

## Chapter 4.3

### *Use of bulk containers*

**Note:** Sheeted bulk containers (BK1) shall not be used for sea transport, except as indicated in 4.3.3.

#### **4.3.1 General provisions**

**4.3.1.1** This section provides general requirements applicable to the use of containers for the transport of solid substances in bulk. Substances shall be transported in bulk containers conforming to the applicable bulk container instruction identified by the letters BK in column 13 of the Dangerous Goods List, with the following meaning:

BK1: the transport in sheeted bulk containers is permitted;

BK2: the transport in closed bulk containers is permitted;

BK3: the transport in flexible bulk containers is permitted.

The bulk container used shall conform to the provisions of chapter 6.9.

**4.3.1.2** Except as provided in 4.3.1.3, bulk containers shall only be used when a substance is assigned a bulk container code in column 13 of the Dangerous Goods List.

**4.3.1.3** When a substance is not assigned BK2 or BK3 in column 13 of the Dangerous Goods List, interim approval for transport may be issued by the competent authority of the country of origin. The approval shall be included in the documentation of the consignment and contain, as a minimum, the information normally provided in the bulk container instruction and the conditions under which the substance shall be transported. Appropriate measures should be initiated by the competent authority to have the assignment included in the Dangerous Goods List. When a substance is not permitted in a BK1 bulk container, an exemption may be issued in accordance with 7.9.1.

**4.3.1.4** Substances which may become liquid at temperatures likely to be encountered during transport are not permitted in bulk containers.

**4.3.1.5** Bulk containers shall be siftproof and shall be so closed that none of the contents can escape under normal conditions of transport, including the effect of vibration, or by changes of temperature, humidity or pressure.

**4.3.1.6** Bulk solids shall be loaded into bulk containers and evenly distributed in a manner that minimizes movement that could result in damage to the container or leakage of the dangerous goods.

**4.3.1.7** Where venting devices are fitted, they shall be kept clear and operable.

**4.3.1.8** Bulk solids shall not react dangerously with the material of the bulk container, gaskets, equipment including lids and tarpaulins, or with protective coatings which are in contact with the contents, or significantly weaken them. Bulk containers shall be so constructed or adapted that the goods cannot penetrate between wooden floor coverings or come into contact with those parts of the bulk containers that may be affected by the dangerous goods or residues thereof.

**4.3.1.9** Before being filled and offered for transport, each bulk container shall be inspected and cleaned to ensure that it does not contain any residue on the interior or exterior that could:

- cause a dangerous reaction with the substance intended for transport;
- detrimentally affect the structural integrity of the bulk container; or
- affect the dangerous goods retention capabilities of the bulk container.

**4.3.1.10** During transport, no dangerous residues shall adhere to the outer surfaces of a bulk container.

**4.3.1.11** If several closure systems are fitted in series, the system which is located nearest to the dangerous goods to be transported shall be closed first before filling.

**4.3.1.12** Empty bulk containers that have contained dangerous goods shall be treated in the same manner as is prescribed in this Code for a filled bulk container, unless adequate measures have been taken to nullify any hazard.

- 4.3.1.13 If bulk containers are used for the carriage of bulk goods liable to cause a dust explosion, or evolve flammable vapours (e.g. for certain wastes), measures shall be taken to exclude sources of ignition and to prevent dangerous electrostatic discharge during transport, loading or unloading of the goods.
- 4.3.1.14 Substances, for example wastes, which may react dangerously with one another and substances of different classes and goods not subject to this Code, which are liable to react dangerously with one another, shall not be mixed together in the same bulk container. Dangerous reactions are:
- .1 combustion and/or evolution of considerable heat;
  - .2 emission of flammable and/or toxic gases;
  - .3 formation of corrosive liquids; or
  - .4 formation of unstable substances.
- 4.3.1.15 Before a bulk container is filled, it shall be visually examined to ensure it is structurally serviceable, its interior walls, ceiling and floors are free from protrusions or damage and that any inner liners or substance retaining equipment are free from rips, tears or any damage that would compromise its cargo retention capabilities. "Structurally serviceable" means the bulk container does not have major defects in its structural components, such as top and bottom side rails, top and bottom end rails, door sill and header, floor cross members, corner posts, and corner fittings in a freight container. Major defects include:
- .1 bends, cracks or breaks in the structural or supporting members that affect the integrity of the container;
  - .2 more than one splice or an improper splice (such as a lapped splice) in top or bottom end rails or door headers;
  - .3 more than two splices in any one top or bottom side rail;
  - .4 any splice in a door sill or corner post;
  - .5 door hinges and hardware that are seized, twisted, broken, missing, or otherwise inoperative;
  - .6 gaskets and seals that do not seal;
  - .7 any distortion of the overall configuration great enough to prevent proper alignment of handling equipment, mounting and securing chassis or vehicle, or insertion into ships' cargo spaces;
  - .8 any damage to lifting attachments or handling equipment interface features; or
  - .9 any damage to service or operational equipment.
- 4.3.1.16 Before a flexible bulk container is filled it shall be visually examined to ensure it is structurally serviceable, its textile slings, load-bearing structure straps, body fabric, lock device parts including metal and textile parts are free from protrusions or damage and that inner liners are free from rips, tears or any damage.
- 4.3.1.16.1 For flexible bulk containers, the period of use permitted for the transport of dangerous goods shall be two years from the date of manufacture of the flexible bulk container.
- 4.3.1.16.2 A venting device shall be fitted if a dangerous accumulation of gases may develop within the flexible bulk container. The vent shall be so designed that the penetration of foreign substances or the ingress of water is prevented under normal conditions of transport.
- 4.3.2 Additional provisions applicable to bulk goods of classes 4.2, 4.3, 5.1, 6.2, 7 and 8**
- 4.3.2.1 Bulk goods of class 4.2**
- Only closed bulk containers (BK2) may be used. The total mass carried in a bulk container shall be such that its spontaneous ignition temperature is greater than 55°C.
- 4.3.2.2 Bulk goods of class 4.3**
- Only closed bulk containers (BK2) may be used. These goods shall be transported in bulk containers which are waterproof.
- 4.3.2.3 Bulk goods of class 5.1**
- Bulk containers shall be so constructed or adapted that the goods cannot come into contact with wood or any other incompatible material.

**4.3.2.4 Bulk goods of class 6.2****4.3.2.4.1 Transport in bulk containers of animal material of class 6.2**

Animal material containing infectious substances (UN Nos. 2814, 2900 and 3373) is authorized for transport in bulk containers provided the following conditions are met:

- .1 Closed bulk containers, and their openings, shall be leakproof by design or by the fitting of a suitable liner.
- .2 The animal material shall be thoroughly treated with an appropriate disinfectant before loading prior to transport.
- .3 Closed bulk containers shall not be re-used until they have been thoroughly cleaned and disinfected.

**Note:** Additional provisions may be required by appropriate national health authorities.

**4.3.2.4.2 Bulk wastes of class 6.2 (UN 3291)**

- .1 only closed bulk containers (BK2) shall be permitted;
- .2 closed bulk containers, and their openings, shall be leakproof by design. These bulk containers shall have non-porous interior surfaces and shall be free from cracks or other features that could damage packagings inside, impede disinfection or permit inadvertent release;
- .3 wastes of UN 3291 shall be contained within the closed bulk container in UN type tested and approved sealed leakproof plastics bags tested for solids of packing group II and marked in accordance with 6.1.3.1. Such plastics bags shall be capable of passing the tests for tear and impact resistance according to ISO 7765-1:1988, *Plastics film and sheeting – Determination of impact resistance by the free-falling dart method – Part 1: Staircase methods*, and ISO 6383-2:1983, *Plastics – Film and sheeting – Determination of tear resistance – Part 2: Elmendorf method*. Each bag shall have an impact resistance of at least 165 g and a tear resistance of at least 480 g in both parallel and perpendicular planes with respect to the length of the bag. The maximum net mass of each plastics bag shall be 30 kg;
- .4 single articles exceeding 30 kg such as soiled mattresses may be transported without the need for a plastics bag when authorized by the competent authority;
- .5 wastes of UN 3291 which contain liquids shall only be transported in plastics bags containing sufficient absorbent material to absorb the entire amount of liquid without it spilling in the bulk container;
- .6 wastes of UN 3291 containing sharp objects shall only be transported in UN type tested and approved rigid packagings meeting the provisions of packing instructions P621, IBC620 or LP621;
- .7 rigid packagings specified in packing instructions P621, IBC620 or LP621 may also be used. They shall be properly secured to prevent damage during normal conditions of transport. Wastes transported in rigid packagings and plastics bags together in the same closed bulk container shall be adequately segregated from each other, e.g. by suitable rigid barriers or dividers, mesh nets or otherwise securing the packagings, such that they prevent damage to the packagings during normal conditions of transport;
- .8 wastes of UN 3291 in plastics bags shall not be compressed in a closed bulk container in such a way that bags may be rendered no longer leakproof;
- .9 the closed bulk container shall be inspected for leakage or spillage after each journey. If any wastes of UN 3291 have leaked or been spilled in the closed bulk container, it shall not be re-used until after it has been thoroughly cleaned and, if necessary, disinfected or decontaminated with an appropriate agent. No other goods shall be transported together with UN 3291 other than medical or veterinary wastes. Any such other wastes transported in the same closed bulk container shall be inspected for possible contamination.

**4.3.2.5 Bulk material of class 7**

For the transport of unpackaged radioactive material, see 4.1.9.2.4.

**4.3.2.6 Bulk goods of class 8**

Only closed bulk containers (BK2) may be used. These goods shall be transported in bulk containers which are watertight.

**4.3.3 Additional provisions for the use of sheeted bulk containers (BK1)**

4.3.3.1 Sheeted bulk containers (BK1) shall not be used for sea transport, except for UN 3077 not meeting the criteria of 2.9.3 transported on short international voyages.

**4.3.4 Additional provisions for the use of flexible bulk containers (BK3)**

4.3.4.1 Flexible bulk containers are only allowed in the holds of general cargo ships. They are not allowed to be transported in cargo transport units.