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Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

Sub-Committee of Experts on the Transport of Dangerous Goods

Fifty-fourth session

Geneva, 26 November-4 December 2018
Item 2 (f) of the provisional agenda
Recommendations made by the Sub-Committee on its fifty-first, fifty-second and fifty-third sessions and pending issues: miscellaneous pending issues

Minimum wall thickness for metal IBCs

Transmitted by the Stainless Steel Container Association (SSCA)*

Introduction

1. SSCA already introduced the issue of the minimum wall thickness for metal-IBCs to the Sub-Committee in document ST/SG/AC.10/C.3/2013/57 at the forty-fourth session and ST/SG/AC.10/C.3/2018/34 at the fifty-third session.

2. The topic was discussed in depth, also during several coffee breaks and informal document INF.60 (fifty-third session) was produced to summarize the result of these discussions and to propose a compromise.

3. The minutes of the fifty-third session state, “Views were divided on the proposal …” and some experts requested “additional time to consult stakeholders at national level”. Also SSCA was asked “to submit the proposal in informal document INF.60 as an official document for the next session”. Therefore SSCA herewith would like to introduce this document.

* In accordance with the programme of work of the Sub-Committee for 2017–2018 approved by the Committee at its eighth session (see ST/SG/AC.10/C.3/100, paragraph 98 and ST/SG/AC.10/44, para. 14).

4. First we would like to remind of the main arguments regarding our proposal to delete the minimum wall thickness requirement for metal IBCs:

(a) (Not only) Metal-IBCs have to pass the design type tests as described in 6.5.6.4 (Bottom Lift test), 6.5.6.5 (Top Lift test), 6.5.6.6 (Stacking test), 6.5.6.7 (Leakproofness test), 6.5.6.8 (Hydraulic Pressure test), 6.5.6.9 (Drop test), and 6.5.6.12 (Vibration test);

(b) On behalf of SSCA a metal IBC (31A) was successfully tested at TÜV Rheinland in Halle. The wall thickness of the tested container is 0.97 mm (top), 0.98 mm (body) and 1.42 mm (bottom), while according to 6.5.5.1.6 the wall thickness for metal IBC should in no case be less than 1.5 mm (the test report was included as an Annex in document ST/SG/AC.10/C.3/2018/34);

(c) Thus it was demonstrated that such IBC types meet the necessary performance requirements and are safe for the transport of dangerous goods;

(d) Only for metal IBCs there are requirements, which are not related to the performance but to the construction (“Minimum Wall Thickness” 6.5.5.1.6, see also table in 6.5.2.2.1, possibly a leftover from regulations for cubical tank containers, from which the metal IBC were once derived);

(e) SSCA is of the opinion that such requirements, are not only restraining innovations but also are not in line with the “European Directive 94/62/EC on packaging and packaging waste” (and similar rules and regulations in other parts of the world), where in the so called “Essential requirements” it is stated that weight and volume of a packaging should be limited to a minimum.

5. In former discussions the aspect of corrosion was discussed as a possible argument to justify keeping the minimum wall thickness requirements for metal IBC. SSCA would like to remind of our earlier comments (see ST/SG/AC.10/C.3/2018/34): The design, the choice of materials and the construction are selected in order to avoid corrosion.

6. In addition we would like to emphasize: (Metal) IBCs are subject to a periodic inspection, where any signs of corrosion would be detected. Also during or before any filling process such signs of corrosion would be discovered.

7. As a result from the discussions at the fifty-third session, it was proposed that the requirement of a “Minimum wall thickness” should be kept but only for those metal IBC with a capacity of more than 1.500 l, while the metal IBC with a lesser volume would be liberated from this requirement.

8. SSCA would appreciate if this proposal would be considered by the Sub-Committee and if we were given the opportunity to introduce the document.

Proposal(s)

9. In the table in 6.5.2.2.1, delete “minimum” in the fourth row under “Additional marks” as follows:

[“

Additional marks	Category of IBC				
	Metal	Rigid Plastics	Composite	Fibreboard	Wooden
Capacity in litres[a] at 20 °C	X	X	X		
Tare mass in kg[a]	X	X	X	X	X
Test (gauge) pressure, in kPa or bar[a], if applicable		X	X		
Maximum filling/discharge pressure in kPa or bar[a], if applicable	X	X	X		
Body material and its ~~minimum~~ thickness in mm	X				
Date of last leakproofness test, if applicable (month and year)	X	X	X		
Date of last inspection (month and year)	X	X	X		
Serial number of the manufacturer	X				
Maximum permitted stacking load [b]	X	X	X	X	X

a The unit used shall be indicated.

b See 6.5.2.2.2. This additional mark shall apply to all IBCs manufactured, repaired or remanufactured as from 1 January 2011. ”]

10. **Amend** 6.5.5.1.6., as follows:

[“6.5.5.1.6 *Minimum wall thickness* [1]

(a) For a reference steel having a product of Rm x A_0 = 10 000, the wall thickness shall not be less than:

Capacity (C) in litres	Wall thickness (T) in mm			
	Types 11A, 11B, 11N		Types 21A, 21B, 21N, 31A, 31B, 31N	
	Unprotected	Protected	Unprotected	Protected
~~C ≤ 1000~~	~~2.0~~	~~1.5~~	~~2.5~~	~~2.0~~
~~1000 < C ≤ 2000~~	~~T = C/2000 + 1.5~~	~~T = C/2000 + 1.0~~	~~T = C/2000 + 2.0~~	~~T = C/2000 + 1.5~~
~~2000 < C ≤ 3000~~	~~T = C/2000 + 1.5~~	~~T = C/2000 + 1.0~~	~~T = C/1000 + 1.0~~	~~T = C/2000 + 1.5~~
1500 < C ≤ 3000	T = C/2000 + 1.5	T = C/2000 + 1.0	T = C/1000 + 1.0	T = C/2000 + 1.5

where: A_0 = minimum elongation (as a percentage) of the reference steel to be used on fracture under tensile stress (see 6.5.5.1.5);

(b) For metals other than the reference steel described in (a), the minimum wall thickness is given by the following equivalence formula:

$$e_1 = \frac{21.4 \times e_0}{\sqrt[3]{Rm_1 \times A_1}}$$

[1] Applies only for metal IBC with a capacity of more than 1.500 litres

where: e_1 = required equivalent wall thickness of the metal to be used (in mm);
e_0 = required minimum wall thickness for the reference steel (in mm);
Rm_1 = guaranteed minimum tensile strength of the metal to be used (in N/mm) (see (c));
A_1 = minimum elongation (as a percentage) of the metal to be used on fracture under tensile stress (see 6.5.5.1.5).

However, in no case shall the wall thickness be less than 1.5 mm.

(c) For purposes of the calculation described in (b), the guaranteed minimum tensile strength of the metal to be used (Rm_1) shall be the minimum value according to national or international material standards. However, for austenitic steels, the specified minimum value for Rm according to the material standards may be increased by up to 15% when a greater value is attested in the material inspection certificate. When no material standard exists for the material in question, the value of Rm shall be the minimum value attested in the material inspection certificate."].