

Chapter 5.1

General provisions

5.1.1 Application and general provisions

5.1.1.1 This part sets forth the provisions for dangerous goods consignments relative to authorization of consignments and advance notifications, marking, labelling, documentation (by manual, electronic data processing (EDP) or electronic data interchange (EDI) techniques) and placarding.

5.1.1.2 Except as otherwise provided in this Code, no person may offer dangerous goods for transport unless those goods are properly marked, labelled, placarded, described and certified on a transport document, and otherwise in a condition for transport as required by this part.

Note: In accordance with the GHS, a GHS pictogram not required by this Code should only appear in transport as part of a complete GHS label and not independently (see GHS 1.4.10.4.4).

5.1.1.3 A carrier shall not accept dangerous goods for transport unless:

- .1 A copy of the dangerous goods transport document and other documents or information as required by the provisions of this Code are provided; or
- .2 The information applicable to the dangerous goods is provided in electronic form.

5.1.1.4 The information applicable to the dangerous goods shall accompany the dangerous goods to final destination. This information may be on the dangerous goods transport document or may be on another document. This information shall be given to the consignee when the dangerous goods are delivered.

5.1.1.5 When the information applicable to the dangerous goods is given to the carrier in electronic form, the information shall be available to the carrier at all times during transport to final destination. The information shall be able to be produced without delay as a paper document.

5.1.1.6 The purpose of indicating the proper shipping name (see 3.1.2.1 and 3.1.2.2) and the UN number of a substance, material or article offered for transport and, in the case of a marine pollutant, of the addition of "marine pollutant" on documentation accompanying the consignment, and of marking the proper shipping name in accordance with 5.2.1 on the package, including IBCs containing the goods, is to ensure that the substance, material or article can be readily identified during transport. This ready identification is particularly important in the case of an accident involving these goods, in order to determine what emergency procedures are necessary to deal properly with the situation and, in the case of marine pollutants, for the master to comply with the reporting requirements of Protocol I of MARPOL.

5.1.2 Use of overpacks and unit loads

5.1.2.1 An overpack and unit load shall be marked with the proper shipping name and the UN number and marked and labelled, as required for packages by chapter 5.2, for each item of dangerous goods contained in the overpack or unit load unless marks and labels representative of all dangerous goods in the overpack or unit load are visible. An overpack, in addition, shall be marked with the word "OVERPACK" unless marks and labels representative of all dangerous goods, as required by chapter 5.2, in the overpack are visible, except as required in 5.2.2.1.12. The lettering of the "OVERPACK" mark shall be at least 12 mm high.

5.1.2.2 The individual packages comprising a unit load or an overpack shall be marked and labelled in accordance with chapter 5.2. Each package of dangerous goods contained in the unit load or overpack shall comply with all applicable provisions of the Code. The "OVERPACK" mark on an overpack is an indication of compliance with this provision. The intended function of each package shall not be impaired by the unit load or overpack.

5.1.2.3 Each package bearing package orientation marks as prescribed in 5.2.1.7.1 of this Code and which is overpacked, placed in a unit load or used as an inner packaging in a large packaging shall be oriented in accordance with such marks.

5.1.3 Empty uncleaned packagings or units

5.1.3.1 Other than for class 7, a packaging, including an IBC, which previously contained dangerous goods shall be identified, marked, labelled and placarded as required for those dangerous goods unless steps such as cleaning, purging of vapours or refilling with a non-dangerous substance are taken to nullify any hazard.

5.1.3.2 Freight containers, tanks, IBCs, as well as other packagings and overpacks, used for the transport of radioactive material shall not be used for the transport of other goods unless decontaminated below the level of 0.4 Bq/cm² for beta and gamma emitters and low-toxicity alpha emitters and 0.04 Bq/cm² for all other alpha emitters.

5.1.3.3 Empty cargo transport units still containing residues of dangerous goods, or loaded with empty uncleaned packages or empty uncleaned bulk containers, shall comply with the provisions applicable to the goods last contained in the unit, packagings or bulk container.

5.1.4 Mixed packing

When two or more dangerous goods are packed within the same outer packaging, the package shall be labelled and marked as required for each substance. Subsidiary hazard labels need not be applied if the hazard is already represented by a primary hazard label.

5.1.5 General provisions for class 7

5.1.5.1 Approval of shipments and notification

5.1.5.1.1 *General*

In addition to the approval of package designs described in chapter 6.4, multilateral shipment approval is also required in certain circumstances (5.1.5.1.2 and 5.1.5.1.3). In some circumstances it is also necessary to notify competent authorities of a shipment (5.1.5.1.4).

5.1.5.1.2 *Shipment approvals*

Multilateral approval shall be required for:

- .1 the shipment of Type B(M) packages not conforming with the provisions of 6.4.7.5 or designed to allow controlled intermittent venting;
- .2 the shipment of Type B(M) packages containing radioactive material with an activity greater than 3,000A₁ or 3,000A₂, as appropriate, or 1,000 TBq, whichever is the lower;
- .3 the shipment of packages containing fissile materials if the sum of the criticality safety indexes of the packages in a single freight container or in a single conveyance exceeds 50. Excluded from this requirement shall be shipments by seagoing vessels, if the sum of the criticality safety indexes does not exceed 50 for any hold, compartment or defined deck area and the distance of 6 m between groups of packages or overpacks as required in table 7.1.4.5.3.4 is met;
- .4 radiation protection programmes for shipments by special use vessels in accordance with 7.1.4.5.8; and
- .5 the shipment of SCO-III.

except that a competent authority may authorize transport into or through its country without shipment approval, by a specific provision in its design approval (see 5.1.5.2.1).

5.1.5.1.3 *Shipment approval by special arrangement*

Provisions may be approved by a competent authority under which a consignment which does not satisfy all of the applicable provisions of this Code may be transported under special arrangement (see 1.5.4).

5.1.5.1.4 *Notifications*

Notification to competent authorities is required as follows:

- .1 Before the first shipment of any package requiring competent authority approval, the consignor shall ensure that copies of each applicable competent authority certificate applying to that package design have been submitted to the competent authority of the country of origin of the shipment and to the competent authority of each country through or into which the consignment is to be transported. The consignor is not required to await an acknowledgement from the competent authority, nor is the competent authority required to make such acknowledgement of receipt of the certificate.

- .2 For each of the following types of shipments:
 - .1 Type C packages containing radioactive material with an activity greater than $3,000A_1$ or $3,000A_2$, as appropriate, or 1,000 TBq, whichever is the lower;
 - .2 Type B(U) packages containing radioactive material with an activity greater than $3,000A_1$ or $3,000A_2$, as appropriate, or 1,000 TBq, whichever is the lower;
 - .3 Type B(M) packages;
 - .4 shipment under special arrangement;
- △ the consignor shall notify the competent authority of the country of origin of the shipment and the competent authority of each country through or into which the consignment is to be transported. This notification shall be in the possession of each competent authority prior to the commencement of the shipment, and preferably at least 7 days in advance.
- .3 The consignor is not required to send a separate notification if the required information has been included in the application for approval of shipment (see 6.4.23.2).
- .4 The consignment notification shall include:
 - .1 sufficient information to enable the identification of the package or packages, including all applicable certificate numbers and identification marks;
 - .2 information on the date of shipment, the expected date of arrival and proposed routing;
 - .3 the names of the radioactive material or nuclides;
 - .4 descriptions of the physical and chemical forms of the radioactive material, or whether it is special form radioactive material or low dispersible radioactive material; and
 - .5 the maximum activity of the radioactive contents during transport, expressed in units of becquerels (Bq) with an appropriate SI prefix symbol (see 1.2.2.1). For fissile material, the mass of fissile material (or of each fissile nuclide for mixtures when appropriate) in units of grams (g), or multiples thereof, may be used in place of activity.

5.1.5.2 Certificates issued by competent authority

5.1.5.2.1 Certificates issued by the competent authority are required for the following:

- .1 designs for:
 - .1 special form radioactive material;
 - .2 low dispersible radioactive material;
 - .3 fissile material excepted under 2.7.2.3.5.6;
 - .4 packages containing 0.1 kg or more of uranium hexafluoride;
 - .5 packages containing fissile material unless excepted by 2.7.2.3.5, 6.4.11.2 or 6.4.11.3;
 - .6 Type B(U) packages and Type B(M) packages;
 - .7 Type C packages;
- .2 special arrangements;
- .3 certain shipments (see 5.1.5.1.2);
- .4 determination of the basic radionuclide values referred to in 2.7.2.2.1 for individual radionuclides which are not listed in table 2.7.2.2.1 (see 2.7.2.2.2.1);
- .5 alternative activity limits for an exempt consignment of instruments or articles (see 2.7.2.2.2.2).

The certificates shall confirm that the applicable provisions are met, and for design approvals shall attribute to the design an identification mark.

The certificates of approval for the package design and the shipment may be combined into a single certificate.

Certificates and applications for these certificates shall be in accordance with the provisions in 6.4.23.

5.1.5.2.2 The consignor shall be in possession of a copy of each applicable certificate.

5.1.5.2.3 For package designs where it is not required that a competent authority issue a certificate of approval, the consignor shall, on request, make available, for inspection by the relevant competent authority, documentary evidence of the compliance of the package design with all the applicable provisions.

5.1.5.3 Determination of transport index (TI) and criticality safety index (CSI)

△ 5.1.5.3.1 The transport index (TI) for a package, overpack or freight container, or for unpackaged LSA-I, SCO-I or SCO-III, shall be the number derived in accordance with the following procedure:

- .1 determine the dose rate in units of millisieverts per hour (mSv/h) at a distance of 1 m from the external surfaces of the package, overpack, freight container, or unpackaged LSA-I, SCO-I or SCO III. The value

determined shall be multiplied by 100 and the resulting number is the transport index. For uranium and thorium ores and their concentrates, the maximum dose rate at any point 1 m from the external surface of the load may be taken as:

- 0.4 mSv/h for ores and physical concentrates of uranium and thorium;
 - 0.3 mSv/h for chemical concentrates of thorium;
 - 0.02 mSv/h for chemical concentrates of uranium, other than uranium hexafluoride;
- .2 for tanks, freight containers and unpackaged LSA-I, SCO-I and SCO-III, the value determined in 5.1.5.3.1.1 above shall be multiplied by the appropriate factor from table 5.1.5.3.1;
- .3 the value obtained in 5.1.5.3.1.1 and 5.1.5.3.1.2 above shall be rounded up to the first decimal place (e.g. 1.13 becomes 1.2), except that a value of 0.05 or less may be considered as zero and the resulting number is the TI value (without unit).

△ **Table 5.1.5.3.1 – Multiplication factors for tanks, freight containers and unpackaged LSA-I, SCO-I and SCO-III**

Size of load ^a	Multiplication factor
size of load ≤ 1 m ²	1
1 m ² < size of load ≤ 5 m ²	2
5 m ² < size of load ≤ 20 m ²	3
20 m ² < size of load	10

^a Largest cross-sectional area of the load being measured.

△ 5.1.5.3.2 The TI for each rigid overpack, freight container or conveyance shall be determined as the sum of the TIs of all the packages contained therein. For a shipment from a single consignor, the consignor may determine the TI by direct measurement of dose rate.

The TI for a non-rigid overpack shall be determined only as the sum of the TIs of all the packages within the overpack.

5.1.5.3.3 The criticality safety index for each overpack or freight container shall be determined as the sum of the CSIs of all the packages contained. The same procedure shall be followed for determining the total sum of the CSIs in a consignment or aboard a conveyance.

5.1.5.3.4 Packages, overpacks and freight containers shall be assigned to either category I – WHITE, II – YELLOW or III – YELLOW in accordance with the conditions specified in table 5.1.5.3.4 and with the following requirements:

- .1 for a package, overpack or freight container, both the transport index and the surface dose rate conditions shall be taken into account in determining which is the appropriate category. Where the transport index satisfies the condition for one category but the surface dose rate satisfies the condition for a different category, the package, overpack or freight container shall be assigned to the higher category. For this purpose, category I – WHITE shall be regarded as the lowest category;
- △ .2 the TI shall be determined following the procedures specified in 5.1.5.3.1 and 5.1.5.3.2;
- .3 if the surface dose rate is greater than 2 mSv/h, the package or overpack shall be transported under exclusive use and under the provisions of 7.1.4.5.6 or 7.1.4.5.7, as appropriate;
 - .4 a package transported under a special arrangement shall be assigned to category III – YELLOW except under the provisions of 5.1.5.3.5;
 - .5 an overpack or freight container which contains packages transported under special arrangement shall be assigned to category III – YELLOW except under the provisions of 5.1.5.3.5.

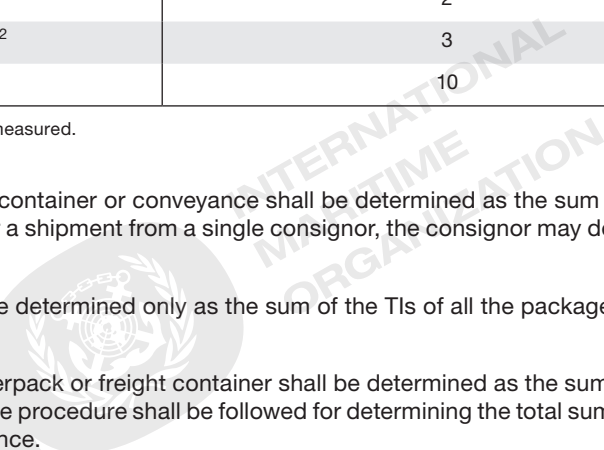


Table 5.1.5.3.4 – Categories of packages, overpacks and freight containers

Conditions		
Transport index	Maximum dose rate at any point on external surface	Category
0 ^a	Not more than 0.005 mSv/h	I – WHITE
More than 0 but not more than 1 ^a	More than 0.005 mSv/h but not more than 0.5 mSv/h	II – YELLOW
More than 1 but not more than 10	More than 0.5 mSv/h but not more than 2 mSv/h	III – YELLOW
More than 10	More than 2 mSv/h but not more than 10 mSv/h	III – YELLOW ^b

^a If the measured TI is not greater than 0.05, the value quoted may be zero in accordance with 5.1.5.3.1.3.

^b Shall also be transported under “exclusive use” except for freight containers (see table 7.1.4.5.3.1).

5.1.5.3.5 In all cases of international transport of packages requiring competent authority approval of design or shipment, for which different approval types apply in the different countries concerned by the shipment, the categorization shall be in accordance with the certificate of the country of origin of design.

5.1.5.4 Specific provisions for excepted packages of radioactive material of class 7

5.1.5.4.1 Excepted packages of radioactive material of class 7 shall be legibly and durably marked on the outside of the packaging with:

- .1 the UN number preceded by the letters “UN”;
- .2 an identification of either the consignor or consignee, or both; and
- .3 the permissible gross mass if this exceeds 50 kg.

5.1.5.4.2 The documentation requirements of 5.4.1 and 5.4.5 do not apply to excepted packages of radioactive material of class 7, except that:

- .1 the UN number preceded by the letters “UN” and the name and address of the consignor and the consignee and, if relevant, the identification mark for each competent authority certificate of approval (see 5.4.1.5.7.1.7) shall be shown on a special transport document such as a bill of lading, air waybill or other similar document complying with the requirements of 5.4.1.2.1 to 5.4.1.2.4; and
- .2 the requirements of 5.4.1.6.2 and, if relevant, those of 5.4.1.5.7.1.7, 5.4.1.5.7.3 and 5.4.1.5.7.4 shall apply.

5.1.5.4.3 The requirements of 5.2.1.5.8 and 5.2.2.1.12.5 shall apply if relevant.

5.1.5.5 Specific provisions for the consignment of fissile material

Fissile material meeting one of the provisions of 2.7.2.3.5.1 to 2.7.2.3.5.6 shall meet the following requirements:

- .1 only one of the provisions of 2.7.2.3.5.1 to 2.7.2.3.5.6 is allowed per consignment;
- .2 only one approved fissile material in packages classified in accordance with 2.7.2.3.5.6 is allowed per consignment unless multiple materials are authorized in the certificate of approval;
- .3 fissile material in packages classified in accordance with 2.7.2.3.5.3 shall be transported in a consignment with no more than 45 g of fissile nuclides;
- .4 fissile material in packages classified in accordance with 2.7.2.3.5.4 shall be transported in a consignment with no more than 15 g of fissile nuclides;
- .5 unpackaged or packaged fissile material classified in accordance with 2.7.2.3.5.5 shall be transported under exclusive use on a conveyance with no more than 45 g of fissile nuclides.

5.1.6 Packages packed into a cargo transport unit

5.1.6.1 Regardless of the placarding and marking provisions for cargo transport units, each package containing dangerous goods packed into a cargo transport unit shall be marked and labelled in accordance with the requirements of chapter 5.2.