UN/SCETDG/23/INF.23

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-third session, 30 June - 4 July 2003
agenda item 4 (c))

PACKAGINGS

Approval of Intermediate Bulk Containers

Resistance to Stacking of Composite intermediate bulk containers (IBCs) with metal outer framework and plastic inner receptacle

Transmitted by the expert from Australia

Introduction

The current trend in the manufacture of Intermediate Bulk Containers (IBCs) has seen a progressive move to "lightweight" composite Intermediate bulk containers (plastic inner receptacle and metal outer framework of types 11HZ1, 21HZ1 and 31HZ1) for the transport of liquid, and some dry dangerous goods, when carried in a Cargo Transport Unit (CTU). In an effort to minimise bulk, weight and cost; the metal outer frame structure is often limited to the minimum required to surround the inner receptacle and support another IBC stacked above it.

While the design practices are used to produce a "lightweight" are often similar it is not common for the pallet or support arrangements for stacking of IBC to be the same. As such many lightweight IBCs are often not suitable for stacking with other IBCs except those of the same design. This is due to the nature of the pallet and the design of the support arrangements of the upper surface of the IBCs. This is not an issue for IBC where the design of the top of the IBC is such that it can support any design of pallet however these tend to be older or 'heavyweight' designs.

Where a shipment within a CTU consists solely of lightweight IBC of the same design there is generally no risk. However, in shipments within a CTU where a variety of design type are used as well as mixes of heavyweight and lightweight designs the experience in Australia is that the potential for failure of the outer package of the lightweight IBCs and subsequent damage of the inner package is significantly increased. The damage generally occurs due to:

i. the upper IBC 'falling into' the IBC on which it is stacked (see picture below); or
ii. the IBC falling within the CTU or out of the CTU when opened for discharge due to the stack being less stable as a result of limited contact between the pallet of the upper IBC and the IBC on which it is stacked.

These scenarios have been the cause of a number of spillages of dangerous goods and are considered a potential hazard for both land and sea transport operations and it appears that the use of lightweight IBCs in such circumstances is contrary to the requirements of section 4.1.1.1 and needs to be resolved.

Damage to corner of IBC (inside undamaged outer package corner) stemming from upper pallet base coming into contact with rigid plastic inner package.

Compressive damage has occurred despite cross rails and frames being undamaged. This IBC has been certified as a reusable IBC without restriction.

Light weight IBC with minimum outer packaging, particularly on the upper surface, and specially designed pallet base

Proposal

To resolve this issue it is recommended that the approval scope for IBC under section 6.5.1.1 be amended to require the stacking compatibility of IBCs to be subject to competent Authority approval. It would be appropriate that where an IBC can only be stacked with another unit of the same type, unless another load bearing device is used between the IBCs, that this should be stipulated in the approval and marked on the IBC. Similarly the specific requirements for composite IBCs in section 6.5.3.4 and the stacking test requirements in section 6.5.4.6 need to amended to address this issue.

SUGGESTED AMENDMENTS

6.5.1.1.3 The construction, equipment, testing, marking and operation of IBCs shall be subject to acceptance by the competent authority of the country in which the IBCs are approved. *Where the design of the IBC is such that the IBC can only be safely stacked with an IBC of the same design in operation, unless another load bearing device is employed between the IBCs, then any such approval shall be worded to this effect and require the IBC to be marked to this effect.*

6.5.3.4.26 Where IBCs are intended for stacking, the bearing surface should be such as to distribute the load in a safe manner *regardless of the design of the IBC it is supporting, particularly in respect of the pallet base. Where the design of the IBC bearing surface is such that it can only safely support an IBC of the same design then approval of the IBC is to be made conditional on the IBC being used solely with IBC's of the same design otherwise another load bearing device must be employed between the IBCs. In either case* such IBCs shall be designed so that the load is not supported by the inner receptacle.

6.5.4.6.5.(c) Noting 6.5.3.4.26 the test results for composite IBC must stipulate if the IBC capable of safely supporting the superimposed load regardless of the design of the IBC it is supporting, or if it is only suitable for stacking with IBC's of the same design unless another load bearing device is used between the IBCs .