperature T_i inside the empty body and thereafter maintaining it continuously, and of raising the temperature and thereafter maintaining it for not less than 12 hours without renewal of supply at a practically constant value, as indicated below.

Class A: T_i may be chosen between +12 °C and 0 °C inclusive at mean outside temperatures of between -10 °C and +30 °C.

Class B: T_i may be chosen between +12 °C and 0 °C inclusive at mean outside temperatures of between -20 °C and +30 °C.

Class C: T_i may be chosen between + 12 °C and 0 °C inclusive at mean outside temperatures of between -30 °C and +30 °C.

Class D: T_i may be chosen between + 12 °C and 0 °C inclusive at mean outside temperatures of between -40 °C and +30 °C.

Class E: T_i may be chosen between + 12 °C and -10 °C inclusive at mean outside temperatures of between -10 °C and +30 °C.

Class F: T_i may be chosen between + 12 °C and -10 °C inclusive at mean outside temperatures of between -20 °C and +30 °C.

Class G: T_i may be chosen between + 12 °C and -10 °C inclusive at mean outside temperatures of between -30 °C and +30 °C.

Class H: T_i may be chosen between + 12 °C and -10 °C inclusive at mean outside temperatures of between -40 °C and +30 °C.

Class I: T_i may be chosen between + 12 °C and -20 °C inclusive at mean outside temperatures of between -10 °C and +30 °C.

Class J: T_i may be chosen between + 12 °C and -20 °C inclusive at mean outside temperatures of between -20 °C and +30 °C.

Class K: T_i may be chosen between + 12 °C and -20 °C inclusive at mean outside temperatures of between -30 °C and +30 °C.

Class L: T_i may be chosen between + 12 °C and -20 °C inclusive at mean outside temperatures of between -40 °C and +30 °C.

The coefficient K of special equipment of classes B, C, D, E, F, G, H, I, J, K and L must not exceed 0.40 W/(m².K).

Heat producing or refrigerating-heating appliances shall have a capacity in conformity with the provisions of Annex 1, Appendix 2, paragraphs 3.4.1 to 3.4.5."

10. Amend the title of Annex 1, Appendix 1, of ATP as follows:

"Provisions relating to the checking of insulated, refrigerated, mechanically refrigerated, ~~or heated or mechanically refrigerated and heated~~ equipment."

11. Amend Annex 1, Appendix 1, paragraph 5, of ATP as follows:

"The insulated bodies of 'insulated', 'refrigerated', 'mechanically refrigerated', ~~or 'heated' or 'mechanically refrigerated and heated'~~ transport equipment ..." (remainder of text unchanged).

12. The first paragraph (before renumbering) of Annex 1, Appendix 1, paragraph 6 (c) (i), to ATP should read as follows:

"If it is insulated equipment, in which case the reference equipment may be insulated, refrigerated, mechanically refrigerated, ~~or heated~~ or mechanically refrigerated and heated equipment, ..."

13. Add the following subparagraph to Annex 1, Appendix 1, paragraph 6 (c), of ATP:

"(v) If it is mechanically refrigerated and heated equipment, in which case the reference equipment shall be:

(a) mechanically refrigerated and heated equipment,

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

and

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

- 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;

or

(b) insulated equipment which is complete in every detail but minus its mechanical refrigeration, heating or mechanical refrigeration-heating appliance, 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 are fitted to the front wall, in which case:

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

and

- the effective refrigerating capacity of the mechanical refrigeration or mechanical refrigeration-heating unit fitted to insulated reference equipment shall be as defined in Annex 1, Appendix 2, paragraph 3.4.7;

- 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.”

14. Add the following subsection 3.4 to Annex 1, Appendix 2, of ATP:

“3.4 Mechanically refrigerated and heated equipment

Test method

3.4.1 The test shall be carried out in two stages. The efficiency of the refrigeration unit of the refrigerating or refrigerating-heating appliance is determined in the first stage and that of the heating appliance is determined in the second stage.

3.4.2 In the first stage, the test shall be carried out in the conditions described in paragraphs 3.1.1 and 3.1.2 of this Appendix; in the second stage, it shall be carried out in the conditions described in paragraphs 3.3.1 and 3.3.2 of this Appendix.

Test procedure

3.4.3 The basic requirements for the test procedure for the first stage are described in paragraphs 3.2.2 and 3.2.3 of this Appendix; those for the second stage are described in paragraphs 3.3.3 and 3.3.4 of this Appendix.

3.4.4 The second stage of the test may be initiated immediately after the end of the first stage, without the measuring equipment being dismantled.

3.4.5 In each stage, the test shall be continued for 12 hours after:

(a) in the first stage, the mean inside temperature of the body has reached the lower limit prescribed for the class to which the equipment is presumed to belong;

(b) in the second stage, the difference between the mean inside temperature of the body 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.

Criteria of satisfaction

3.4.6 The results of the test shall be deemed satisfactory if:

- (a) in the first stage, the refrigerating or refrigerating-heating appliance is able to maintain the prescribed temperature conditions during the said 12-hour period, with any automatic defrosting of the refrigerating or refrigerating-heating unit not being taken into account;
- (b) in the second stage, the heating appliance is able to maintain the prescribed temperature difference during the said 12-hour period.

3.4.7 If the refrigerating unit of the refrigerating or refrigerating-heating 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 having passed the first stage of the test 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.

3.4.8 If the mechanically refrigerating unit in the refrigerating or refrigerating-heating appliance is replaced by a unit of a different type, the competent authority may:

- (a) require the equipment to undergo the determinations and verifications for the first stage of testing prescribed in paragraphs 3.4.1–3.4.5 of this Appendix; 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 3.4.7 of this Appendix.”

15. The first paragraph (before renumbering) of Annex 1, Appendix 2, section 6, of ATP should read as follows:

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

- Apply the methods described in sections 3.1, 3.2, 3.3 and 3.4 of this Appendix;*
- 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.”*

16. Insert after Annex 1, Appendix 2, subsection 6.3, of ATP the following subsection:

“6.4 Mechanically refrigerated and heated equipment

The test is carried out in two stages.

- (i) During the first stage of the test, 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 in paragraph 6.2 of this Appendix.

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

- (ii) In the second stage of the test, 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 classes A, E and I, of 32 K in the case of classes B, F and J, of 42 K for classes C, G and K, and of 52 K in the case of classes D, H, and L).

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

Renumber subsections 6.4 and 6.5 in the current version of Annex 1, Appendix 2, of ATP to 6.5 and 6.6, respectively.

17. In subsection 6.5 of the current version of Annex 1, Appendix 2, of ATP (subsection 6.6 in the renumbered version), wherever the categories of special equipment are listed in the text, add “mechanically refrigerated and heated”, and where subsections “3.1, 3.2 and 3.3” are listed, amend to “3.1, 3.2, 3.3 and 3.4”.

18. Modify the wording of the first paragraph of Annex 1, Appendix 2, section 7, of ATP as follows:

“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~~ 12 hereunder.”

19. Add to Annex 1, Appendix 2, section 7, of ATP the test reports and expert check reports for mechanically refrigerated and heated equipment, and change the numbering of the current model reports. Model test and check reports for mechanically refrigerated and heated equipment are included in the Annex to the present document.

20. Modify the wording of the subtitle of Annex 1, Appendix 3, of ATP as follows: ***“Form of certificate for insulated, refrigerated, mechanically refrigerated, ~~or~~ heated ~~or~~ mechanically refrigerated and heated equipment used for the international carriage of perishable foodstuffs by land”***.

21. Edit the model form of certificate, adding the category of “MECHANICALLY REFRIGERATED AND HEATED” to the heading row, placing it between “REFRIGERATED” and “MULTI-TEMPERATURE”.

22. Add the following to the table in Annex 1, Appendix 4, of ATP:

<i>“Equipment</i>	<i>Distinguishing mark</i>
...	...
<u><i>Class A mechanically refrigerated and heated equipment with normal insulation</i></u>	<u><i>BNA</i></u>
<u><i>Class A mechanically refrigerated and heated equipment with heavy insulation</i></u>	<u><i>BRA</i></u>
<u><i>Class B mechanically refrigerated and heated equipment with heavy insulation</i></u>	<u><i>BRB</i></u>
<u><i>Class C mechanically refrigerated and heated equipment with heavy insulation</i></u>	<u><i>BRC</i></u>

<i>Equipment</i>	<i>Distinguishing mark</i>
<u>Class D mechanically refrigerated and heated equipment with heavy insulation</u>	<u>BRD</u>
<u>Class E mechanically refrigerated and heated equipment with heavy insulation</u>	<u>BRE</u>
<u>Class F mechanically refrigerated and heated equipment with heavy insulation</u>	<u>BRF</u>
<u>Class G mechanically refrigerated and heated equipment with heavy insulation</u>	<u>BRG</u>
<u>Class H mechanically refrigerated and heated equipment with heavy insulation</u>	<u>BRH</u>
<u>Class I mechanically refrigerated and heated equipment with heavy insulation</u>	<u>BRI</u>
<u>Class J mechanically refrigerated and heated equipment with heavy insulation</u>	<u>BRJ</u>
<u>Class K mechanically refrigerated and heated equipment with heavy insulation</u>	<u>BRK</u>
<u>Class L mechanically refrigerated and heated equipment with heavy insulation</u>	<u>BRL</u>

23. Amend Annex 1, Appendix 4, section 2, of ATP as follows:
2. For mechanically refrigerated equipment and mechanically refrigerated and heated equipment:
- 2.1 *Where the compressor is powered by the vehicle engine;*
- 2.2 *Where the refrigeration or refrigeration-heating unit itself or a part is removable, which would prevent its functioning.*
- (remainder of text unchanged).

Justification

24. The introduction of a new category of special equipment — mechanically refrigerated and heated equipment — corresponds to the main stated objectives of ATP:

- Preservation of the quality of perishable foodstuffs during carriage;
- The expansion of trade in perishable foodstuffs.

Annex 3 of ATP contains a list of chilled foodstuffs, the vast majority of which, on the one hand, should not be exposed to high temperatures (require cooling when outside air temperatures are above certain values) and, on the other hand, cannot be frozen (require heating when outside air temperatures are below certain, usually negative, values).

Bearing in mind the possible fluctuations in outside air temperatures and the climates of the States parties to ATP, not only is the use of combined mechanically refrigerated and heated equipment an obvious choice in view of its greater versatility (it can be used to transport any perishable foodstuffs at any time of the year), it is also *necessary* to maintain the quality and safety of many goods transported.

Furthermore, the introduction of a separate category of mechanically refrigerated and heated equipment reduces total costs for the transport of perishable foodstuffs in that it reduces the overall number of certification procedures for such special equipment and the time required for those procedures (unproductive downtime). The reduction in the transport component thus represents an additional incentive to the expansion of trade, including international trade, in perishable foodstuffs.

25. The introduction of a new category of special equipment — mechanically refrigerated and heated equipment — contributes to the accomplishment of the main tasks resulting from the stated objectives of ATP:

- The classification of existing special equipment to facilitate correct choices for the carriage of perishable foodstuffs (the introduction of the category of mechanically refrigerated and heated equipment facilitates the choice for the carriage of a range of chilled goods in specific climatic conditions);
- The development of procedures and the improvement of checking and certification methods for special equipment on introduction into service and when in service (the introduction of this category of special equipment and the relevant procedures and methods for checking and certification significantly reduces the amount of work involved compared to the current situation);
- Guarantee of equal conditions in the market (the introduction of this category of special equipment puts it on an equal footing with other existing categories).

26. The proposed new category of special equipment has already been introduced into a number of national and international instruments. Such combined equipment (mechanically refrigerated and heated) has long been serially produced and occupies a significant share of the market.

For example, the regulations on container manufacture of the Russian Maritime Register of Shipping, which reflects international maritime register requirements as adapted for the Russian Federation, includes the category of mechanically refrigerated and heated container with the following definition: “a mechanically refrigerated and heated container is an insulated container with a refrigeration unit or consumable refrigerant and a heating unit”.

There are many examples of mass produced special equipment of the category described in this document in the production ranges of the major producers of refrigeration and heating appliances for special transport equipment: Carrier Transicold, Thermo King, Starcool and others. Mechanically refrigerated and heated equipment accounts for the overwhelming majority of transport units currently used for rail transport in the Russian Federation.

27. The fact that the proposal complies fully with the aims and objectives of ATP, as well as with the real situation in terms of special transport equipment in the world, is, in the opinion of the Russian Federation, sufficient justification for the proposed solution.

Costs

28. There are no additional costs. The standards and requirements for checking and certification of mechanically refrigerated and heated equipment are based on the standards and requirements for mechanically refrigerated equipment and for heated equipment, which are already contained in ATP. There are no additional requirements for ATP test stations or experts.

Indeed, the introduction of the category of mechanically refrigerated and heated special equipment will reduce the total costs of checking and certification of such vehicles.

Feasibility

29. The proposed changes will only create better conditions for realization of the fundamental goals and objectives of ATP without any additional costs or the need for a transitional period.

Enforceability

30. There will be no problems with the tests or expert checks of mechanically refrigerated and heated equipment. All the procedures, methods and standards are analogous to those for which provision is made in ATP for mechanically refrigerated equipment and for heated equipment. It is also expected that the class of mechanically refrigerated and heated equipment will match the existing ATP classes of mechanically refrigerated equipment and heated equipment.

Appendix A – Model No. 7 Test Report (addition)

MODEL No. 7

Section 3

Determination of the efficiency of cooling and heating appliances of mechanically refrigerated and heated equipment by an approved testing station in accordance with ATP Annex 1, Appendix 2, subsection 3.4

Mechanical refrigerator:

- Drive independent/dependent/mains-operated¹
- Cooling appliance removable/not removable¹
- 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/hydraulic¹
- Description
- Make..... Type power..... kW atrpm
- Condenser and evaporator
- Motor element of fan(s): make type number
- power.....kW atrpm

Heating appliance:

- Description
- Drive independent/dependent/mains-operated¹
- Heating appliance removable/not removable¹
- 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

Automatic devices:

MakeType

Defrosting (if any)

Thermostat

LP pressostat

HP pressostat

Relief valve

Others

Mean temperatures at beginning of test:

Inside °C ± K

Outside °C ± K

Dew point in test chamber² °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

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

Where applicable, mean heating output during test to maintain prescribed temperature difference³ between inside and outside of body⁴ 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

-
- ¹ *Delete if not applicable.*
 - ² *Only for cooling appliances.*
 - ³ *Increased by 35% for new equipment.*
 - ⁴ *Only for heating appliances.*

Appendix B – Model No. 11 Test Report (addition)

MODEL No. 11

Section 3

Expert field check of the efficiency of cooling and heating appliances of mechanically refrigerated and heated equipment in service in accordance with ATP Annex 1, Appendix 2, subsection 6.4

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 stated 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

Heating appliance:

Description

Manufacturer

Type, serial number

Year of manufacture

Where situated

Overall area of heat exchange surfacesm²

Effective power rating as specified by manufacturer kW

Inside ventilation appliances:

Description (number of appliances, etc.)

Power of electric fans W

Delivery ratem³/h

Dimensions of ducts: cross-section m², length m

Condition of cooling appliance, heating appliance and ventilation appliances

.....

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
