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Working Party on the Transport of Perishable Foodstuffs

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Draft report of the Working Party on the Transport of Perishable Foodstuffs on its seventy-sixth session

I. Proposed amendments to the ATP

1. Annex 1, section 1. Insulated equipment

Replace degrees "K" by "°C" under I_N and I_R (twice).

(Reference document: ECE/TRANS/WP.11/2020/11)

2. Annex 1, section 2. Refrigerated equipment

In the last paragraph, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

3. Annex 1, section 3. Mechanically refrigerated equipment

Under Class F, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

4. Annex 1, section 4. Heated equipment

In the last paragraph, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

5. Annex 1, section 5. Mechanically refrigerated and heated equipment

In the second to last paragraph, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

6. Annex 1

Insert a new section 7 to read as follows:

"7. Definitions

Equipment means an assembly of parts forming an insulated body and its supportive structure needed for carriage on road and rail. Thermal appliances may be part of the assembly.

Heating appliance means a thermal appliance that generates thermal energy to increase(heat) the temperature inside.

Mechanically heated and refrigerated appliance means a mechanical refrigerating appliance that is able to decrease (cool) or increase (heat) the temperature inside the equipment that is tested to certify both the capacity to cool and to heat.

Mechanically refrigerating appliance means a thermal appliance that generates thermal energy to decrease (cool) the temperature inside the equipment by a mechanical drive system.

Refrigerating appliance means a thermal appliance that generates thermal energy to decrease (cool) the temperature inside the equipment by melting, evaporation or sublimation of for example natural ice, brine (eutectic) liquefied gas or dry ice.

Thermal appliance means a device to generate thermal energy, to decrease (cool) or increase (heat) the temperature inside the equipment.".

(Reference document: ECE/TRANS/WP.11/2020/14 as amended)

7. Annex 1, appendix 1, paragraph 3(b)

Add a new last sentence to read as follows: "For Multi Temperature, Multi Compartment equipment also the declaration of conformity (see 7.3.6 of annex I, appendix 2) shall be provided.".

(Reference document: ECE/TRANS/WP.11/2020/14 as amended)

8. Annex 1, appendix 1, paragraph 3(c)

Add a new last sentence to read as follows: "For Multi Temperature, Multi Compartment equipment also a calculation sheet (see 7.3.6 of annex I, appendix 2) based on the iterative method shall be provided.".

(Reference document: ECE/TRANS/WP.11/2020/14 as amended)

9. Annex 1, appendix 2, section 1.2

Under Method C, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

10. Annex 1, appendix 2, section 1.7

In the first paragraph, replace degrees "K" by "°C" (twice).

(Reference document: ECE/TRANS/WP.11/2020/11)

11. Annex 1, appendix 2, section 1.7

In the fourth paragraph, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

12. Annex 1, appendix 2, section 2.1.2

In the first paragraph, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

13. Annex 1, appendix 2, section 2.1.7

Replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

14. Annex 1, appendix 2, section 2.2.3

Replace degrees "K" by "°C" (twice).

(Reference document: ECE/TRANS/WP.11/2020/11)

15. Annex 1, appendix 2, section 2.2.8

Replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

16. Annex 1, appendix 2, section 4.1.1

Replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

17. Annex 1, appendix 2, section 4.2.2, paragraph a)

In the last paragraph, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

18. Annex 1, appendix 2, section 4.2.3, paragraph a)

In the second paragraph, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

19. Annex 1, appendix 2, section 4.2.3, paragraph b)

Replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

20. Annex 1, appendix 2, section 4.2.3

In the paragraph after (b), replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

21. Annex 1, appendix 2, section 6.3

Replace degrees "K" by "°C" (four times).

(Reference document: ECE/TRANS/WP.11/2020/11)

22. Annex 1, appendix 2, section 6.4, (ii)

Replace degrees "K" by "°C" (four times).

(Reference document: ECE/TRANS/WP.11/2020/11)

23. Annex 1, appendix 2, section 7.3.1

In the second paragraph, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

24. Annex 1, appendix 2, section 7.3.2

In the first paragraph, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

25. Annex 1, appendix 2, section 7.3.6, third paragraph

Insert a new last sentence to read as follows: "The declaration shall conform to the layout given in Model No. 14 of this appendix"

(Reference document: ECE/TRANS/WP.11/2020/14)

26. Annex 1, appendix 2, section 7.3.7

In the table heading, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

27. Annex 1, appendix 2, section 8, MODELS No. 1A and 1B

Replace "Date of construction" by "Date of construction (month/year)".

(Reference document: ECE/TRANS/WP.11/2020/14)

28. Annex 1, appendix 2, section 8, MODEL No. 1 A

In the last line, replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

29. Annex 1, appendix 2, section 8, MODEL No. 2 A

Replace degrees "K" by "°C" everywhere it appears (seven times).

(Reference document: ECE/TRANS/WP.11/2020/11)

30. Annex 1, appendix 2, section 8, MODEL No. 2 B

Replace degrees "K" by "°C" everywhere it appears (seven times).

(Reference document: ECE/TRANS/WP.11/2020/11)

31. Annex 1, appendix 2, section 8, MODEL No. 3

Replace degrees "K" by "°C".

(Reference document: ECE/TRANS/WP.11/2020/11)

32. Annex 1, appendix 2, section 8, MODEL No. 4 A

Replace degrees "K" by "°C" everywhere it appears (three times).

(Reference document: ECE/TRANS/WP.11/2020/11)

33. Annex 1, appendix 2, section 8, MODELS No. 4A, 4B, 4C, 5, 6, 7, 8, 9, 10, 11

Replace "Year of manufacture" by "Date of manufacture (month/year)".

(Reference document: ECE/TRANS/WP.11/2020/14)

34. Annex 1, appendix 2, section 8, MODEL No. 4 B

Replace degrees "K" by "°C" everywhere it appears (three times).

(Reference document: ECE/TRANS/WP.11/2020/11)

35. Annex 1, appendix 2, section 8, MODEL No. 4 C

Replace degrees "K" by "°C" everywhere it appears (three times).

(Reference document: ECE/TRANS/WP.11/2020/11)

36. Annex 1, appendix 2, section 8, MODEL No. 5

Replace degrees "K" by "°C" everywhere it appears (three times).

(Reference document: ECE/TRANS/WP.11/2020/11)

37. Annex 1, appendix 2, section 8, MODEL No. 6

Replace degrees "K" by "°C" everywhere it appears (twice).

(Reference document: ECE/TRANS/WP.11/2020/11)

38. Annex 1, appendix 2, section 8, MODEL No. 7

Replace degrees "K" by "°C" everywhere it appears (twice).

(Reference document: ECE/TRANS/WP.11/2020/11)

39. Annex 1, appendix 2, section 8, MODEL No. 12

Replace "Date of manufacture" by "Date of manufacture month/year)".

(Reference document: ECE/TRANS/WP.11/2020/14)

40. Annex 1, appendix 2, section 8, MODEL No. 12

Replace "Self-contained/not self-contained" by "Drive independent/dependent".

(Reference document: ECE/TRANS/WP.11/2020/14)

41. Annex 1, appendix 2, section 8, MODEL No. 12

At the beginning, delete the following text:

"Refrigerant charge .....

Refrigerant fluid: (ISO/ASHRAE designation) [a)].....

Nominal mass of refrigerant .....

[a)] *If existing*".

(Reference document: ECE/TRANS/WP.11/2020/7)

42. Annex 1, appendix 2, section 8, MODEL No. 12

Replace "Refrigerant fluid……" by

"Refrigerant charge .....

Refrigerant fluid: (ISO/ASHRAE designation) [a)].....

Nominal mass of refrigerant .....

[a)] *If existing*".

(Reference document: ECE/TRANS/WP.11/2020/7)

43. Annex 1, appendix 2, section 8

Insert a new Model No. 14 to read as follows:

"

Model No. 14

Declaration of conformity for Multi Temperature – Multi compartment equipment

Supplementary document to the Certificate of Compliance as per Annex 1, appendix 2 paragraph 7.3.6

Top view sketch of the lay-out of the equipment:

Indicating:

-front and rear, numbering of compartments

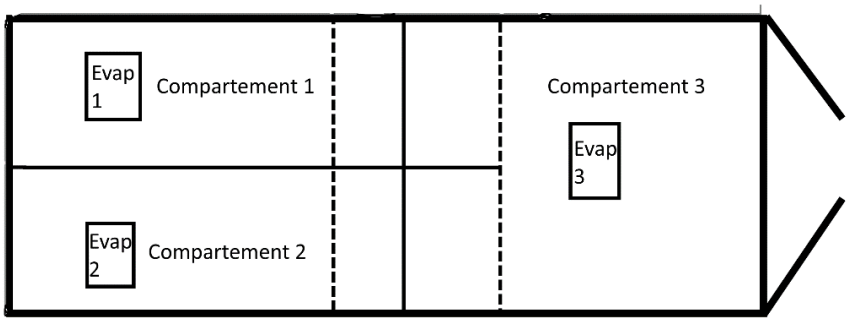
-lay-out of the compartments with fixed and movable bulkheads and the following dimensions in centimeters: inside dimensions of the body, thickness and lengths of the bulkheads.

-most extreme position of movable dividing walls

- Position of the host unit(s) and evaporators

-material of the floor.

(Example of top view sketch)



Insulated body:
ATP test report number:
Make:
Serial number:

Host unit:
ATP Test report number:
Make:
Serial Number:

Evaporators:
ATP test report number:
Make:
Type:

Remarks:

(for example, limitations in compartment temperatures or dimensions, use of particular accessories as curtains etc.)

Authentication

Name of competent authority:
Address:
Telephone number:
E-mail address:

Date and Place of signature Stamps signature, and name signing officer.”.

(Reference document: ECE/TRANS/WP.11/2020/14)

II. Additions to the ATP Handbook

1. At the end of Annex I, Appendix 2, add the following comment:

"CONFORMITY ACCEPTANCE

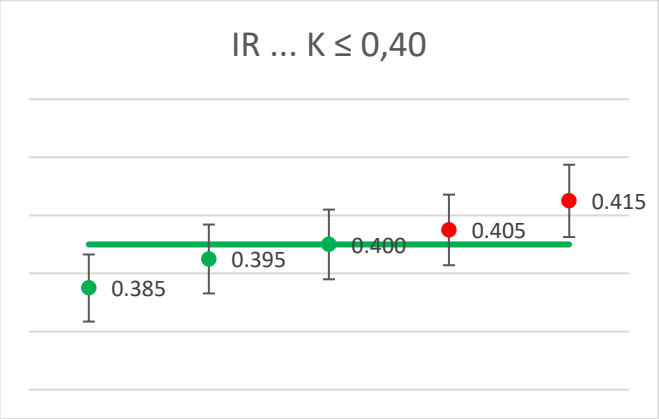
Measurement results in all sections of Annex I, Appendix 2 should include estimation of measurement uncertainty. To achieve demanded level of measurement uncertainty Test stations should follow definition of procedures as defined by test procedure in each section of Annex I, Appendix 2.

Conformity acceptance in all sections of Annex I, Appendix 2 should be done without taking measurement uncertainty into account, using *binary decision*[1] or *shared risk*[1,2,3,4] decision rule.

Examples of conformity acceptance decisions for insulation box classification:

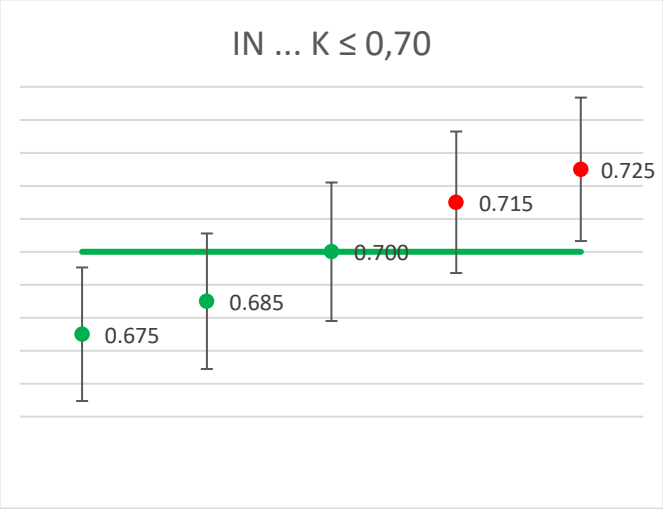
Case 1 – insulation box to be classified as IR:

All results for K factor which are smaller or equal to 0,40 conform with IR class (green points). All results for K factor which are greater than 0,40 do not conform with IR class (red points).



Case 2 – insulation box to be classified as IN:

All results for K factor which are smaller or equal to 0,70 conform with IN class (green points). All results for K factor which are greater than 0,70 do not conform with IN class (red points).



References:

[1] *ILAC- ILAC- Guidelines on the Reporting of Compliance with Specification G8:09/2019, - 2.7*

[2] *JCGM 106 :2012 Evaluation of measurement data – The role of measurement uncertainty in conformity assessment - 8.2*

[3] *Welmec 4.2-1 / 2006 – 6*

[4] *OIML G 19 /2017 - 5.3.3, 5.3.4".*

(Reference document: ECE/TRANS/WP.11/2020/12)

2. Add to the French and Russian versions of the Handbook the following 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: cs = 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 P1 [W] on the shaft of the compressor or generator is calculated.

$$P1\ [W] = 2\pi n\tau \qquad \text{... where } \pi = 3.141593$$

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 P2 [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 Pfans is the total electric input needed to drive the fans, the alternator shaft input is:

$$P2 = 2 \times Pfans$$

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 P1 and of the alternator input P2 for the fans:

$$P = P1 + P2$$

6. If P [W] is the total refrigeration unit input power at specific operating conditions, then the fuel consumption by weight Cfw [g/h] of the tested refrigeration unit can be calculated as:

$$Cfw\ [g/h] = P \times cs = 0.165 \times P.$$

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 $\rho = 836$ kg/m^3 = 836 g/l has been used for the purposes of this procedure (see the third of the standards mentioned above).

$$Cfvol\ [l/h] = Cfw / 836$$

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 cfvol (consumption by volume reduced to 1 kW of refrigeration capacity Q) is defined in this way:

$$cfvol\ [l/(h.\ kW)] = 1000\ Cfvol / Q".$$