

## Chapter 3

### CLASS 1 — EXPLOSIVES

*Parts of this Chapter are affected by State Variation BE 2, DK 2, HR 5;  
see Table A-1*

#### 3.1 PACKING GROUP

Unless otherwise specified in these Instructions, packagings must conform to the requirements of 6;1, 6;2, 6;3 and 6;4 and must meet the test requirements of 6;4 for Packing Group II.

#### 3.2 GENERAL REQUIREMENTS

3.2.1 The general packing requirements of 4;1 must be met.

3.2.2 All packagings for Class 1 explosives must be so designed and constructed that:

- a) they will protect the explosives, prevent them from escaping and cause no increase in the risk of unintended ignition or initiation when subjected to normal conditions of transport including foreseeable changes in temperature, humidity and pressure;
- b) the complete package can be handled safely in normal conditions of transport; and
- c) the packages will withstand any loading imposed on them by foreseeable stacking to which they will be subject during transport so that they do not add to the risk presented by the explosives, the containment function of the packagings is not harmed, and they are not distorted in a way or to an extent which will reduce their strength or cause instability of a stack.

3.2.3 All explosive substances and articles, as prepared for transport, must have been classified in accordance with the procedures detailed in 2;1.5.

#### 3.3 GENERAL PACKING PROVISIONS

3.3.1 The general provisions detailed below are in addition to those in Part 4, Chapter 1.

3.3.1.1 The closure device of packagings containing liquid explosives must ensure a double protection against leakage.

3.3.1.2 The closure device of metal drums must include a suitable gasket; if a closure device includes a screw-thread, the ingress of explosive substances into the screw-thread must be prevented.

3.3.1.3 Packagings for water soluble substances must be water-resistant.

3.3.1.4 When the packaging includes a double envelope filled with water which may freeze during transport, a sufficient quantity of an anti-freeze agent must be added to the water to prevent freezing. Anti-freeze that could create a fire hazard because of its inherent flammability must not be used.

3.3.1.5 Nails, staples and other closure devices made of metal without protective covering must not penetrate to the inside of the outer packaging unless the inner packaging adequately protects the explosives against contact with the metal.

3.3.1.6 Inner packagings, fittings and cushioning materials and the placing of explosive substances or articles in packages must be accomplished in a manner which prevents the explosive substances or articles from becoming loose in the outer packaging under normal conditions of transport. Metallic components of articles must be prevented from making contact with metal packagings. Articles containing explosive substances not enclosed in an outer casing must be separated from each other in order to prevent friction and impact. Padding, trays, partitioning in the inner or outer packaging, mouldings or receptacles may be used for this purpose.

3.3.1.7 Packagings must be made of materials compatible with, and impermeable to, the explosives contained in the package, so that neither interaction between the explosives and the packaging materials, nor leakage, causes the explosive to become unsafe to transport, or the hazard division or compatibility group to change.

3.3.1.8 The ingress of explosive substances into the recesses of sealed metal packagings must be prevented.

3.3.1.9 Plastic packagings must not be liable to generate or accumulate sufficient static electricity so that a discharge could cause the packaged explosive substances or articles to initiate, ignite or function.

3.3.1.10 Explosive substances must not be packed in inner or outer packagings where the differences in internal and external pressures, due to thermal or other effects, could cause an explosion or rupture of the package.

3.3.1.11 Whenever loose explosive substances or the explosive substance of an uncased or partly cased article may come into contact with the inner surface of metal packagings (1A2, 1B2, 4A, 4B and metal receptacles), the metal packaging must be provided with an inner liner or coating (see 1.1.3).

3.3.1.12 Packing Instruction 101 may be used for any explosive provided the package has been approved by an appropriate national authority regardless of whether the packaging complies with the packing instruction assignment in the Dangerous Goods List.

3.3.1.13 Electro-explosive devices must be adequately protected against electro-magnetic radiation and stray currents.

3.3.1.14 Large and robust explosive articles, normally intended for military use, without their means of initiation or without their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems must be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling, storage or launching devices in such a way that they will not become loose during normal conditions of transport.

3.3.1.14.1 Where such large explosive articles are, as part of their operational safety and suitability tests, subjected to test regimes that meet the intentions of these Instructions and such tests have been successfully undertaken, the appropriate national authority may approve such articles to be transported under these Instructions.

*Note 1.— The term receptacle used in the Inner and Intermediate packaging columns of this table includes boxes, bottles, cans, drums, jars and tubes, including any means of closure.*

*Note 2.— Reels are devices made of plastics, wood, fibreboard, metal or other suitable material comprising a central spindle with, or without, side walls at each end of the spindle. Articles and substances can be wound onto the spindle and may be retained by side walls.*

*Note 3.— Trays are sheets of metal, plastics, wood, fibreboard or other suitable material which are placed in the inner, intermediate or outer packaging and achieve a close-fit in such packaging. The surface of the tray may be shaped so that packagings or articles can be inserted, held secure and separated from each other.*

#### 3.4 PACKING INSTRUCTIONS

##### Packing Instruction 101

*Inner packagings*

*Intermediate packagings*

*Outer packagings*

As specified by the appropriate national authority.

The State's distinguishing sign for motor vehicles in international traffic of the country for which the authority acts must be marked on the dangerous goods transport document as follows: "Packaging approved by the competent authority of ..."

*Note.— In this instance the term "competent authority" is used for intermodal compatibility; it refers to the appropriate national authority.*

### Packing Instruction 114

#### a) solid wetted

##### *Inner packagings*

Bags  
 plastics  
 textile  
 woven plastics  
 Receptacles  
 metal  
 plastics  
 + wood

##### *Intermediate packagings*

Bags  
 plastics  
 textile, plastic coated or lined  
 Receptacles  
 metal  
 plastics  
 + Dividing partitions  
 wood

##### *Outer packagings*

Boxes  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
 + other metal (4N)  
 plywood (4D)  
 reconstituted wood (4F)  
 solid plastics (4H2)  
 steel (4A)  
 Drums  
 ≠ aluminium (1B1, 1B2)  
 fibre (1G)  
 + other metal (1N1, 1N2)  
 ≠ plastics (1H1, 1H2)  
 plywood (1D)  
 ≠ steel (1A1, 1A2)

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

- For UN 0077, 0234, 0235 and 0236, packagings must be lead-free.
- For UN 0342, inner packagings are not required when metal (1A1, 1A2, 1B1, 1B2, 1N1 or 1N2) or plastic (1H1 or 1H2) drums are used as outer packagings.
- Intermediate packagings are not required if leakproof removable head drums are used as the outer packaging.

#### b) solid dry

##### *Inner packagings*

Bags  
 paper, kraft  
 plastics  
 textile, siftproof  
 woven plastics, siftproof  
 Receptacles  
 fibreboard  
 metal  
 paper  
 plastics  
 + wood  
 woven plastics, siftproof

##### *Intermediate packagings*

Not necessary

##### *Outer packagings*

Boxes  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
 plywood (4D)  
 reconstituted wood (4F)  
 Drums  
 ≠ aluminium (1B1, 1B2)  
 fibre (1G)  
 + other metal (1N1, 1N2)  
 ≠ plastics (1H1, 1H2)  
 plywood (1D)  
 ≠ steel (1A1, 1A2)

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

- For UN 0077, 0132, 0234, 0235 and 0236, packagings must be lead-free.
- For UN 0508 and 0509, metal packagings must not be used.
- For UN 0160 and 0161, when metal drums (1A1, 1A2, 1B1, 1B2, 1N1 or 1N2) are used as the outer packaging, metal packagings must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes, is prevented.
- For UN 0160 and 0161, inner packagings are not required if drums are used as the outer packaging.

### Packing Instruction 130

**Inner packagings**

Not necessary

**Intermediate packagings**

Not necessary

**Outer packagings**
**Boxes**

aluminium (4B)  
 expanded plastics (4H1)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
 + other metal (4N)  
 plywood (4D)  
 reconstituted wood (4F)  
 solid plastics (4H2)  
 steel (4A)

**Drums**

≠ aluminium (1B1, 1B2)  
 fibre (1G)  
 + other metal (1N1, 1N2)  
 ≠ plastics (1H1, 1H2)  
 plywood (1D)  
 ≠ steel (1A1, 1A2)

**PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:**

- The following applies to UN 0006, 0009, 0010, 0015, 0016, 0018, 0019, 0034, 0035, 0038, 0039, 0048, 0056, 0137, 0138, 0168, 0169, 0171, 0181, 0182, 0183, 0186, 0221, 0238, 0243, 0244, 0245, 0246, 0254, 0280, 0281, 0286, 0287, 0297, 0299, 0300, 0301, 0303, 0321, 0328, 0329, 0344, 0345, 0346, 0347, 0362, 0363, 0370, 0412, 0424, 0425, 0434, 0435, 0436, 0437, 0438, 0451, 0459 and 0488. Large and robust explosive articles, normally intended for military use, without their means of initiation or with their means of initiation containing at least two effective protective features, may be carried unpackaged. When such articles have propelling charges or are self-propelled, their ignition systems must be protected against stimuli encountered during normal conditions of transport. A negative result in Test Series 4 on an unpackaged article indicates that the article can be considered for transport unpackaged. Such unpackaged articles may be fixed to cradles or contained in crates or other suitable handling, storage or launching devices in such a way that they will not become loose during normal conditions of transport. Where such large explosive articles are as part of their operational safety and suitability tests subjected to test regimes that meet the intentions of these Instructions and such tests have been successfully undertaken, the appropriate national authority may approve such articles to be transported under these Instructions.
- For UN 0457, 0458, 0459 and 0460, whenever loose explosive substances or the explosive substance of an uncased or partly cased article may come into contact with the inner surface of metal packagings (1A2, 1B2, 4A, 4B and metal receptacles), the metal packaging must be provided with an inner liner or coating.

### Packing Instruction 131

#### Inner packagings

##### Bags

paper  
plastics

##### Receptacles

fibreboard  
metal  
plastics  
wood

##### Reels

#### Intermediate packagings

Not necessary

#### Outer packagings

##### Boxes

aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
+ other metal (4N)  
plywood (4D)  
reconstituted wood (4F)  
steel (4A)

##### Drums

≠ aluminium (1B1, 1B2)  
fibre (1G)  
≠ plastics (1H1, 1H2)  
+ other metal (1N1, 1N2)  
plywood (1D)  
≠ steel (1A1, 1A2)

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— For UN 0029, 0267 and 0455, bags and reels must not be used as inner packagings.

### Packing Instruction 133

#### Inner packagings

##### Receptacles

fibreboard  
metal  
plastics  
wood

##### Trays, fitted with dividing partitions

fibreboard  
plastics  
wood

#### Intermediate packagings

##### Receptacles

fibreboard  
metal  
plastics  
wood

#### Outer packagings

##### Boxes

aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
+ other metal (4N)  
plywood (4D)  
reconstituted wood (4F)  
solid plastics (4H2)  
steel (4A)

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— Receptacles are only required as intermediate packagings when the inner packagings are trays.  
— For UN 0043, 0212, 0225, 0268 and 0306, trays must not be used as inner packagings.

### Packing Instruction 134

#### Inner packagings

Bags  
 water-resistant

Receptacles  
 fibreboard  
 metal  
 plastics  
 wood

Sheets  
 fibreboard, corrugated

Tubes  
 fibreboard

#### Intermediate packagings

Not necessary

#### Outer packagings

Boxes  
 aluminium (4B)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
 + other metal (4N)  
 plywood (4D)  
 reconstituted wood (4F)  
 solid plastics (4H2)  
 steel (4A)

Drums  
 ≠ aluminium (1B1, 1B2)  
 fibre (1G)  
 ≠ plastics (1H1, 1H2)  
 + other metal (1N1, 1N2)  
 plywood (1D)  
 ≠ steel (1A1, 1A2)

### Packing Instruction 135

#### Inner packagings

Bags  
 paper  
 plastics

Receptacles  
 fibreboard  
 metal  
 plastics  
 wood

Sheets  
 paper  
 plastics

#### Intermediate packagings

Not necessary

#### Outer packagings

Boxes  
 aluminium (4B)  
 expanded plastics (4H1)  
 fibreboard (4G)  
 natural wood, ordinary (4C1)  
 natural wood, with siftproof walls (4C2)  
 + other metal (4N)  
 plywood (4D)  
 reconstituted wood (4F)  
 solid plastics (4H2)  
 steel (4A)

Drums  
 ≠ aluminium (1B1, 1B2)  
 fibre (1G)  
 + other metal (1N1, 1N2)  
 ≠ plastics (1H1, 1H2)  
 plywood (1D)  
 ≠ steel (1A1, 1A2)

### Packing Instruction 136

#### Inner packagings

##### Bags

plastics  
textile

##### Boxes

fibreboard  
plastics  
wood

Dividing partitions in the  
outer packagings

#### Intermediate packagings

Not necessary

#### Outer packagings

##### Boxes

aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
+ other metal (4N)  
plywood (4D)  
reconstituted wood (4F)  
solid plastics (4H2)  
steel (4A)

##### Drums

≠ aluminium (1B1, 1B2)  
fibre (1G)  
+ other metal (1N1, 1N2)  
≠ plastics (1H1, 1H2)  
plywood (1D)  
≠ steel (1A1, 1A2)

### Packing Instruction 137

#### Inner packagings

##### Bags

plastics

##### Boxes

fibreboard

+ wood

##### Tubes

fibreboard  
metal  
plastics

Dividing partitions in the  
outer packagings

#### Intermediate packagings

Not necessary

#### Outer packagings

##### Boxes

aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
+ other metal (4N)  
plywood (4D)  
reconstituted wood (4F)  
steel (4A)

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

- For UN 0059, 0439, 0440 and 0441, when the shaped charges are packed singly, the conical cavity must face downwards and the package marked "THIS SIDE UP". When the shaped charges are packed in pairs, the conical cavities must face inwards to minimize the jetting effect in the event of accidental initiation.

### Packing Instruction 138

#### Inner packagings

Bags  
plastics

#### Intermediate packagings

Not necessary

#### Outer packagings

##### Boxes

aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
+ other metal (4N)  
plywood (4D)  
reconstituted wood (4F)  
solid plastics (4H2)  
steel (4A)

##### Drums

≠ aluminium (1B1, 1B2)  
fibre (1G)  
+ other metal (1N1, 1N2)  
≠ plastics (1H1, 1H2)  
plywood (1D)  
≠ steel (1A1, 1A2)

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

— If the ends of the articles are sealed, inner packagings are not necessary.

### Packing Instruction 139

#### Inner packagings

Bags  
plastics  
Receptacles  
fibreboard  
metal  
plastics  
wood  
Reels  
Sheets  
paper  
plastics

#### Intermediate packagings

Not necessary

#### Outer packagings

##### Boxes

aluminium (4B)  
fibreboard (4G)  
natural wood, ordinary (4C1)  
natural wood, with siftproof walls (4C2)  
+ other metal (4N)  
plywood (4D)  
reconstituted wood (4F)  
solid plastics (4H2)  
steel (4A)

##### Drums

≠ aluminium (1B1, 1B2)  
fibre (1G)  
+ other metal (1N1, 1N2)  
≠ plastics (1H1, 1H2)  
plywood (1D)  
≠ steel (1A1, 1A2)

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

- For UN 0065, 0102, 0104, 0289 and 0290, the ends of the detonating cord must be sealed, for example by a plug firmly fixed so that the explosive cannot escape. The ends of "Cord, detonating, flexible", must be fastened securely.
- For UN 0065 and 0289, inner packagings are not required when they are in coils.



### Packing Instruction 140

| <i>Inner packagings</i>  | <i>Intermediate packagings</i> | <i>Outer packagings</i>   |
|--|--------------------------------|---|
| Bags<br>plastics<br>Reels<br>Sheets<br>paper, kraft<br>plastics<br>+ Receptacles<br>wood | Not necessary                  | Boxes<br>aluminium (4B)<br>fibreboard (4G)<br>natural wood, ordinary (4C1)<br>natural wood, with siftproof walls (4C2)<br>+ other metal (4N)<br>plywood (4D)<br>reconstituted wood (4F)<br>solid plastics (4H2)<br>steel (4A)<br>Drums<br>≠ aluminium (1B1, 1B2)<br>fibre (1G)<br>+ other metal (1N1, 1N2)<br>≠ plastics (1H1, 1H2)<br>plywood (1D)<br>≠ steel (1A1, 1A2) |

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

- If the ends of UN 0105 are sealed, no inner packagings are required.
- For UN 0101, the packaging must be siftproof except when the fuse is covered by a paper tube and both ends of the tube are covered with removable caps.
- For UN 0101, steel, aluminium or other metal boxes or drums must not be used.

### Packing Instruction 141

| <i>Inner packagings</i>  | <i>Intermediate packagings</i> | <i>Outer packagings</i>   |
|--|--------------------------------|---|
| Receptacles<br>fibreboard<br>metal<br>plastics<br>wood<br>Trays, fitted with dividing partitions<br>plastics<br>wood<br>Dividing partitions in the<br>outer packagings | Not necessary                  | Boxes<br>aluminium (4B)<br>fibreboard (4G)<br>natural wood, ordinary (4C1)<br>natural wood, with siftproof walls (4C2)<br>+ other metal (4N)<br>plywood (4D)<br>reconstituted wood (4F)<br>solid plastics (4H2)<br>steel (4A)<br>Drums<br>≠ aluminium (1B1, 1B2)<br>fibre (1G)<br>+ other metal (1N1, 1N2)<br>≠ plastics (1H1, 1H2)<br>plywood (1D)<br>≠ steel (1A1, 1A2) |

### Packing Instruction 142

| <i>Inner packagings</i>  | <i>Intermediate packagings</i> | <i>Outer packagings</i>   |
|--|--------------------------------|---|
| Bags<br>paper<br>plastics<br>Receptacles<br>fibreboard<br>metal<br>plastics<br>wood<br>Sheets<br>paper<br>Trays, fitted with dividing partitions<br>plastics | Not necessary                  | Boxes<br>aluminium (4B)<br>fibreboard (4G)<br>natural wood, ordinary (4C1)<br>natural wood, with siftproof walls (4C2)<br>+ other metal (4N)<br>plywood (4D)<br>reconstituted wood (4F)<br>solid plastics (4H2)<br>steel (4A)<br>Drums<br>≠ aluminium (1B1, 1B2)<br>fibre (1G)<br>+ other metal (1N1, 1N2)<br>≠ plastics (1H1, 1H2)<br>plywood (1D)<br>≠ steel (1A1, 1A2) |

### Packing Instruction 143

| <i>Inner packagings</i>   | <i>Intermediate packagings</i> | <i>Outer packagings</i>   |
|---|--------------------------------|---|
| Bags<br>paper, kraft<br>plastics<br>textile<br>textile, rubberized<br>Receptacles<br>fibreboard<br>metal<br>plastics<br>+ wood<br>Trays, fitted with dividing partitions<br>plastics<br>> | Not necessary                  | Boxes<br>aluminium (4B)<br>fibreboard (4G)<br>natural wood, ordinary (4C1)<br>natural wood, with siftproof walls (4C2)<br>+ other metal (4N)<br>plywood (4D)<br>reconstituted wood (4F)<br>solid plastics (4H2)<br>steel (4A)<br>Drums<br>≠ aluminium (1B1, 1B2)<br>fibre (1G)<br>+ other metal (1N1, 1N2)<br>≠ plastics (1H1, 1H2)<br>plywood (1D)<br>≠ steel (1A1, 1A2) |

#### PARTICULAR PACKING REQUIREMENTS OR EXCEPTIONS:

- For UN 0271, 0272, 0415 and 0491, when metal packagings are used, metal packagings must be so constructed that the risk of explosion, by reason of increase in internal pressure from internal or external causes, is prevented.
- Instead of the above inner and outer packagings, composite packagings (6HH2) (plastic receptacle with outer solid box) may be used.