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

Geneva, 25-28 October 2022

Item 5 (a) of the provisional agenda

**Proposals of amendments to ATP:****pending proposals**

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27 October 2022

English

**Amendment to Annex 1, Appendix 2, paragraph 3.2.8 and the ATP Handbook****Transmitted by the Government of the United Kingdom****I. Proposed Amendment**

1. We propose to amend the text as follows with a new paragraph which is added to 3.2.8:

"If the refrigerating appliance with all of its accessories has undergone separately, to the satisfaction of the competent authority, a test to determine the air circulation volume., the minimum required airflow in cooling mode for both mechanically refrigerated equipment and mechanically refrigerated and heated equipment with a forced ventilation system shall conform to the following formula<sup>1</sup>:

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

Where minimum airflow rate  $\dot{V}_L$  is air changes per hour N, multiplied by the empty volume V.

Where N = 50

The air volume flow may be modulated in part load operation after reaching the set point temperature and if the temperature of the class is reached, the air flow needs not be continuous.

Where V exceeds 60 m<sup>3</sup>  $\dot{V}_L$  may be limited to at least 3000 m<sup>3</sup> per hour for container<sup>2</sup>, wagons and lorries

Where V exceeds 100 m<sup>3</sup>  $\dot{V}_L$  may be limited to at least 5000 m<sup>3</sup> per hour."

2. We propose to amend the text as follows with a new paragraph which is added to 3.4.9:

"The equipment should comply with the airflow requirements in cooling mode prescribed in paragraph 3.2.8".

3. We propose to amend the text as follows with a new paragraph at the end added to 7.3.1:

"- The equipment should comply with the airflow requirements in cooling mode prescribed in paragraph 3.2.8".

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<sup>1</sup> Applies to equipment manufactured after (DD MM YEAR)

<sup>2</sup> Containers can be demountable bodies of lorries

## II. Annex 1, Appendix 3

4. 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".

5. New footnote added after footnote 10:

"<sup>11</sup> Where XX is the number of air changes per hour calculated by dividing the total airflow of the circulation fans by the total internal volume of the equipment. In the case of multi-compartment equipment with movable bulkheads, the total airflow of the circulation fans has to be divided by the maximum internal volume of each compartment."

6. Original footnotes 11 to 15 to be renamed 12 to 16.

## III. The following could be added to the ATP handbook for additional explanation:




"Airflow 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 the set temperature due to freezing or chilling damage. 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. Generally, start/stop operation of the unit when the evaporator fans/unit are allowed to cycle shall be used only for frozen goods transportation.

Table 1

**Examples of air flow requirements for temperature sensitive goods**

<i>Type of goods</i>	 <i>Temperature range [°C]</i>	 <i>Sensitivity to humidity</i>	 <i>Recommended airflow rate [times/empty volume of equipment]</i>
<b>Hanging meat</b>	-1/+1°C	Yes	50 – 90
<b>Chilled products</b>	-1/+6°C	Yes	50 – 90
<b>Frozen foods</b>	< -18°C	No	40 – 60
<b>Ice cream</b>	< -20 °C	low	40 – 60

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