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Working Party on the Transport of Perishable Foodstuffs

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Item 5 (b) of the provisional agenda

Proposals of amendments to ATP: new proposals

Amendment to Annex 1, Appendix 2, paragraph 3.2.6 and 4.3.4 (ii), Annex 1, Appendix 3 and the ATP Handbook

Transmitted by the Government of the United Kingdom

Introduction

1. Currently there is no airflow requirement despite the secondary coolant being vital for safe carriage of perishable cargoes in mechanically refrigerated vehicles.

2. At present, the existing text appears to make airflow measurement optional. Annex 1, Appendix 2, paragraph 4.3.4 (iii) reads as follows:

“If the air circulation of a refrigeration unit’s evaporator fans is to be measured, methods capable measuring the total delivery volume shall be used.”

3. A proposal from the expert from the United Kingdom (ECE/TRANS/WP11/2012/5) was to change the wording regarding airflow tests was presented at the 68th session. This was not accepted, as verifying manufacturers’ airflow figures is not mandated. A working group was proposed for an amended proposal for next year.

4. The expert from the United Kingdom submitted an informal document INF.5 for discussion at the sixty-ninth session of WP.11 and it was suggested an informal working group to be formed.

The expert from the United Kingdom then submitted a working document (ECE/TRANS/WP.11/2014/15, part A) which was adopted at the seventieth session of WP.11.

5. On the 17 September 2015, the Finnish Government made an objection to the proposed amendment to annex 1, appendix 2, paragraph 2.3.6 (C.N.481.2015.TREATIES-X1.B.22) (airflow requirement proposal for 60 a/c/h). This was an objection to a single proposal and did not affect the other proposals.

6. At this year’s CERTE meeting the United Kingdom presented a modified proposal which was discussed but not accepted in the form proposed. Subsequently the proposal was discussed at length at CEN and a new proposal was developed which is presented below in modified form suitable for ATP.

I. Proposed amendment

7. We propose to amend the text as follows, with a footnote.

A new paragraph is added to the point 3.2.6:

“The required airflow for equipment that has an internal volume of ≤ 2 and $\leq 100\text{m}^3$ is calculated using the following formula:

$$\dot{V}_L = N \cdot V$$

The air flow rate N is defined as the circulated volumes V of the empty load space each hour.

Where:

V is the volume of the load space, in m^3 ;

\dot{V}_L is the recommended design air flow, in m^3/h ;

N is the air flow rate, in h^{-1} .

With

$40 \leq N \leq 60$ for frozen mode or
 $50 \leq N \leq 90$ for chilled/heating mode.

The air delivery system shall be compensated for any loss of airflow due to internal equipment such as air ducts and the frosting of the evaporator(s) and need not be continuous.

If the internal volume is $\geq 100\text{m}^3$ or ≤ 2 , the competent authority where the equipment is registered or recorded shall determine adequate airflow based on the overall heat transfer.”

Annex 1, Appendix 3

The ATP certificate will need to be amended with a new section below in Annex 1, Appendix 3.

“7.2.6 XX air changes/hour”

Where XX is the number of air changes per hour calculated by dividing the total airflow of the evaporator fans by the total internal volume of the equipment as a whole.

II. Impact

8. This change would modernise the ATP and a positive impact would be that food safety and quality would improve. The financial impact to industry is that there would be an additional cost for an airflow test in cases where it is not carried out already.

9. A defined flowrate for the secondary refrigerant would help ensure all products within the cargo space meet the requirements of Annex 2 and 3.

10. However, the airflow result is required in the machine test report and therefore there appears an inconsistency.

III. Handbook

11. The following could be added to the handbook for additional explanation:




“Air flow is an essential parameter within temperature-controlled transport.

For frozen cargoes, airflow should be low to avoid desiccation but sufficient to remove heat entering through the insulated walls, supply air can deviate below the set temperature to remove heat without damaging the product. Chilled cargoes require higher airflow for good temperature distribution and also because the supply air temperature cannot be allowed to deviate significantly below from the set temperature due to freeze or chilling. Some chilled cargoes are metabolically active and therefore require higher airflow to remove that heat.

Intermittent fan operation should not be used for sensitive cargo where close temperature distribution is required.

Table D.X:

Examples of air flow requirements for temperature sensitive goods

Type of goods	 Temperature range [°C]	 Sensitivity to humidity	 Recommended airflow rate [times/empty volume of container]
Hanging meat	-1/+1°C	Yes	40 – 60
Prepared/smoked foods Unpackaged	0/+2°C	No for packaged products	40 – 50
Dairy products	+2/+6°C	Yes	40 – 50
Fruits and vegetables	+6/+8°C	Yes	55 – 70
Bananas	+13°C	average	60 – 90
Frozen foods/ice cream	< -18°C	No	40 – 60
frozen pharmaceuticals	< -18 °C	low	40 – 60*)
Pharmaceuticals (e.g. vaccine, insulin)	+2/+8 °C	low	60– 90 *)
Other pharmaceuticals and cosmetics	+15/+25 °C	low	40–60 *)

The air flow rate can be modulated if indicated temperature range has been reached except where indicated by *).

Other special applications are existing and may modulate the range of the air flow (e.g. living animals, art work).”
