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

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Item 5 (a) of the provisional agenda

**Proposals of amendments to the ATP: pending proposals****K value of in-service vehicles: proposal to amend annex 1****Transmitted by the Government of Germany***Summary*

<b>Executive summary:</b>	It has long been established that the average ageing of insulation is 5% per annum. It is clear that the requirement in ATP, that K values “shall in every case be equal to or less than” the limits set for type approval testing, cannot be met and that K-value testing after 6 or 9 years would result in a K value higher than 0.4 W/m <sup>2</sup> .K.
<b>Action to be taken:</b>	Amend annex 1, paragraph 2
<b>Related documents:</b>	ECE/TRANS/WP.11/2013/10

**I. Introduction**

1. To understand the problem of the K value defined in annex 1, paragraph 2 (and similar wording in paragraphs 3 and 4) that stipulates: “The K coefficient of refrigerated equipment of classes B and C shall in every case be equal to or less than 0.40 W/m<sup>2</sup>.K”, it is necessary to look at the development of vehicles transporting temperature-controlled goods.

2. It was in the 1980s that, in order to handle the increased movement of goods more efficiently, in shops, warehouses and cold stores, the transport pallet with dimensions of 1200 mm x 800 mm became the standard format. The Official Journal of the European Communities recognized this development with the issuance of guidelines that defined the maximum width of refrigerated lorries as 2.60m including a sidewall thickness of at least 4mm. There are today some 500 million pallets with those dimensions in use worldwide.

3. However, the ATP that was drawn up in the 1970s never took account of these changes. Neither did the ATP and the K value defined at the time take into account the various forms of temperature-controlled vehicles, classes and categories that require a differentiated approach in regards to insulation requirements. More important is the fact that in the 1970s, the ageing of insulation materials was a more or less unknown issue and completely disregarded when the ATP was drawn up. It is undeniable that the different classes and sizes of vehicles will, given their surface/volume ratio, not all be affected to the same extent by the problem of insulation ageing, but this is a problem for insulated trailers. Thanks to the technical advances made since that time and the research developments, this phenomenon is accepted and requires a correction of the ATP in order to bring it up to date with the current knowledge of insulation materials.

4. In annex 1, paragraph 2 (and similar wording in paragraphs 3 and 4) can be found the phrase “The K coefficient of refrigerated equipment of classes B and C shall in every case be equal to or less than 0.40 W/m<sup>2</sup>.K”.

5. Some Contracting Parties to ATP have implemented K-value testing for the renewal of ATP certificates after 6 years.

6. It has long been established using test data from ATP testing stations, and is also supported by different research papers, that the average ageing of insulation is 5% per annum. Obviously, this can only be an average value since the different materials, fibreglass, steel or aluminium surface sheets, as a continuous sheet or a composite do age differently. This is also generally accepted by the manufacturers of insulated bodies.

7. Type approval testing of new bodies yields K values in the region of 0.37 - 0.39 for IR or FRC class equipment, approaching the maximum value of 0.4 W/m<sup>2</sup>.K. The situation is similar for class A equipment.

8. With the possibility of using a prototype test report to obtain an ATP certificate for an insulated body with a  $\pm 20$  % variation of the inside surface area, anecdotal evidence suggests that K values could be closer to or perhaps higher than the type approval limits. Also, this testing of the K value gives only the base for the box type IR or IN. Generally when the box is fitted with a refrigerating unit after a test, the K value of the completed box will increase.

9. When the ageing coefficient of 5% per annum is added, it is clear that the requirement in ATP, that K values “shall in every case be equal to or less than” the limits set for type approval testing, cannot be met. K-value testing after 6 or 9 years would result in a K value higher than 0.4 W/m<sup>2</sup>.K. The practical and commercial impact of this interpretation is that the vehicle would have to be declassified with a potential consequential devaluation of the asset value of the vehicle and a restriction on its operational ability to carry frozen products. This lack of flexibility also impacts on the earning capability of the vehicle for its owner. Furthermore, shortening the lifecycles of vehicles is counterproductive to the set goals of global CO<sub>2</sub> reduction, as increased production of new vehicles itself contributes to higher CO<sub>2</sub> emissions.

10. Therefore the use of the temperature pull-down tests originally drafted by France is supported. It is important that the tests are conducted in strict accordance with the minimum and maximum ambient temperature requirements. This would avoid the need for K-value testing and provide practical, easily reproducible proof that a vehicle can safely transport perishable foodstuffs in accordance with the requirements of ATP.

11. It is also important that due consideration is given to the need to retain the type approval class categorization of the vehicle and its overall energy consumption. The industry has been working for years on the improvement of the insulation properties of vehicles. This work has very high priority in the temperature-controlled business and is

driven by a strong market demand for good K values. However, the improvements that can be achieved with today's technologies are only small steps in a continuous product improvement process. The acknowledgement of the ageing of insulating materials and the fact that K values can physically not be maintained at the same level in the long term is a long outstanding problem that needs to be corrected

## **Proposal**

12. Remove the wording "shall in every case" in paragraphs 2, 3 and 4 of annex 1.
  13. Modify the wording of annex 1, paragraph 2, last sentence to read as follows:  
"The K coefficient of new refrigerated equipment of classes B and C shall refer to IR type approved insulated equipment".
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