

## General requirements

### 2.1 For all Packaging and Packages

The consignor shall ensure that all packaging and packages used for transport satisfy the following general requirements:

- 1) The package shall be so designed in relation to its mass, volume and shape that it can be easily and safely transported. In addition, the package shall be so designed that it can be properly secured in or on the conveyance during transport.
- 2) The design shall be such that any lifting attachments on the package will not fail when used in the intended manner and that if failure of the attachments should occur, the ability of the package to meet other requirements of this safety code would not be impaired. The design shall take account of appropriate safety factors to cover snatch lifting.
- 3) Attachments and any other features on the outer surface of the package that could be used to lift it shall be designed either to support its mass in accordance with the requirements of point 2, or shall be removable or otherwise rendered incapable of being used during transport.
- 4) As far as practicable, the packaging shall be so designed and finished that the external surfaces are free from protruding features and can be easily decontaminated.
- 5) As far as practicable, the outer layer of the package shall be so designed as to prevent the collection and the retention of water.
- 6) Any features added to the package at the time of transport that are not part of the package shall not reduce its safety.
- 7) The package shall be capable of withstanding the effects of any acceleration, vibration or vibration resonance that may arise under routine conditions of transport without any deterioration in the effectiveness of the closing devices on the various receptacles or in the integrity of the package as a whole. In particular, nuts, bolts and other securing devices shall be so designed as to prevent them from becoming loose or being released unintentionally, even after repeated use.
- 8) The materials of the packaging and any components or structures shall be physically and chemically compatible with each other and with the radioactive contents. Account shall be taken of their behaviour under irradiation.
- 9) All valves through which the radioactive contents could escape shall be protected against unauthorized operation.
- 10) The design of the package shall take into account ambient temperatures and pressures that are likely to be encountered in routine conditions of transport.
- 11) A package shall be so designed that it provides sufficient shielding to ensure that, under routine conditions of transport and with the maximum radioactive contents that the package is designed to contain, the radiation level at any point on the external surface of the package would not exceed  $2 \text{ mSv.h}^{-1}$  at the external surface and a TI of 10.0 for other packages, overpacks, as applicable, with account taken of the limits on the radiation levels for loading of freight containers and accumulation of packages, overpacks and freight containers, viz.,  $2 \text{ mSv.h}^{-1}$  at any point on, and  $0.1 \text{ mSv.h}^{-1}$  at 2 m from, the external surface of the conveyance ( conditions vary for exclusive use)

- 12) For radioactive material having other dangerous properties, the package design shall take into account those properties.

## **2.2 Additional Requirements for Packages transported by Air**

- 1) For packages to be transported by air, the temperature of the accessible surfaces shall not exceed 50°C at an ambient temperature of 38°C with no account taken for insolation.
- 2) Packages to be transported by air shall be so designed that if they were exposed to ambient temperatures ranging from -40°C to +55°C, the integrity of containment would not be impaired.
- 3) Packages to be transported by air shall be capable of withstanding, without loss or dispersal of radioactive contents from the containment system, an internal pressure that produces a pressure differential of not less than maximum normal operating pressure plus 95 kPa.