Dangerous goods & Hazardous substances marks, labels and placards

Application

Minimum requirements for marks, labels and placards used for dangerous goods and other hazardous substances classified either as dangerous goods under UN model regulation or hazardous chemical under GHS.

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1  **Warning & information marks and labels on products and packages**

All packages containing dangerous goods and some hazardous substances require some type of marks and/or labels to indicate that they carry a risk, the type of risk and that special handling might be required. For some articles and substances these warnings shall also be on the product itself.

Depending on type different levels of marks and labels are required by national and international dangerous goods regulations. If classifying as “exempted”, normally dangerous goods markings are not required, but that cannot be taken as a rule.

This document aims to support addressing the national and international regulations governing the requirements on dangerous goods Marks, Labels and Placards.

For usage and placement of Marks and Labels on transport packages, see instruction Packaging, marking and labeling of dangerous goods 124 46-3280 Uen.

2  **Locations for marks and labels on transport packages and overpacks**

All applicable marks and labels for the dangerous goods contained in a package and Overpack shall be placed on the same surface, close to each other to enable easy identification in the supply chain. They must be placed on the package, so they are not covered or obscured by any part of the package, any detail that is attached to the packaging or any other label or marking.

Marks and Labels are only required on 1 side of the package however, it is allowed to reproduce marks and labels on more surfaces provided that the information is identical on all surfaces.

All dangerous goods when prepared for transport shall be marked and labeled as prescribe in the regulations. The hazard label(s) to be used is shown in the dangerous goods list, unless otherwise provided for by a special provision.

Exemption from this requirement are the UN Specification Code that may appear on another surface than other marks and labels; and the Orientation labels that shall be on 2 opposite sides.

A permanent (printed) danger markings corresponding exactly to the prescribed models are allowed.

If a package is of such an irregular shape or the package is too small, so that the label cannot be fixed in a satisfactory manner, it may be attached to the package by a tag or other suitable means.

Orientation labels shall be on 2 opposite sides, indicating the handling orientation of the package.
3 Label for transport

Symbols can either be in label form or pre-printed on the packages. Regardless if in label form or pre-printed the symbol(s) needs to conform to the minimum specification requirements.

3.1 Quality

a All labels shall be readily visible and legible.

b All labels shall be able to withstand open weather exposure without a substantial reduction in effectiveness.

Labels and placards on packages, cargo transport units and containers intended for sea transport, containing dangerous goods, shall be such that the label(s) and placard(s) will still be identifiable on packages, cargo transport units and containers surviving at least three months’ immersion in the sea. Account shall be taken of the durability of the packaging materials used and the surface of the package in the relation to long term exposure of water.

3.2 Dangerous Goods Hazard label design and layout

Labels shall satisfy the provisions herein and conform, in terms of color, symbols, and general format, to the models shown in section 7 Specimens, labels and marks. Corresponding models, with minor variations which do not affect the obvious meaning of the label, are also acceptable.

Where appropriate labels in section 7 are shown with a dotted outer boundary as provided for in this is not required when labels are applied on a background of contrasting color.

Labels shall conform to as shown in below figure

Class/division label figure

* The class or for Classes 4.1, 4.2 and 4.3 the figure “4” or for Classes 6.1 and 6.2, the figure “6” shall be shown in the bottom corner.

** Additional text/numbers/symbol/letters shall (if mandatory) or may (if optional) be shown in this bottom half.

*** The class symbol or, for divisions 1.4, 1.5 and 1.6, the division number and for Model No 7E the word “FISSILE” shall be shown in this top half.
The label must be in the form of a square set at an angle of 45° (diamond shaped) with the minimum dimensions of 100 × 100 mm. If the size of the package so requires the dimensions may be reduced proportionally, provided that the symbols and other elements of the label remain clearly visible.

Note: *Air freight does not allow labels to be reduced in size, except the labels for gas cylinders.*

There must be line inside the edge forming the diamond, which must be parallel and approximately 5 mm from the outside of that line to the edge of the label. The line inside the edge on the upper half of the label the line must be the same color as the symbol and the line inside the edge on the lower half of the label must be the same color as the class or division number in the bottom corner. Where dimensions are not specified, all features must be in approximate proportion to those shown.

3.2.1 Pictorial symbol and class number

With the exception of labels for Division 1.4, 1.5 and 1.6 of Class 1 and class 9, the upper half of the label shall contain the pictorial symbol and the lower half must contain:

a. For Classes 1, 2, 3, 7 and 9, the class number;

b. For Classes 4.1, 4.2 and 4.3, the figure “4”;

c. For division 5.1 and 5.2 the figure “5.1” and “5.2” as applicable;

d. For Classes 6.1 and 6.2, the figure “6”.

For the Class 9 label, the upper half of the label must only contain the seven vertical stripes of the symbol and for 9A the lower half must contain the symbol of the group of batteries. The class number must be in the lower half for both 9 and 9A.

3.2.2 Color standards

The following color standards from the Pantone® Formula Guide may be used to achieve the required colors on hazard and handling labels:

- Blue Pantone Color No. 285U
- Green Pantone Color No. 335U
- Orange Pantone Color No. 151U
- Red Pantone Color No. 186U
- Yellow Pantone Color No. 109U

The symbols, text and numbers must be shown in black on all labels except:
1. the Class 8 label, where the text (if any) and class number must appear in white;
2. labels with entirely green, red or blue backgrounds where they may be shown in white;
3. the Division 5.2 label, where the symbol may be shown in white; and
4. the Division 2.1 label displayed on cylinders and gas cartridges for liquefied petroleum gases, where they may be shown in the background color of the receptacle if adequate contrast is provided.

3.2.3 Text indicating the nature of the hazard and/or UN number

Unless otherwise provided in the regulations, only text indicating the nature of the hazard may be inserted in the lower half of the hazard label(s) in addition to the class or division number or compatibility group.

No text other than the class number “9” must be included in the bottom part of the Class 9 label for lithium batteries (9A).

Hazard labels other than the lithium battery Class 9A label may include information in the lower half such as the UN number, or words describing the hazard class (e.g. “flammable”) provided that the text does not obscure or detract from the other required label elements.

This text should be in English, unless otherwise required by the State of origin. In such cases, an English translation should also be provided with both languages given equal prominence. The same language provisions apply to labels.

A label may contain form identification information, including the name of its maker, provided that information is printed outside of the solid line border in no larger than 10-point type.

3.2.4 Class 1 Explosives

Except for Divisions 1.4, 1.5 and 1.6, labels for Class 1 shall show in the lower half, above the class number, the division number and the compatibility group letter for the substance or article. Labels for Division 1.4, 1.5 and 1.6 shall show in the upper half the division number, and in the lower half the class number and the compatibility group letter.

3.2.5 Class 2 Gas cylinders

Gas cylinders for Class 2 may, on account of their shape, orientation and securing mechanisms for transport, bear labels representative of those specified in this section, which have been reduced in size, according to ISO 7225:2005 “Gas cylinders - Precautionary labels”, for display on the non-cylindrical part (shoulder) of such cylinders.
Labels may overlap to the extent provided for by ISO 7225:2005; however, in all cases, the labels representing the primary hazard and the numbers appearing on any label must fully visible and symbols recognizable.

When the diameter of the cylinder is too small to permit the display of the reduced size labels on the non-cylindrical upper part of the cylinder, the reduced sized labels may be displayed on the cylindrical part.

Empty uncleaned pressure receptacles for gases of Class 2 may be carried with obsolete or damaged labels for the purpose of refilling or inspection as appropriate and the application of a new label in conformity with current regulations or for the disposal of the pressure receptacle.

3.2.6 Class 7 Radioactive

On labels other than those for material of Class 7, the optional insertion of any text (other than the class number) in the space below the symbol shall be confined to particulars indicating the nature of the risk and precautions to be taken in the handling.

4 Placards, Hazard labels for Cargo Transport Units

For tanks with a capacity of not more than 3m³ and for small containers, placards may be replaced by labels conforming to section 3 Label for transport.

4.1 All other classes except class 7 Radioactive

Except for the class 7 placard and the placard for Environmentally hazardous substances, placards shall be configured as shown in below figure.

The label must be in the form of a square set at an angle of 45° (diamond shaped) with the minimum dimensions of 250 × 250 mm.

The line inside the edge shall be parallel and 12.5 mm from the outside of that line to the edge of the placard.

The symbol and line inside the edge shall correspond on color to the label for the class or division of dangerous goods in question.

The class or division symbol/numeral shall be positioned and sized in proportion to those prescribed in 3.2.1-3.2.6 for the corresponding class or division of the dangerous goods in question.
The placard shall display the number of the class or division (and for goods in Class 1, the compatibility group letter) of the dangerous goods in question in the manner prescribed for the corresponding label, in digits not less than 25 mm high. Where dimensions are not specified, all features shall be in approximate proportion to those shown.

4.2 Radioactive placard

The Class 7 placard shall be not less than 250x250 mm with a black line running 5 mm inside the edge and parallel with it and is otherwise as shown below (Model No. 7D). The number “7” shall not be less than 25 mm high. The background color of the upper half of the placard shall be yellow and of the lower half white, the color of the trefoil and the printing shall be black.

The use of “RADIOACTIVE” in the bottom half is optional to allow the use of this placard to display the appropriate UN number for the consignment.

Class 7 placard figure (7D)

Symbol (trefoil): Black

Background: Upper half yellow with white border, lower half white.

The lower half shall show the word “RADIOACTIVE” or alternatively, the appropriate UN Number, and the figure “7” in the bottom corner.

5 Marks used for transport

All package marks required:

a  Shall be readily visible and legible; and

b  Shall be able to withstand open weather exposure without a substantial reduction in effectiveness.; and

c  Shall be placed next to each other\(^1\), on the same surface\(^2\).

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\(^1\) This does not apply to the UN specification mark that is allowed to be on another side/surface of the package.

\(^2\) This does not apply to orientation arrows that shall be on minimum 2 opposite sides.
5.1 Text size

The size of some type of marking is regulated with minimum size as per below table:

<table>
<thead>
<tr>
<th>Mark, text and numbers</th>
<th>Package capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&gt; 30 L capacity.</td>
</tr>
<tr>
<td></td>
<td>&gt; 30 kg max net mass.</td>
</tr>
<tr>
<td></td>
<td>Cylinders &gt; 60 L water capacity.</td>
</tr>
<tr>
<td>UN number</td>
<td>≥ 12 mm high</td>
</tr>
<tr>
<td>Salvage packaging</td>
<td>≥ 12 mm high</td>
</tr>
<tr>
<td>Overpack</td>
<td>≥ 12 mm high</td>
</tr>
<tr>
<td>UN specification mark</td>
<td>≥ 12 mm high</td>
</tr>
</tbody>
</table>

It is recommended that, where possible, that the size used is 1-2 mm higher than the minimum size, this to reduce the risk of not enough height in the final print.

5.2 UN number

The UN number corresponding to the dangerous goods contained, preceded by the letters “UN”, shall be clearly and durably marked on each package, either as pre-printed or on a label.

In case of unpacked articles, the mark shall be displayed on the article, on its cradle or on its handling, storage or launching device. This could be done by using a “tag”.

The size of the UN number is determined by the package capacity or max net quantity; see table 5.1 Text size.

5.3 Proper Shipping Name

The Proper Shipping Name (PSN) corresponding to the UN number used shall be clearly and durably marked on each package, either as pre-printed or on a label, next to the UN number. The PSN is not subject to the minimum size requirement as stipulated for the UN number.

5.4 Net quantity of dangerous goods

The net quantity of dangerous goods contained within a package and the total net quantity of dangerous goods contained within an overpack shall be either pre-printed or on a label, next to the UN number and PSN.

The net quantity shall be in kg for articles, solids and some gases; and in Liters for liquids and some gases.
Net quantity is not mandatory except for class 1 explosives and transport by air when the consignment contain different UN numbers or packages of the same UN number but with different net quantity. Consequently, to cater for Ericsson’s complete supply chain, it is recommended that the net quantity dangerous goods is always marked as stated in the first and second paragraph.

5.5 Salvage packaging

Salvage packagings and salvage pressure receptacles shall additionally be marked with the word “SALVAGE”. The lettering of the “SALVAGE” mark shall be at least 12 mm high.

5.6 Overpack

Unless all marks and labels of all dangerous goods types contained in the overpack are clearly visible, the overpack shall:

a Marked with the word “OVERPACK”. The lettering of the “OVERPACK” shall be at least 12 mm high. The mark shall be in an official language of the country of origin and also; if that language is not English, French or German, in English, French or German;

b Same marks and labels as of the packages contained in the Overpack shall be reproduced on the outside, next to the Overpack mark. Each applicable mark and label only need to be applied once on 1 side of the overpack surface, next to each other.

Note 1 If the Overpack contain UN specification packages, the UN specification code of the packages within must not be reproduced on the outside of the Overpack.

Note 2 For the clarification of “...types contained in the overpack are clearly visible...” and when labels must be reproduced; the purpose of mark and labels is that the supply chain easily can identify what hazard(s) that is within a package, Overpack etc. If the Overpack is assembled in such way that it is difficult to easily see, read or by other means identify the hazard communication e.g. through transparent plastic wrap, the marks and labels shall be reproduced.

5.7 UN Specification mark

Each packaging intended to be used as a UN Specification dangerous goods packaging shall bear marks which are durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible.

For packages with a gross mass of more than 30 kg, the marks or duplicate thereof shall appear on the top or on a side of the packaging.

Letters, numerals and symbols must be at least 12 mm high, except for packagings of 30 L capacity or less or of 30 kg maximum net weight, when they must be at least 6 mm in
height. For packaging of 5-liter capacity or less or 5 kg maximum net weight, the letters, numbers and symbols must be of an appropriate size.

Marks shall be applied in the sequence as described below. Each sequence shall be clearly separated e.g. by a slash or a space, to be easily identifiable.

This sub-chapter does not consider:

- Packages containing radioactive materials of class 7
- Packages containing infectious substances of class 6.2
- Pressure receptacles containing gases of class 2; and
- Packages which net mass exceeds 400 kg / 450 Liter

5.7.1 Code for designating types of packagings

The packing code consist of:

a An Arabic numeral indicating the kind of packaging, e.g. drum, jerrican etc. followed by:

b A capital letter(s) in Latin characters indicating the nature of the material, e.g. steel, wood etc.; followed where necessary by

c An Arabic numeral indicating the category of packaging within the kind to which the packaging belongs.

In case of composite packagings, two capital letters in Latin characters are used in sequence in the second position of the code. The first indicates the material of the inner receptacle and the second that of the outer packaging.

In case of a combination packaging only the code number for the outer packaging is used.

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3 Combination packaging is a package intended to contain inner packagings or articles.
The following numerals and capital letters are used describing type of packaging and its material:

1. Drum
2. (Reserved)
3. Jerrican
4. Box
5. Bag
6. Composite packaging
7. (Reserved)
8. Light gauge metal packaging

<table>
<thead>
<tr>
<th>Letter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Steel (all types and surface treatments)</td>
</tr>
<tr>
<td>B</td>
<td>Aluminum</td>
</tr>
<tr>
<td>C</td>
<td>Natural wood</td>
</tr>
<tr>
<td>D</td>
<td>Plywood</td>
</tr>
<tr>
<td>E</td>
<td>Reconstituted wood</td>
</tr>
<tr>
<td>F</td>
<td>Fiberboard</td>
</tr>
<tr>
<td>G</td>
<td>Plastic material</td>
</tr>
<tr>
<td>H</td>
<td>Glass, porcelain or stoneware</td>
</tr>
<tr>
<td>I</td>
<td>Textile</td>
</tr>
<tr>
<td>J</td>
<td>Paper, multiwall</td>
</tr>
<tr>
<td>K</td>
<td>Metal (other than steel or aluminum)</td>
</tr>
<tr>
<td>L</td>
<td>Light gauge metal packaging</td>
</tr>
</tbody>
</table>

The letters “T”, “V” or “W” may follow the packing code to indicate that it is a special packaging:

- “T” — Signifies a salvage packaging conforming to the special requirements for a salvage package;
- “V” — Signifies a special packaging that is allowed to contain other type of inner packagings/content than for which it have been successfully tested with.
- “W” — Signifies that the packaging, although of the same type indicated by the code, is manufactured to a different specification and is considered equivalent to the general a UN specification packaging requirement.

### 5.7.2 UN specification mark, details

The marks shall show:

1. The United Nations packaging symbol.
   1.1 This symbol shall not be used for any other purpose other than certifying that a packaging, a flexible bulk container, a portable tank or a MEGC complies with the relevant test requirements of the dangerous goods regulation(s).
   1.2 This symbol shall not be used for packagings which comply with the simplified conditions stipulated in the dangerous goods regulations.
   1.3 For embossed metal packagings, the capital letters “UN” may be applied instead of the symbol.

2. The code designating the type of package, see table in 5.2.1.

3. A code in 2 parts:
3.1 A letter designating the packing group(s) for which the design type has been successfully tested:

3.1.1 “X” for packing group I, II and III

3.1.2 “Y” for packing group II and III

3.1.3 “Z” for packing group III

3.2 Relative density or maximum gross weight in kilograms:

3.2.1 For packaging without inner packaging intended to contain liquids, the relative density rounded off to the first decimal for which the design type have been tested. This may be omitted when the relative density does not exceed 1.2; or

3.2.2 For packaging intended to contain solids or inner packagings the maximum allowed gross weight in kilograms for the packed package.

4 Either:

4.1 For packagings (other than combination packagings) intended to contain liquids, the hydraulic test pressure which the packaging was shown to withstand in kPa rounded down to the nearest 10 kPa; or

4.2 The letter “S” denoting that the packaging is intended for the carriage of Solids or Inner packagings

5 The last 2 digits of the year during the packaging was manufactured. Packagings of the type plastic (1H and 3H) shall also be appropriately marked with the month of manufacture; this may be marked on the packaging in a different place form the remainder of the marks, an appropriate method is as shown in the figure to the right.

*The last two digits of the year of manufacture may be displayed at that place. In such case and when the clock is placed adjacent to the UN design type mark, the indication of the year in the mark may be waived. However, when the clock is not placed adjacent to the UN design type mark, the two digits of the year in the mark and in the clock must be identical.

6 The State authorizing the allocation of the mark, indicated by the distinguishing sign used on vehicles in international traffic (VRI code).

7 Name of the manufacturer or other identification of the packaging specified by the competent authority.
5.7.3 Example of UN specification codes

<table>
<thead>
<tr>
<th>UN</th>
<th>4G/</th>
<th>Y145/</th>
<th>S/</th>
<th>15/</th>
<th>S/</th>
<th>RI1234</th>
<th>1</th>
<th>2</th>
<th>3.1 &amp; 3.2.2</th>
<th>4.2</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
</table>
A new fiberboard box intended to contain solids or inner packaging

| UN   | 1A1/ | Y1.4/ | 150/ | 19/ | S/  | RI4321 | 1 | 2 | 3.1 & 3.2.1 | 4.1 | 5 | 6 | 7 |
A new steel drum with a non-removable head that is intended to contain liquids.

5.7.4 Special considerations

Every new metal drum of a capacity greater than 100 liters shall bear the UN specification mark on the bottom, with an indication of the nominal thickness of at least the metal used in the body, in permanent form. When the nominal thickness of either head is thinner than the body the nominal thickness of the top head, body and bottom shall be marked on the bottom in permanent form e.g. “1.0-1.2-1-0”. Nominal thickness shall be determined according to the appropriate ISO standard, e.g. ISO 3574:1999. The marks indicated in ’6’ and ’7’ sub-section 5.2.2 shall not be applied in a permanent form except for metal drums designed to be reused repeatedly, those may bear the marks in a permanent form.

Every packaging except for metal drums mentioned above, liable to undergo a reconditioning process shall bear the marks indicated in sub-section 5.2.2 ‘1’ to ‘5’ in permanent form. Marks are permanent if they can withstand reconditioning process. For packagings other than metal drums of a capacity greater than 100 liters, these permanent marks may replace the corresponding durable marks described above.

The UN specification mark 5.2.2 ‘1’ to ‘7’ are valid for only one design type or series of design types. Different surface treatments may fall within the same design type.

A “series of design types” means packagings of the same structural design, wall thickness, material and cross-section, which differs only in their lesser design heights from the design type approved.

5.8 Environmentally hazardous substances

Marking shall be in the form of a square angle of 45° (diamond-shaped). The symbol (fish and tree) must be black on white or suitable contrasting background.

Minimum dimension of 100 mm × 100 mm and the minimum width of line forming the diamond must be 2 mm.
If the size of the package so requires, the dimensions/line thickness may be reduced, provided the mark remains clearly visible.

Where dimensions are not specified, all features must be in approximate proportion to those shown.

Unless otherwise specified in the regulations, packages containing environmentally hazardous substances or mixtures meeting the criteria of being UN 3077 and UN 3082, must be durably marked with the environmentally hazardous substance mark and in addition packages must bear the Class 9 hazard label.

The environmentally hazardous substance mark may also appear on packages containing substances other than UN 3077 and UN 3082 if the substance also meets the criteria environmentally hazardous substances e.g. Diesel fuels.

The environmentally hazardous substance mark is not required on single packagings and combination packagings packed in accordance with Special Provision A197.

The environmentally hazardous substance mark must be located adjacent to other dangerous goods labels and marks required by the applicable regulations.

5.9 Orientation labels for dangerous goods

Either the “Package Orientation” (This Way Up) labels (see 7.2) or pre-printed package orientation labels meeting the same specifications as Orientation Figure in 7.2 (ISO 780:2015) must be used on packagings and overpacks containing liquid dangerous goods.

When offering liquid dangerous goods by air the orientation label must have a minimum dimension of 74x105 mm, both on transport package and the Overpack when such is used.

The labels must be affixed or pre-printed on at least two opposite sides to show the proper package orientation for the closure(s) of the inner packagings to be in the upright position. When a package orientation label is affixed on a package or overpack, the words “THIS END UP” or “THIS SIDE UP” may also be displayed on the top of the package or overpack.

They shall be rectangular and such that they in relation to the size of the package are clearly visible.

It is optional to have a rectangular boundary around the arrows. The words “Dangerous Goods” may be inserted on the label below the line.
5.10 Small Lithium Cells and Batteries

“Small lithium cells and batteries” are:

a. A Lithium Ion Cells not exceeding 20 Wh;

b. A Lithium Ion Battery (cells/batteries connected together) not exceeding 100 Wh;

c. A Lithium Metal Cells not exceeding 1g lithium; and

d. A Lithium Metal Battery (cells/batteries connected together) with an aggregated lithium content not exceeding 2g.

Packages containing lithium cells or batteries meeting the above limitation and are prepared in accordance with Section II of IATA-DGR Packing Instruction 965 to 970, Section IB of IATA-DGR Packing Instruction 965 and 968 and Special provision 188 of UN model regulations must be marked the 'Lithium Battery Mark'.

The mark shall indicate the appropriate UN number preceded by the letters “UN” as follows:

- “UN 3090” for lithium Metal cells or batteries;
- “UN 3480” for lithium Ion cells or batteries;
- “UN 3091” for lithium Metal cells or batteries contained in, or packed with equipment;
- “UN 3481” for lithium Ion cells or batteries contained in or packed with equipment.

Where a package contains lithium cells or batteries assigned to different UN numbers, all applicable UN numbers must be indicated on one or more marks.

The UN number(s) indicated on the mark should be at least 12 mm high.

The mark shall be in the form of a rectangle or square with hatched edging. The dimensions must be a minimum of 100 wide x 100 high and the minimum width of the hatching must be 5 mm. The symbol (group of batteries, one damaged and emitting flame, above the UN number for Lithium Ion or Lithium Metal batteries or cells) must be black on white or suitable contrasting background. The hatchings must be red.

If the size of the package so requires, the dimensions may be reduced to not less than 100 mm wide x 70 mm high. Where dimensions are not specified, all features must be in approximate proportion to those shown in the specimen below.

Packages containing lithium batteries that meet the requirements of Section IB of Packing Instructions 965 and 968 IATA-DGR must bear both the lithium battery mark and the lithium battery Class 9A hazard label.
**Lithium Battery Mark**

* Place for UN number(s).
** Place for telephone number for additional information.

**5.11 Cargo Aircraft Only**

The "Cargo Aircraft Only" (CAO) label must only be used on packages containing dangerous goods that are not allowed on a passenger aircraft, in addition to the other required marks and labels. The labels specification is found in section 7.2.

If the dangerous goods content in a package is within the limits for passenger aircraft the CAO label must not be used. However, where the packing instruction number and the permitted quantity per package are identical for passenger and cargo aircraft, the “Cargo Aircraft Only” label should not be used.

The CAO label, under the prerequisites in the first paragraph of this section, can be applied on a package that is transported by surface, e.g. truck or boat, as it is a handling label identifying a transport limitation hence not prohibited in the other modes of transport.

The CAO label must be placed on the same surface and next to the hazard label.

**Note:** There are cases when a State variation may require a shipment to be labelled and carried on Cargo Aircraft Only, when normally permitted on a passenger aircraft.

**5.12 Magnetized material**

Magnetized Material (MAG) label is unique for air transport and shall be applied on packages containing magnetized material exceeding the limits as specified in packing instruction 953 of ICAO-TI/IATA-DGR.

*Magnetized materials with field strengths causing a compass deflection of more than 2 degrees at a distance of 2.1 m but not more than 2 degrees at a distance of 4.6 m (equivalent to 0.418 A/m or 0.00525 Gauss measured at a distance of 4.6 m) is subject to certain requirements.*

*Magnetized material with field strength sufficient to cause a compass deflection of more*
than 2 degrees at a distance of 4.6 m may only be transported with the prior approval of the appropriate authority of the State of Origin and the State of the Operator.

The MAG label replaces the use of class 9 hazard label on the package.

The labels specification is found in section 7.2.

5.13 Keep away from heat

The “Keep away from heat” handling label must be used in addition to the applicable marks and labels on packages and overpacks containing self-reactive substances in Division 4.1 and organic peroxides in Division 5.2.

The labels specification is found in section 7.2.

5.14 Limited Quantity


The mark must be in the form of a square set at an angle of 45° (diamond shaped). The top and bottom portions and the surrounding line must be black. The center area must be white or a suitable contrasting background. The minimum dimension must be 100 mm × 100 mm and the minimum width of line forming the diamond must be 2 mm.

If the size of the package so requires, the minimum outer dimensions may be reduced to be not less than 50 mm × 50 mm provided the mark remains clearly visible. The minimum width of the line forming the diamond may be reduced to a minimum of 1 mm.

Air transport specific

The symbol “Y” that shall be used for mark applicable to air transport must be placed in the center of the mark and must be clearly visible. Where dimensions are not specified, all features must be in approximate proportion to those shown, even for the reduced mark.

All packages shipped under the provisions of Limited Quantity by air must also meet the relevant marking and labelling requirements as required for fully regulated dangerous goods except for the UN Specification Code.
5.15 **Excepted Quantity**

Packages containing Excepted Quantities of dangerous goods must be durably and legibly marked with the Excepted Quantities mark. The primary hazard class or, when assigned, the division of each of the dangerous goods contained in the package must be shown in the mark. Where the name of the shipper or consignee is not shown elsewhere on the package this information must be included within the mark.

The mark must be in the form of a square. The hatching and symbol must be of the same color, black or red, on white or suitable contrasting background. The dimensions of the mark must be a minimum of 100 mm × 100 mm. Where dimensions are not specified, all features must be in approximate proportion to those shown.

The mark must be applied on one face of the package. Where the mark is applied by way of a label, the label must not be folded or affixed in such a manner that parts of the same mark appear on different faces of the package.

Unless the mark required is visible when packages of dangerous goods in excepted quantities are placed in an overpack, the overpack must be:

- marked with the word “overpack”. The lettering of the “overpack” mark must be at least 12 mm high; and
- marked as required by sub-section 5.6.

If the overpack also contains packages of other dangerous goods, then the provisions of sub-section 5.6 also apply.

*—Place for class or, when assigned, the division number(s).
**—Place for name of shipper or consignee, if not shown elsewhere on the package.
6 Globally Harmonized System of Classification and Labelling of Chemicals

This section provides information on the United Nations Globally Harmonized System of Classification and Labelling of Chemicals (GHS) and provides examples of the pictograms used by the GHS that may appear on the outside of products and transport packagings.

Globally Harmonized System of Classification and Labelling of Chemicals (GHS)**, addresses classification of chemicals by types of hazard and proposes harmonized hazard communication elements, including labels and safety data sheets. It aims at ensuring that information on physical hazards and toxicity from chemicals is available in order to enhance the protection of human health and the environment during the handling, transport and use of these chemicals. The GHS also provides a basis for harmonization of rules and regulations on chemicals at national, regional and worldwide level, an important factor also for trade facilitation.

The two major elements of GHS are classification of the hazards of chemicals according to the GHS rules and communication of the hazards and precautionary information using safety data sheets (SDS) (also known as material safety data sheets [MSDS]) and labels. The GHS labels may also appear on products and packages to communicate the hazards by the use of standardized hazard statements, signal words and diamond-shaped pictograms according to the classification of that chemical or mixture. Precautionary statements may also be required.

While some pictograms identify substances that only pose a hazard for supply and use, other GHS pictograms contain symbols that are largely equivalent to the symbols contained in the hazard labels used in transport and which may therefore indicate that the contents are dangerous goods.

The pictograms used by GHS are shown in below Tables. Table 5.1 identifies the GHS pictograms that contain symbols that also appear on the hazard label used in transport. The presence of these pictograms may indicate that the contents of the package are dangerous goods. Table 5.2 identifies GHS pictograms that identify substances that pose a hazard other than an acute hazard and which do not pose a risk in transport. More information on UNECE.org/GHS/.
### 6.1 Table 1 GHS Pictograms and their Criteria

<table>
<thead>
<tr>
<th>Pictogram</th>
<th>Pictogram Name</th>
<th>Appears on</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Explosive Pictogram" /></td>
<td>Explosive</td>
<td>Explosives, Self-Reactive Substances and Mixtures, Organic Peroxides</td>
</tr>
<tr>
<td><img src="image" alt="Gases under Pressure Pictogram" /></td>
<td>Gases under Pressure</td>
<td>Gases under Pressure</td>
</tr>
<tr>
<td><img src="image" alt="Oxidizer Pictogram" /></td>
<td>Oxidizer</td>
<td>Oxidizing Gases, Oxidizing Liquids, Oxidizing Solids</td>
</tr>
<tr>
<td><img src="image" alt="Toxic Pictogram" /></td>
<td>Toxic</td>
<td>Acute Toxicity, Skin, Oral, Inhalation</td>
</tr>
<tr>
<td><img src="image" alt="Corrosive Pictogram" /></td>
<td>Corrosive</td>
<td>Corrosive to Metal, Skin Corrosion, Serious Eye Damage</td>
</tr>
<tr>
<td><img src="image" alt="Aquatic Toxicity Pictogram" /></td>
<td>Aquatic Toxicity</td>
<td>Acute, Chronic</td>
</tr>
</tbody>
</table>
### 6.2 Table 2 GHS Pictograms and their Criteria, other

<table>
<thead>
<tr>
<th>Pictogram</th>
<th>Pictogram Name</th>
<th>Appears on</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image_url" alt="Harmful" /></td>
<td>Harmful</td>
<td>• Harmful to Skin</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Oral</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inhalation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Skin Irritation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Eye Irritation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Respiratory Tract Irritation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Narcotic Effects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Skin Sensitization</td>
</tr>
<tr>
<td><img src="image_url" alt="Respiratory" /></td>
<td>Respiratory</td>
<td>• Respiratory Sensitization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Carcinogenicity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Toxic to Reproduction</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Specific Target Organ Systemic Toxicity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Single Exposure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Specific Target Organic Systemic Toxicity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Repeated Exposure</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Aspiration Hazard</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Germ Cell Mutagenicity</td>
</tr>
</tbody>
</table>
Dangerous goods & Hazardous substances marks, labels and placards

7 Specimens, labels and marks

7.1 Hazard labels and placards

<table>
<thead>
<tr>
<th>Class</th>
<th>Div./Cat.</th>
<th>Symbol and color</th>
<th>Background</th>
<th>Figure in bottom corner and color</th>
<th>Specimen label</th>
<th>Note</th>
</tr>
</thead>
</table>
| 1     | Explosives| Exploding bomb, black | Orange Patone colour no. 151U | 1, black | ![Image](image1.png) | * Compatibility group letter, left blank if explosive is the subrisk  
**Division 1.1, 1.2 or 1.3. Left blank if explosive is the subrisk. |
|       | Division 1.4 | 1.4, black | Orange Patone colour no. 151U | 1, black | ![Image](image2.png) | 1.4 |
|       | Division 1.5 | 1.5, black | Orange Patone colour no. 151U | 1, black | ![Image](image3.png) | 1.5 |
|       | Division 1.6 | 1.6, black | Orange Patone colour no. 151U | 1, black | ![Image](image4.png) | 1.6 |

**Figures:** Numerals shall be about 30 mm in height and about 5 mm thick  
* Compatibility group letter.
<table>
<thead>
<tr>
<th>Class</th>
<th>Div./Cat.</th>
<th>Symbol and color</th>
<th>Background</th>
<th>Figure in bottom corner and color</th>
<th>Specimen label</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>2.1 Flammable gas</td>
<td>Black or white Flame</td>
<td>Red Patone colour no. 186U</td>
<td>2, black or white</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.2 Non-flammable, non-toxic gas</td>
<td>Black or white gas cylinder</td>
<td>Gren Patone colour no. 335U</td>
<td>2, black or white</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2.3 Toxic gas</td>
<td>Black skull and crossbones</td>
<td>White</td>
<td>2, black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Flammable liquids</td>
<td>Black or white Flame</td>
<td>Red Patone colour no. 186U</td>
<td>3, black or white</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Flammable solids</td>
<td>Black flame</td>
<td>White with seven vertical red stripes, Patone colour no. 186U</td>
<td>4, black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Spontaneous combustible</td>
<td>Black flame</td>
<td>Upper half white, lower half red, Patone colour no. 186U</td>
<td>4, black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4.3</td>
<td>Dangerous when wet</td>
<td>Black or White flame</td>
<td>Blue, Patone colour no. 285U</td>
<td>4, black or white</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Class</td>
<td>Div./Cat.</td>
<td>Symbol and color</td>
<td>Background</td>
<td>Figure in bottom corner and color</td>
<td>Specimen label</td>
<td>Note</td>
</tr>
<tr>
<td>-----------------------</td>
<td>-----------</td>
<td>----------------------------------------</td>
<td>---------------------------------</td>
<td>----------------------------------</td>
<td>----------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>5.1 Oxidizing substance</td>
<td>-</td>
<td>Black flame over circle</td>
<td>Yellow, Patone colour no. 109U</td>
<td>5.1, black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5.2 Organic peroxide</td>
<td>-</td>
<td>Black or white flame</td>
<td>Upper half red Patone colour no. 186U. Lower half yellow Patone colour no. 109U</td>
<td>5.2, black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6.1 Toxic Substances</td>
<td>-</td>
<td>Black skull and crossbones</td>
<td>White</td>
<td>6, black</td>
<td></td>
<td>The lower half of the label may bear the inscriptions: “INFECTIOUS SUBSTANCE” and “In the case of damage or leakage immediately notify Public Health Authority”</td>
</tr>
<tr>
<td>6.2 Infectious Substance</td>
<td>-</td>
<td>Three crescents superimposed on a circle, black</td>
<td>White</td>
<td>6, black</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Category I – White (7A)</td>
<td></td>
<td>Black trefoil</td>
<td>White</td>
<td>7, black</td>
<td></td>
<td>Mandatory Text in lower half: “RADIOACTIVE” “CONTENTS……..” “ACTIVITY……..” In black. One red vertical bar shall follow the word “RADIOACTIVE”</td>
</tr>
<tr>
<td>Category II – Yellow (7B)</td>
<td></td>
<td>Black trefoil</td>
<td>Upper half Yellow White Patone colour no. 109U &amp; Background White</td>
<td>7, black</td>
<td></td>
<td>Mandatory Text in lower half: “RADIOACTIVE” “CONTENTS……..” “ACTIVITY……..” In a black outlined box “TRANSPORT INDEX”. Two red vertical bars shall follow the word “RADIOACTIVE”</td>
</tr>
<tr>
<td>Class</td>
<td>Div./Cat.</td>
<td>Symbol and color</td>
<td>Background</td>
<td>Figure in bottom corner and color</td>
<td>Specimen label</td>
<td>Note</td>
</tr>
<tr>
<td>-------</td>
<td>----------</td>
<td>-----------------</td>
<td>------------</td>
<td>----------------------------------</td>
<td>----------------</td>
<td>------</td>
</tr>
<tr>
<td>7 Radioactive</td>
<td>Category III — Yellow (7C)</td>
<td>Black trefoil</td>
<td>Upper half Yellow White Patone colour no. 109U &amp; Background White</td>
<td>7, black</td>
<td><img src="image" alt="Specimen label" /></td>
<td>Mandatory Text in lower half: “RADIOACTIVE” “CONTENTS........” “ACTIVITY........” In a black outlined box “TRANSPORT INDEX”. Three red vertical bars shall follow the word “RADIOACTIVE”</td>
</tr>
<tr>
<td></td>
<td>Fissile material (7E)</td>
<td>TEXT</td>
<td>White</td>
<td>7, black</td>
<td><img src="image" alt="Specimen label" /></td>
<td>Mandatory Text in lower half: In a black outlined box “CRITICALITY SAFETY INDEX”.</td>
</tr>
<tr>
<td>8 Corrosive substances</td>
<td>-</td>
<td>Liquids, spilling from two glass vessels and attacking a hand and a metal, in black.</td>
<td>Upper half white with black border. Lower half black with white border.</td>
<td>8, white</td>
<td><img src="image" alt="Specimen label" /></td>
<td></td>
</tr>
<tr>
<td>9 Miscellaneous dangerous goods and articles</td>
<td>9</td>
<td>Seven black vertical stripes in upper half.</td>
<td>White</td>
<td>9, black, underlined</td>
<td><img src="image" alt="Specimen label" /></td>
<td>Only applicable to packages containing lithium cells and batteries UN no 3090, 3091, 3480 and 3481 not consigned under an exemption.</td>
</tr>
<tr>
<td></td>
<td>9A</td>
<td>Seven black vertical stripes in upper half. Black Battery group, one broken and emitting flame in lower half.</td>
<td>White</td>
<td>9, black, underlined</td>
<td><img src="image" alt="Specimen label" /></td>
<td></td>
</tr>
</tbody>
</table>
### 7.2 Handling labels

<table>
<thead>
<tr>
<th>Label name</th>
<th>Specimen label</th>
<th>Minimum size</th>
<th>Symbol and color</th>
<th>Background</th>
<th>Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cargo Aircraft Only</td>
<td><img src="image" alt="Cargo Aircraft Only" /></td>
<td>120x110 mm</td>
<td>Black on orange, Patone colour no. 151U</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For details, see [5.11]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lithium handling label</td>
<td><img src="image" alt="Lithium handling label" /></td>
<td></td>
<td></td>
<td></td>
<td>Not allowed to be used after 2018/12/31</td>
</tr>
<tr>
<td>Lithium handling label</td>
<td><img src="image" alt="Lithium handling label" /></td>
<td>100x100 mm</td>
<td>The symbol (group of batteries, one damaged and emitting flame, above the UN number for Lithium Ion or Lithium Metal batteries or cells) shall be black on white or suitable contrasting background.</td>
<td>White or suitable contrasting background. The hatchings shall be red, 5 mm wide.</td>
<td>If the size of the package so requires, the dimensions/line thickness may be reduced to not less than 100 mm wide x 70 mm high. Where dimensions are not specified, all features must be in approximate proportion to those shown.</td>
</tr>
<tr>
<td>For details, see [5.10]</td>
<td><img src="image" alt="Lithium handling label" /></td>
<td></td>
<td></td>
<td></td>
<td>* Place for UN number(s), minimum 12 mm height</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>** Place for telephone number for additional information.</td>
</tr>
<tr>
<td>Label name</td>
<td>Specimen label</td>
<td>Minimum size</td>
<td>Symbol and color</td>
<td>Background</td>
<td>Note</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>----------------</td>
<td>--------------</td>
<td>------------------</td>
<td>-----------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>Environmentally hazardous...</td>
<td>![Specimen label]</td>
<td>100 × 100 mm</td>
<td>Black</td>
<td>White or suitable contrasting background.</td>
<td>Front line forming diamond shape shall be black, 2 mm wide</td>
</tr>
<tr>
<td>hazardous substances</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For details, see [5.8]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnetized material</td>
<td>![Magnetized material]</td>
<td>110x90 mm</td>
<td></td>
<td>Blue (Patone colour no. 285U) on white background</td>
<td></td>
</tr>
<tr>
<td>For details, see [5.12]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Keep away from heat</td>
<td>![Keep away from heat]</td>
<td>74x105 mm</td>
<td></td>
<td>Red (Patone colour no. 186U) and black on white background</td>
<td></td>
</tr>
<tr>
<td>For details, see [5.13]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orientation label</td>
<td>![Orientation label]</td>
<td>74x105 mm</td>
<td>Red or black on a contrasting background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For details, see [5.9]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Label name</td>
<td>Specimen label</td>
<td>Minimum size</td>
<td>Symbol and color</td>
<td>Background</td>
<td>Note</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------------</td>
<td>--------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Limited Quantity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface Transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For details, see [5.14]</td>
<td></td>
<td>100x100 mm</td>
<td>The top and bottom portions and the surrounding line must be black. The center area must be white or a suitable contrasting background.</td>
<td></td>
<td>Dimensions may be reduced to be not less than 50 mm × 50 mm and the minimum width of the line forming the diamond may be reduced to a minimum of 1 mm</td>
</tr>
<tr>
<td><strong>Limited Quantity</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air Transport</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>For details, see [5.14]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Excepted Quantity</strong></td>
<td></td>
<td>100x100 mm</td>
<td>The hatching and symbol must be of the same color, black or red, on white or suitable contrasting background.</td>
<td></td>
<td>* Place for class or, when assigned, the division number(s). ** Place for name of shipper or consignee, if not shown elsewhere on the package.</td>
</tr>
</tbody>
</table>

* Size requirement is only applicable for transport of liquids by Air transport
8 Definitions

Hazard label A label identifying the risk and the dangerous goods class, used on packages containing dangerous goods.

Hazard placard A large label identifying the risk and the dangerous goods class. Used on containers and cargo transport units containing dangerous goods.

Handling label Used for additional handling information in regard to the dangerous goods being packed and transported.

9 References

[1] Packaging, marking and labeling of dangerous goods 124 46-3280 Uen

10 Revisions

<table>
<thead>
<tr>
<th>Date</th>
<th>Change</th>
<th>Made by</th>
</tr>
</thead>
<tbody>
<tr>
<td>2021-01-20</td>
<td>Grammar corrections</td>
<td>EMAROSV</td>
</tr>
<tr>
<td>2021-01-12</td>
<td>Both major and minor changes are made throughout the whole document. Changed document title and number (EAB-12:073659) to Decimal class number 126 46-3297 Uen.</td>
<td>EMAROSV</td>
</tr>
</tbody>
</table>

Main changes:

- Applicability updated
- Added parameters related to GHS
- 3.2 Label design reworked to match new regulatory requirements
- 5.2.2 UN specification mark: Size of the mark and details of the specification code clarified
- 5.3 Environmentally hazardous substances: all text updated.
<table>
<thead>
<tr>
<th>5.4</th>
<th>Orientation labels for dangerous goods: all text updated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.5</td>
<td>Small lithium batteries: updated to match new label requirements</td>
</tr>
<tr>
<td>5.6</td>
<td>Cargo Aircraft Only: added clarifying text when and how to use the label.</td>
</tr>
<tr>
<td></td>
<td>Added 5.14 and 5.15</td>
</tr>
</tbody>
</table>

| 2019-08-28 | Bi-annual review. Update in section 1 and removal of the "2 mm line requirement" due to regulatory change. |
|            | Editorial adjustments in all sections. |
|            | Section 4 re-worked, all labels and design requirement are presented in a new table format. |
|            | Clarification that the old Lithium Handling label is no longer to be used. |
|            | Added descriptions for: UN specification marks, Cargo Aircraft Only, Magnetized Material and 'keep away from heat' in section 3. |

11 **Contact for this instruction**

Contact: dangerous.goods@ericsson.com