
**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

Twenty-eighth session
Geneva, 28 November – 7 December 2005

**REPORT OF THE IBC INFORMAL WORKING GROUP
(Paris, 10-13 October 2005)**

Submitted by the expert from Canada on behalf of the informal Working Group

Canadian comments. October 2005
UN Recommendations for the TDG 14th edition, revision of chapters 6.5.

Chapter 6.5 IBC

~~Delete~~ insert

Definitions of some IBC

Some flexible IBC manufacturers are sewing fiberboard panels between layers of plastic fabric. The resulting IBC is more rigid than a “normal” flexible IBC when it is filled but not as rigid as a composite plastic IBC or a fiberboard IBC with a liner. However, we have seen some of these IBC bearing the HH2 code. (picture 1)
The definitions of FIBCs should be reviewed to make it clear that a 13H IBC may have some structural equipment such as fiberboard inserts to rigidify it.

6.5.1.3.2 *Flexible IBCs* consist of a body constituted of film, woven fabric or any other flexible material or combinations thereof, and if necessary an inner coating or liner, together with any appropriate service ~~or structural~~ equipment and handling devices.



6.5.6.6 Stacking test

Testing at 1.8 times the maximum permissible evenly distributed load does not provide any safety factor and may even be less than actual load experienced by rigid IBCs in real conditions of transport. Dynamic road and rail loads as well as rolling experienced in marine transport asymmetrically loads the IBCs, leading to higher-than tested loads on the IBC. These dynamic effects have no significant effect on Flexible IBCs, the current criteria. Consideration should be given to keep the 1.8 times load for the 28 day test at 40°C for rigid plastic and plastic-plastic composites but add the 24 hours test at 4 times the load. Language will have to be developed for that purpose.

6.5.6.6.4 *Calculation of superimposed test load*

The load to be placed on **the a rigid** IBC shall be **1.8 4** times...

The load to be placed on a flexible IBC shall be 1.8 times the combined maximum permissible gross mass of the number of similar IBCs that may be stacked on top of the IBC during transport.

6.5.6.9 Drop test

Maximum gross mass for IBC for solids

IBC for solids should be loaded to their maximum permissible gross mass as well as to 95% of their capacity to be representative of an actual IBC in transport. We propose to add this precision to the preparation sections.

6.5.6.9.2 Preparation of the IBC for test

- (a) *Metal IBCs: the IBC shall be filled to not less than 95% of its maximum capacity and to its maximum permissible gross mass for solids or 98% of its maximum capacity for liquids. Pressure-relief devices shall be removed and their apertures plugged, or shall be rendered inoperative;*
- (b) *Flexible IBCs: the IBC shall be filled to the maximum permissible gross mass, the contents being evenly distributed;*
- (c) *Rigid plastics IBCs: the IBC shall be filled to not less than 95% of its maximum capacity and to its maximum permissible gross mass for solids or 98% of its maximum capacity for liquids. Arrangements provided for pressure-relief may be removed and plugged or rendered inoperative. Testing of IBCs shall be carried out when the temperature of the test sample and its contents has been reduced to minus 18 °C or lower. Where test samples of composite IBCs are prepared in this way the conditioning specified in 6.5.6.3.1 may be waived. Test liquids shall be kept in the liquid state, if necessary by the addition of anti-freeze. This conditioning may be disregarded if the materials in question are of sufficient ductility and tensile strength at low temperatures;*
- (d) *Fibreboard and wooden IBCs: The IBC shall be filled to not less than 95% of its maximum capacity and to its maximum permissible gross mass.*

Angle of impact and acceptance criteria, drop test

The location of impact for IBC with capacity above 450 liters is too vague. The location of impact may be a corner but the angle of the base with the impact surface may be almost 0° and still satisfy this section's requirements. We suggest introducing a minimum angle between the plane of the base of the IBC and the target surface. We suggest 30° between the plane of the base and the impact surface, that is 60° between the perpendicular of drop and the base plane of the IBC. Some permanent deformation must be acceptable but the IBC must still be capable of being handled by the means provided originally.

6.5.6.9.3 Method of testing

The IBC shall be dropped on its base onto a rigid, non-resilient, smooth, flat and horizontal surface, in such a manner as to ensure that the point of impact is that part of the base of the IBC considered to be the most vulnerable. The plan of the base of the IBC must make an angle of 30° or more with the horizontal surface.

6.5.6.9.5 Criteria for passing the test(s):

- (a) *Metal IBCs: no loss of contents and the IBC remains safe for handling by the handling devices originally provided;*
- (b) *Flexible IBCs: no loss of contents. A slight discharge, e.g. from closures or stitch holes, upon impact shall not be considered to be a failure of the IBC provided that no further leakage occurs after the IBC has been raised clear of the ground;*
- (c) *Rigid plastics, composite, fibreboard and wooden IBCs: no loss of contents and the IBC remains safe for handling by the handling devices originally provided. A slight discharge from a closure upon impact shall not be considered to be a failure of the IBC provided that no further leakage occurs.*

Rollover test (applicable to mobile IBC : mobile refueling tanks)

CAN/CGSB 43.146-2002

7.11 Rollover Test

7.11.1 Scope — Conduct this test on an IBC of a mobile design type.

7.11.2 Preparation for Testing — Before testing in accordance with par. 7.11.3, secure the IBC to a platform using the method to be used during transport. The platform shall be constructed to withstand, without deformation, the stresses to which it is subjected during the test in par. 7.11.3. The edges of the platform shall extend a minimum of 300 mm beyond the horizontal outside dimensions of the IBC. Load the IBC with water to at least 95% of its capacity.

7.11.3 Procedure — Place the IBC and its platform on a level concrete surface. Raise a long side of the platform, pivoting the assembly on the other long side until it passes the balance point and the assembly rolls unrestrained.

7.11.4 Results

- a. There shall be no release of the contents from the body of the IBC. However, a discharge from the loading, unloading, venting devices or closure of the IBC shall not be considered to be a failure of the IBC provided that the discharge is equal to or less than 4 L.
- b. There shall be no separation of the IBC from the platform.

ISO standards on weathering plastics

ISO : TC61 Plastics

SC 6: Ageing, chemical and environmental resistance

ISO 877-1994 Plastics -- Methods of exposure to direct weathering, to weathering using glass-filtered daylight, and to intensified weathering by daylight using Fresnel mirrors

ISO4582-1998 Plastics -- Determination of changes in colour and variations in properties after exposure to daylight under glass, natural weathering or laboratory light sources

(both standards under review and other specific tests were developed as well)
