

**Attachment 15****LABELING HAZARDOUS MATERIALS**

**A15.1. General Requirements.** Unless otherwise specified in this manual, apply the appropriate labels to the outer packaging of packages containing hazardous materials.

A15.1.1. Use labels meeting the commercial color and specifications outlined in 49 CFR Sections 172.411 through 172.450, ICAO, or IATA. Do not use labels that are easily confused by their use, shape, and color, with the standard labels prescribed.

A15.1.2. Labels are diamond-shaped with each side at least 10 cm (4 inches) long and have a solid line border 6.3 mm (0.25 inches) from the edge. "UN3373" labels may be 5 cm (2 inches) long.

A15.1.3. The hazard class and division number is at least 6.3 mm (0.25 inches) and not greater than 12.7 mm (0.5 inches). The label text is at least 7.6 mm (0.3 inches) and in capitalized Roman letters.

A15.1.4. It is the shipping activity's responsibility to establish procedures to locally fund for and procure hazardous material labels and commercial forms.

A15.1.5. Accessorial hazards do not require labels.

A15.1.6. Comply with paragraph 1.10.8. to ensure visibility of hazard labels during transportation. If hazard labels required by this attachment are not visible due to placement (located in the middle of an aircraft pallet, cargo bed covered by a tarp, within a freight container, etc), apply required labels to a marking board placed/attached to identify presence of each hazard classification.

A15.1.7. Engines and machinery UN3528, UN3529, and UN3530 do not require labeling unless packaged, crated, or otherwise enclosed to prevent ready identification.

**A15.2. Hazard Labels.**

A15.2.1. Affix to the outer packaging or (overpack) a primary hazard label and a subsidiary hazard label(s) (if required) based on the hazard classification/subsidiary hazard provided in columns 4 and 5 of Table A4.1. unless exempted by A15.4. Include the hazard class or division number in the bottom corner of the label(s). Labels that do not have the class or division number preprinted may be stamped or overprinted with the appropriate hazard class/division number in the bottom corner of the label.

A15.2.1.1. For explosives, include the division number and compatibility group letter. Ensure the compatibility group letter is a capitalized Roman letter.

A15.2.1.2. For Division 5.1 oxidizers and Division 5.2 organic peroxides, include the division number in the bottom corner of the label.

A15.2.2. Unless otherwise directed in this manual, attach labels to the part of the package bearing the PSN if package size is adequate. If package size is not adequate, use an overpack. Label packages requiring a Radioactive Material label ("Category I-White", "Category II-Yellow" or "Category III-Yellow") on two opposite sides.

- A15.2.3. Do not place labels over any identifying data on the container. Remove or obliterate any irrelevant labeling already on the packaging.
- A15.2.4. When hazardous materials are placed in an overpack, the appropriate primary hazard label, subsidiary hazard label(s) and handling label(s) for each class is applied to the outer package or container. If the primary hazard or subsidiary hazard label(s) of another component of the overpack already adequately identifies a primary or subsidiary hazard it is not necessary to apply an additional label.
- A15.2.5. When hazardous materials are palletized on a 463L or warehouse pallet, ensure the label is clearly visible.
- A15.2.6. Position hazardous cargo loaded in the back of a vehicle so the labels are clearly visible, or apply the labels for each hazard loaded in the back of the vehicle to a marker board that is clearly visible.
- A15.2.7. Label each Limited Quantity package for each dangerous good contained in the package.
- A15.2.8. Excepted Quantities do not require hazard labels. See A19.2.3 for package marking requirements.
- A15.2.9. Label hazardous waste with the appropriate hazard label and properly completed hazardous waste label.
- A15.2.10. For items shipped under the PSN "Dangerous Goods in Machinery" or "Dangerous Goods in Apparatus" apply Package Orientation (This Way Up) labels to opposite vertical sides when required to ensure liquid hazardous materials remain in their intended orientation. If machinery or apparatus contains a magnetized material apply both a Class 9 (Miscellaneous) and a "Magnetized Material" label.
- A15.2.11. A label(s) is not required for domestic shipments when use is exempted by a DOT special permit. For international shipments, apply the correct label(s).
- A15.2.12. Do not apply hazard labels to a package containing material that is not regulated.
- A15.2.13. When consolidating loads, apply labels required by this attachment for individual packages directly to stretch or shrink wrapping used or to a marking board (A14.3.11). Orientation labels are not required if stretch or shrink wrap prevents incorrect loading of packages/containers.

### **A15.3. Handling Labels.**

- A15.3.1. Apply a "Cargo Aircraft Only" label on packaging (to include overpacks) not permitted on passenger aircraft as identified in column 7 of Table A4.1. Also apply to marking boards according to A15.1.6., when applicable, if label is not visible.
- A15.3.2. The "Cargo Aircraft Only" label is not required on cargo shipped according to A17.3 or when Chapter 3 of this Manual is authorized unless diverted as identified in A17.3.5.

- A15.3.3. Apply a "Magnetized Material" label on packages containing magnetized material. An additional Class 9 label is not required. Also apply to marking boards according to A15.1.6., when applicable, if label is not visible.
- A15.3.4. Apply an "Empty" label when the packaging meets the requirements of paragraph A3.1.16. Remove, obliterate, destroy, or completely cover any previously applied hazard labels from the container or cylinder when shipped as empty. New or reconditioned cylinders do not require an "Empty" label but mark or tag them to indicate they are empty.
- A15.3.5. Apply "Keep Away From Heat" label to each outside package containing self-reactive substances of Class/Division 4.1 or organic peroxides of Class/Division 5.2.
- A15.3.6. Labels required by 49 CFR, ICAO, or IATA may be affixed even if not required by this manual.
- A15.3.7. A marking board may be used in lieu of applying a handling label(s) directly to a freight container (see A14.3.11).
- A15.3.8. Apply labels required for large packagings or overpacks on two opposite sides. Large packagings are defined as a packaging or overpack having a volume of 1.8 m<sup>3</sup> (64 cubic feet) or more.

#### **A15.4. Labeling Requirements Applicable to Hazard Classes.**

- A15.4.1. Class 1. For unitized, containerized, or palletized loads of like items with the same hazard classification, division and compatibility group, only one of the required hazard label(s) needs to be applied and visible.
- A15.4.2. Class 2.
- A15.4.2.1. For packages containing oxygen, compressed; or oxygen, refrigerated liquid, a label with the word "OXYGEN" may be used in place of a label with the word "OXIDIZER," if the letter size and color are the same as those required for oxidizer. Alternatively, an "OXYGEN" label may be used in place of the "NONFLAMMABLE GAS" and "OXIDIZER" labels required in Table A4.1.
- A15.4.2.2. Apply a nonflammable compressed gas label to each exterior container of recoil mechanisms or artillery gun mounts prepared and certified according to A6.5.13. However, when shipped as an integral part of the complete weapon system, the nonflammable compressed gas label may be on the weapon or its exterior cover.
- A15.4.3. Class 3. All flammable liquids, whose vapor pressure (Reid test) is more than 110 kPa (16 psi) at 38 degrees C (100 degrees F), require a "white bung label," 76 x 127 mm (3 by 5 inches), affixed near the bung or closure of the container.
- A15.4.4. Class 4. A division 4.1 subsidiary hazard label is not required on a package bearing a division 4.2 label.
- A15.4.5. Class 6.
- A15.4.5.1. Label PG I or II material with either a "TOXIC" or "TOXIC INHALATION HAZARD" label as appropriate.
- A15.4.5.2. Label Hazard Zone A or B material with a "TOXIC INHALATION HAZARD" label.

A15.4.5.3. Ensure material classified as an infectious substance, that also meets the definition of a Class 2.3 toxic material or a radioactive material, is also labeled with a "TOXIC GAS" (or INHALATION HAZARD) label or "RADIOACTIVE" label as appropriate.

A15.4.5.4. Label all Category A infectious substance packagings with an "INFECTIOUS SUBSTANCE" label.

A15.4.6. Class 7.

A15.4.6.1. Hazard Label. Ensure each package requiring a "RADIOACTIVE" label has two of these labels affixed to opposite sides of the package. The proper label to affix to a package of radioactive material is based on the radiation level at the surface of the package and the transport index. The proper category of label is determined according to Table A15.1. The first step is to determine the maximum radiation level at a distance of 1 meter from the external surfaces of the package, overpack or freight container, the value determined is multiplied by 100. The final step is the figure obtained in step 1 is rounded up to the first decimal place, except that a value of 0.05 or less may be considered as zero. Apply the highest category label required for any of the two determining conditions. Radioactive Category I-White is the lowest category and Category III-Yellow is the highest. For example: a package with a transport index of 0.8 and a maximum surface radiation level of 0.6 mSv/h (60 mrem/h) bears a Category III-Yellow label (see Table A15.1.)

**Table A15.1. Radioactive Label Requirements. (See Note 1).**

<b>Transport Index (TI)</b>	<b>Maximum Radiation Level at any Point on the External Surface</b>	<b>Label Category (see Note 1)</b>
0 (see Note 2)	Less than or equal to 0.005 mSv/h (0.5 mrem/h)	I - White
More than 0 but not more than 1 (see Note 2)	More than 0.005 mSv/h (0.5 mrem/h) but less than or equal to 0.5 mSv/h (50 mrem/h)	II - Yellow
More than 1 but not more than 10	More than 0.5 mSv/h (50 mrem/h) but less than or equal to 2 mSv/h (200 mrem/h)	III - Yellow
More than 10 (see Note 3)	More than 2 mSv/h (200 mrem/h) but less than or equal to 10 mSv/h (1000 mrem/h)	III – Yellow
<b>Notes:</b> 1. The category of label is shown in Key 17 of the Shipper's Declaration for Dangerous Goods form and the correct label is applied to radioactive materials packages. Any package containing a "highway route controlled quantity" is labeled as radioactive Category III-Yellow. 2. If the measured TI is not greater than 0.05, the value quoted may be zero. 3. If the TI is greater than 10, the package or overpack may be transported by SAAM airlift only (see Attachment 24)		

A15.4.6.2. Subsidiary hazard Label. Label each package containing a radioactive material that also meets the definition of one or more additional hazards, as required by this attachment for the radioactive material and for each additional hazard. For example, label solid nitrates of uranium or thorium, "RADIOACTIVE" and "OXIDIZER." Subsidiary hazard labels are not required for an uncompressed gas that is non-flammable and non-toxic.

A15.4.6.3. Label Marking. Mark the contents, activity, and for Category II and III yellow labels, the transport index on the label. Additionally, mark the CSI on the CSI label. Enter the following information in the blank spaces by legible printing (manual or mechanical), using a durable weather resistant means of marking:

A15.4.6.3.1. Contents. Mark the contents as follows:

A15.4.6.3.1.1. Except for LSA-I material, the symbol of the radionuclide as listed in Table A11.1. Symbols that conform to established radiation protection terminology are authorized, (e.g., <sup>99</sup>Mo, <sup>60</sup>Co, etc).

A15.4.6.3.1.2. For mixtures of radionuclides, or for different individual radionuclides packed together in the same package, the most restrictive radionuclides are listed to the extent that space on the line permits.

A15.4.6.3.1.3. LSA (except LSA-1) or SCO has the symbol of the radionuclide followed by "LSA-II", "LSA-III", "SCO-I", "SCO-II" as appropriate.

A15.4.6.3.1.4. For LSA-I material, only “LSA-I” is required to be marked.

A15.4.6.3.2. Activity. Express units in appropriate international units of Becquerels (Bq) or Terabecquerels (TBq). The customary units, e.g., curies (Ci), millicuries (mCi), or microcuries (uCi) may be included in parenthesis following the international units. Abbreviations are authorized. For a fissile material, the weight in grams or kilograms of the fissile radioisotope also may be inserted.

A15.4.6.3.3. Transport Index (TI). For Category II and Category III yellow labels only, mark the Transport Index in the box provided. It is rounded up to one decimal place (see Attachment 1).

A15.4.6.3.4. Criticality Safety Index (CSI).

A15.4.6.3.4.1. Mark the Criticality Safety Index label with the CSI as stated in the certificate of approval for special arrangement or the certificate of approval for the package design, issued by the NRC or the US Competent Authority, in the box provided.

A15.4.6.3.4.2. For overpacks and freight containers, the CSI on the label is the sum of the criticality safety indexes of the individual packages in the freight container or overpack as stated in the certificate of approval for the package design issued by the NRC or the US Competent Authority.

A15.4.6.3.5. Overpacks and Freight Containers. When one or more packages of radioactive material are placed within an overpack, label the overpack as prescribed in this paragraph except as follows:

A15.4.6.3.5.1. The content entry on the label may state “See Shipper’s Declaration” in place of the names of the radionuclides unless each inside package contains the same radionuclide(s).

A15.4.6.3.5.2. The activity entry on the label is determined by adding together the number of becquerels of the radioactive materials packages contained in the overpack.

A15.4.6.3.5.3. For an overpack, determine the TI by adding together the transport indexes of the radioactive materials packages contained in the overpack. For a rigid overpack, the TI may alternatively be determined by direct measurement as prescribed in this paragraph; however, only the person who initially offered the packages contained within the overpack for shipment may take the measurement.

A15.4.6.3.5.4. Determine the category of Class 7 label for the overpack from Table A15.1. using the TI derived from the requirements in this paragraph and the maximum surface radiation level on the surface of the overpack.

A15.4.6.3.5.5. Use the category of the Class 7 label of the overpack and not that of any contained packages in accordance with Table 1 of 49 CFR Paragraph 172.504(e) to determine when the transport vehicle requires placarding.

## A15.4.7. Class 8.

A15.4.7.1. Ensure wet-cell batteries prepared and certified according to A12.4. have "Package Orientation" labels indicating the upright position (top) of the container, if not already marked on the container as specified in A14.3.6.

A15.4.7.2. Label Chemical or First Aid Kits prepared in accordance with A12.6. with the primary hazard label and any subsidiary hazard labels applicable to each individual hazard within the kit.

A15.4.7.3 Packages displaying a Class 8 label need not display a Division 6.1 subsidiary hazard label if the toxicity of the material is based solely on the corrosive destruction of tissue rather than systematic poisoning.

## A15.4.8. Class 9.

A15.4.8.1. Vehicles do not require a label unless packaged, crated, or otherwise enclosed to prevent ready identification.

A15.4.8.2. Certify items containing both limited quantity radioactive and magnetic characteristics to the radioactive material. Although limited quantity radioactive material is exempt from labeling, apply a magnetic material label to the shipping container.