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Inland Transport Committee

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

Transmitted by the Government of the United Kingdom

Introduction

1. In the ATP Agreement Annex 1, paragraph 1 specifies the limits for heat transfer coefficient (K) of Normally Insulated (I_N) and Heavily Insulated (I_R) equipment.

2. There is an irregularity that allows the rate of heat flow for an I_N category body set at 0°C to be higher than an I_R category body when set at -20°C, assuming both bodies have exactly the same dimensions. Below is a worked example:

> The ATP ambient condition is 30°C. The minimum refrigerated temperature for I_N equipment is 0°C; the minimum refrigerated temperature for I_R equipment is -20C.
>
> The ATP ambient condition is 30°C. The minimum refrigerated temperature for I_N equipment is 0°C; the minimum refrigerated temperature for I_R equipment is -20C.

Category	*K coefficient*	*Temperature Difference*	*Heat Flow Factor*
I_R	0.40 W/m^2°C	+30 - -20 = 50°C	0.4 x 50 = 20W/m^2
I_N	0.70 W/m^2°C	+30 - 0 = 30°C	0.7 x 30 = 21W/m^2

3. In chill transport operations close temperature distribution is more important than for frozen operations. The implication of an I_N body with a comparatively higher heat flow (21W/m^2) is a higher potential for warm spots.

I. Proposed amendment

4. We propose the K coefficient limit for I_N equipment should be reduced to ensure that the heat flow factor is less than for I_R category equipment when controlled at each minimum corresponding refrigerated temperature.

Option	*Category*	*K coefficient*	*Temperature Difference*	*Heat Flow Factor*
1	I_N	0.65 W/m^2°C	+30 - 0 = 30°C	0.65 x 30 = 19.5 W/m^2
2	I_N	0.60 W/m^2°C	+30 - 0 = 30°C	0.60 x 30 = 18 W/m^2

5. The result of both proposals is that the design temperature distribution for IN rated bodies surpasses that of I_R bodies.

We propose to amend the text as follows

"I_N = Normally insulated equipment specified by: - a K coefficient equal to or less than ~~0.70~~ **0.65** W/m2.K;"

Or

"I_N = Normally insulated equipment specified by: - a K coefficient equal to or less than ~~0.70~~ **0.60** W/m2.K;"

II. Impact

6. A very low percentage of ATP insulated bodies are certified to I_N category. The potential impact on the marginal results will affect manufacturers. It is likely they will need to focus the design improvements on to small areas where the worst thermal bridging occurs.

7. There could be a financial impact to industry; if we lower the k value then there will be more restrictions to the ATP market.

8. It could be that a dispensation is required for tanks as some are reinsulated and may not be capable of achieving an improved k value.

9. However, in lowering the k value the insulated bodies will be more efficient and could save energy.