



## Dangerous goods safety information sheet

### Design approval requirements for bulk containers used to transport solid dangerous goods

#### **Introduction**

This information sheet explains the requirements in the Dangerous Goods Safety (Road and Rail Transport of Non-explosives) Regulations 2007 (Transport Regulations) for the design approvals of bulk containers. There are three types of bulk containers but only flexible bulk containers require design approval:

- sheeted bulk containers or BK1 – no approval required
- closed bulk containers or BK2 – no approval required
- flexible bulk containers or BK3 – approval required

Chapter 6.8 of the *Australian Code for the Transport of Dangerous Goods by Road and Rail* (ADG Code) deals with the requirements for the design, construction, inspection, testing and approval of bulk containers.

#### **BK1 and BK2**

Bulk containers of types BK1 and BK2 include freight containers, kibbles, skips, offshore bulk containers, bulk bins, swap bodies, trough-shaped containers, roller containers, and load compartments of vehicles.

They must be designed and constructed to be strong enough to withstand the shocks and loadings normally encountered during transport, including transshipment between transport modes if applicable. Under regulation 56 of the Transport Regulations, bulk containers coded BK1 and BK2 do not require design approval in Western Australia for packaging design because there are no performance tests in chapter 6.8 of ADG Code. This is despite the contrary intent of clause 6.8.4.4 of ADG Code, since the Transport Regulations — and not ADG Code — set out the requirements for Government approvals. If inconsistencies exist between the code and Transport Regulations, the regulations take precedent.

With one exception, bulk containers simply need to be sturdy enough to stand up to repeated usage and operate without losing product during normal transport operations. ADG Code does not define dimensions, pressures, construction materials and thicknesses, or the types of discharge mechanisms.

The exception is freight containers used as BK2 for sea transport. These need to comply with specific design requirements given in ISO 1496 Series 1 Freight Containers – Specification and Testing, as explained in clauses 6.8.3.1.1 and 6.8.3.1.2 of ADG Code.

Sheeted or closed bulk containers need to be well maintained and functional in compliance with the requirements of chapter 4.3.1 of ADG Code. In particular, note the following clauses:

- *Clause 4.3.1.5 – “Bulk containers must be sift-proof and must be so closed that none of the contents can escape under normal conditions of transport including the effect of vibration, or changes of temperature, humidity or pressure.”*

- *Clause 4.3.1.10 – “During transport, no dangerous residues may adhere to the outer surfaces of bulk containers.”*

### **BK3**

Flexible bulk containers or BK3 were introduced recently by the 17th edition of the United Nations Model Regulations and may only be used for Packaging Group III dangerous goods. There are detailed and specific requirements for their design, construction, performance testing and inspection set out in section 6.8.5 of ADG Code.

Before being used, each BK3 design type must be approved by Dangerous Goods Branch after having successfully passed the performance tests prescribed in clause 6.8.5.3 of ADG Code. These comprise drop tests, top lift tests, topple tests, righting tests, tear tests and stacking tests, which must be recorded in a test report as described in clause 6.8.5.4 of ADG Code.

Each BK3 bulk container must carry the United Nations packaging symbol and associated markings as described in clause 6.8.5.5 of ADG Code.

Tests must be repeated after each design modification that alters the design, material or manner of construction of a flexible bulk container.