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**COMMITTEE OF EXPERTS ON THE
TRANSPORT OF DANGEROUS GOODS**

**(Twentieth session,
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agenda item 2 (b))**

**WORK OF THE SUB-COMMITTEE OF EXPERTS ON
THE TRANSPORT OF DANGEROUS GOODS**

Packing instructions

**Report of the informal Working Group on Packing Instructions
(Frankfurt, 7 - 11 September 1998)**

Annex 2

Proposed packing instructions for IBCs

Transmitted by the Expert from the United States of America

PACKING INSTRUCTIONS FOR IBCS

| IBC01 | IBC PACKING INSTRUCTION | IBC01 |
|--|--------------------------------|--------------|
| <p>Only metal IBCs (31A, 31B and 31N) are authorized. Only liquids with a vapour pressure less than or equal to 110 kPa at 50 °C, or 130 kPa at 55 °C, are authorized in IBCs.</p> | | |

| IBC02 | IBC PACKING INSTRUCTION | IBC02 |
|--|--------------------------------|--------------|
| <p>The following IBCs are authorized:</p> <ul style="list-style-type: none"> (a) Metal: 31A, 31B and 31N; (b) Rigid plastics: 31H1 and 31H2; (c) Composites: 31HZ1. <p>Only liquids with a vapour pressure less than or equal to 110 kPa at 50 °C, or 130 kPa at 55 °C, are authorized in IBCs.</p> | | |

| IBC03 | IBC PACKING INSTRUCTION | IBC03 |
|--|--------------------------------|--------------|
| <p>The following IBCs are authorized:</p> <ul style="list-style-type: none"> (a) Metal: 31A, 31B and 31N; (b) Rigid plastics: 31H1 and 31H2; (c) Composites: 31HZ1 and 31HZ2. <p>Only liquids with a vapour pressure less than or equal to 110 kPa at 50 °C, or 130 kPa at 55 °C, are authorized in IBCs.</p> | | |

| IBC04 | IBC PACKING INSTRUCTION | IBC04 |
|--|--------------------------------|--------------|
| <p>The following IBCs are authorized:</p> <ul style="list-style-type: none"> (a) Metal: 11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N; (b) Rigid plastics: 11H1, 11H2, 21H1, 21H2, 31H1 and 31H2; (c) Composites: 11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2. | | |

| IBC04A | IBC PACKING INSTRUCTION | IBC04A |
|---|--------------------------------|---------------|
| <p>The following IBCs are authorized:</p> <ul style="list-style-type: none"> (a) Metal: 11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N; (b) Rigid plastics: 11H1, 11H2, 21H1, 21H2, 31H1 and 31H2; (c) Composites: 11HZ1, 21HZ1 and 31HZ1. | | |

| IBC05 | IBC PACKING INSTRUCTION | IBC05 |
|---|--------------------------------|--------------|
| <p>The following IBCs are authorized:</p> <ul style="list-style-type: none">(a) Metal: 11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N;(b) Rigid plastics: 11H1, 11H2, 21H1, 21H2, 31H1 and 31H2;(c) Composites: 11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2.(d) Fibreboard: 11G;(e) Wooden: 11C, 11D and 11F.(f) Flexible: 13H1, 13H2, 13H3, 13H4, 13H5, 13L1, 13L2, 13L3, 13L4, 13M1 or 13M2. <p>The following additional requirements apply to the use of IBCs specified in this packing instruction:</p> <ul style="list-style-type: none">(a) Flexible, fibreboard and wooden IBCs shall not be used for substances that may become liquid during transport;(b) For Packing Group I substances, IBCs shall be transported in closed transport units;(c) Flexible, fibreboard, wooden IBCs and composite IBCs with a fibreboard or wooden outer body containing Packing Group II substances shall be transported in closed transport units. | | |

| IBC06 | IBC PACKING INSTRUCTION | IBC06 |
|---|--------------------------------|--------------|
| <p>Only metal IBCs (11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N) are authorized.</p> | | |

| IBC07 | IBC PACKING INSTRUCTION | IBC07 |
|--|--------------------------------|--------------|
| <p>The following IBCs are authorized:</p> <ul style="list-style-type: none">(a) Metal: 11A, 11B, 11N, 21A, 21B, 21N, 31A, 31B and 31N;(b) Rigid plastics: 11H1, 11H2, 21H1, 21H2, 31H1 and 31H2;(c) Composites: 11HZ1, 11HZ2, 21HZ1, 21HZ2, 31HZ1 and 31HZ2.(d) Wooden: 11C, 11D and 11F. <p>The following additional requirements apply to the use of IBCs specified in this packing instruction:</p> <ul style="list-style-type: none">(a) Wooden IBCs shall not be used for substances that may become liquid during transport.(b) Wooden IBC liners shall be sift proof;(c) For Packing Group I substances, IBCs shall be transported in closed transport units;(c) Wooden IBCs and composite IBCs with a fibreboard or wooden outer body containing Packing Group II substances shall be transported in closed transport units. | | |

| IBC08 | IBC PACKING INSTRUCTION | IBC08 |
|---|--------------------------------|--------------|
| <p>IBCs are only authorized when approved by the competent authority (see 4.1.3.1).</p> | | |

| IBC09 | IBC PACKING INSTRUCTION | IBC09 |
|--|--------------------------------|--------------|
| <p>This packing instruction applies to clinical and medical waste. The following packagings are authorized:</p> <p>Rigid, leakproof IBCs conforming to the Packing Group II performance level shall be used. There shall be sufficient absorbent material to absorb the entire amount of liquid present in the large packaging or IBC. IBCs shall be capable of retaining liquids. IBCs intended to contain sharp objects such as broken glass and needles shall be resistant to puncture.</p> | | |

| IBC10 | IBC PACKING INSTRUCTION | | | | IBC10 |
|--|--|------------------------|---------------------------|--------------------------------|-----------------------|
| <p>The special packing provisions of 4.1.5.2 shall be met. To prevent explosive rupture of metal IBCs or composite IBCs with complete metal casing, the emergency-relief devices shall be designed to vent all the decomposition products and vapours evolved during self-accelerating decomposition or during a period of not less than one hour of fire-engulfment as calculated by the formula in 4.2.1.13.8. The formulations listed below are suitable for carriage in IBCs. For other formulations, see 4.1.5.2.2. The control and emergency temperatures specified in this packing instruction are based on a non-insulated IBC. When consigning an organic peroxide in an IBC in accordance with this instruction, it is the responsibility of the consignor to ensure that:</p> <p>(a) The pressure and emergency relief devices installed on the IBC are designed to take appropriate account of the self-accelerating decomposition of the organic peroxide and of fire engulfment; and</p> <p>(b) When applicable, the control and emergency temperatures indicated are appropriate, taking into account the design (e.g. insulation) of the IBC to be used.</p> | | | | | |
| UN No | Organic peroxide | Type of IBC <u>1</u> / | Maximum quantity (litres) | Control temperature <u>2</u> / | Emergency temperature |
| 3109 | ORGANIC PEROXIDE, TYPE F, LIQUID tert-Butyl peroxyacetate, not more than 32% in diluent type A | 31A 31HA1 | 1250 1000 | | |
| | tert-Butyl peroxy-3,5,5-trimethylhexanoate, not more than 32% in diluent type A | 31A 31HA1 | 1250 1000 | | |
| | Cumyl hydroperoxide, not more than 90% in diluent type A | 31HA1 | 1250 | | |
| | Dibenzoyl peroxide, not more than 42% as a stable dispersion | 31H1 | 1000 | | |
| | Di-tert-butyl peroxide, not more than 32% in diluent type A | 31A 31HA1 | 1250 1000 | | |
| | 1,1-Di-(tert-butylperoxy) cyclohexane, not more than 42% in diluent type A | 31H1 | 1000 | | |
| | Dilauroyl peroxide, not more than 42%, stable dispersion, in water | 31HA1 | 1000 | | |
| | Isopropyl cumyl hydroperoxide, not more than 72% in diluent type A | 31HA1 | 1250 | | |
| | p-Menthyl hydroperoxide, not more than 72% in diluent type A | 31HA1 | 1250 | | |
| | Peroxyacetic acid, stabilized, not more than 17% | 31H1 31HA1 31A | 1500 1500 1500 | | |
| 3119 | ORGANIC PEROXIDE, TYPE F, LIQUID, TEMPERATURE CONTROLLED tert-Butyl peroxy-2-ethylhexanoate, not more than 32% in diluent type B | 31HA1 31A | 1000 1250 | +30 °C | +35 °C |
| | tert-Butyl peroxy-pivalate, not more than 27% in diluent type B | 31HA1 31A | 1000 1250 | +10 °C | +15 °C |
| | Di-(4-tert-butylcyclohexyl) peroxydicarbonate, not more than 42%, stable dispersion, in water | 31HA1 | 1000 | +30 °C | +35 °C |
| | Dicetyl peroxydicarbonate, not more than 42%, stable dispersion, in water | 31HA1 | 1000 | +30 °C | +35 °C |
| | Dimyristyl peroxydicarbonate, not more than 42%, stable dispersion, in water | 31HA1 | 1000 | +15 °C | +25 °C |
| | Di-(3,5,5-trimethylhexanoyl) peroxide, not more than 38% in diluent type A | 31HA1 31A | 1000 1250 | +10 °C | +15 °C |

IBC Special packing provisions:

B1 IBCs shall be transported in closed transport units. *This would be applied to all PG I substances authorized in IBCs in the Dangerous Goods List.*

B2 When this substance is transported in flexible, fibreboard, wooden IBCs or composite IBCs with a fibreboard or wooden outer body the IBCs shall be transported in closed transport units. *This would be applied to all PG II solids assigned to IBC05.*

B3 Only flexible IBCs fitted with a coating or liner are authorized. *This is applied to most substances assigned to IBC05.*

B4 Flexible, fibreboard or wooden IBCs shall be sift-proof and water-resistant or shall be fitted with a sift-proof and water-resistant liner. *This would be applied to all PGI and II substances assigned to IBC05.*

B5 IBCs shall be provided with a device to allow venting during transport. The inlet to the pressure relief device shall be sited in the vapour space of the IBC under maximum filling conditions during transport. *This is note 6 in the List of liquid substances suitable for transport in the General Introduction to the IMDG Code. This is assigned to UN 2014, 3109, 3119, 3149 and 1791.*

B6 Bottom openings are not authorized. *The Sub-Committee should decide whether this is necessary and which substances, if any, this special packing provision should apply. This is note 7 in the List of liquid substances suitable for transport in the General Introduction to the IMDG Code.*

B7 IBCs are not required to meet the IBC testing requirements of Chapter 6.5. *(This should apply to UN 1327, 1363, 1364, 1365, 1386, 2211, 2217, 2793 and 3314).*

B8 IBCs with a capacity greater than 450 litres are not permitted due to the potential for explosion when transported in large volumes. (SP 26 should be deleted and a Tank Provision should be included which states:

“TPxx Portable tanks are not permitted due to the potential for explosion when transported in large volumes”. (This should be applied to UN 1222 and 1261).

B9 The pure form of this substance is known to have a vapour pressure of more than 110 kPa at 50°C or 130 kPa at 55°C. Only solutions with a vapour pressure less than or equal to 110 kPa at 50°C or 130 kPa at 55°C are authorized for transport in IBCs (see also 3.1.3.2).
