Subpart K—Specifications for Packagings for Class 7 (Radioactive) Materials

§ 178.350 Specification 7A; general packaging, Type A.

(a) Each packaging must meet all applicable requirements of subpart B of part 173 of this subchapter and be designed and constructed so that it meets the requirements of §§173.403, 173.410, 173.412, 173.415 and 173.465 of this subchapter for Type A packaging.

(b) Each Specification 7A packaging must be marked on the outside “USA DOT 7A Type A.”

(c) Each Specification 7A packaging must comply with the requirements of §§178.2 and 178.3. In §178.3(a)(2) the term “packaging manufacturer” means the person certifying that the package meets all requirements of this section.


Subpart L—Non-bulk Performance-Oriented Packaging Standards

§ 178.500 Purpose, scope and definitions.

(a) This subpart prescribes certain requirements for non-bulk packagings for hazardous materials. Standards for these packagings are based on the UN Recommendations.

(b) Terms used in this subpart are defined in §171.8 of this subchapter.

§ 178.502 Identification codes for packagings.

(a) Identification codes for designating kinds of packagings consist of the following:

(i) A numeral indicating the kind of packaging, as follows:

(ii) “1” means a drum.

(iii) “2” means a wooden barrel.

(iv) “3” means a jerrican.

(v) “4” means a box.

(vi) “5” means a bag.

(vii) “7” means a pressure receptacle.

(b) A capital letter indicating the material of construction, as follows:

(i) “A” means steel (all types and surface treatments).

(ii) “B” means aluminum.

(iii) “C” means natural wood.

(iv) “D” means plywood.

(v) “F” means reconstituted wood.

(vi) “G” means fiberboard.

(vii) “H” means plastic.

(viii) “L” means textile.

(ix) “M” means paper, multi-wall.

(x) “N” means metal (other than steel or aluminum).

(xi) “P” means glass, porcelain or stoneware.

(c) A numeral indicating the category of packaging within the kind to which the packaging belongs. For example, for steel drums (“1A”), “1” indicates a non-removable head drum (i.e., “1A1”) and “2” indicates a removable head drum (i.e., “1A2”).

(d) For composite packagings, two capital letters are used in sequence in the second position of the code, the first indicating the material of the inner receptacle and the second, that of the outer packaging. For example, a plastic receptacle in a steel drum is designated “6HA1”.

(c) For combination packagings, only the code number for the outer packaging is used.

(d) Identification codes are set forth in the standards for packagings in §§178.504 through 178.523 of this subpart.

Note to §178.502: Plastics materials include other polymeric materials such as rubber.


§ 178.503 Marking of packagings.

(a) A manufacturer must mark every packaging that is represented as manufactured to meet a UN standard with the marks specified in this section. The markings must be durable, legible and placed in a location and of such a size relative to the packaging as to be readily visible, as specified in §178.3(a). Except as otherwise provided in this section, every reusable packaging liable to undergo a reconditioning process which might obliterate the packaging...
marks must bear the marks specified
in paragraphs (a)(1) through (a)(6) and
(a)(9) of this section in a permanent
form (e.g. embossed) able to withstand
the reconditioning process. A marking
may be applied in a single line or in
multiple lines provided the correct se-
quence is used. As illustrated by the
examples in paragraph (e) of this sec-
tion, the following information must
be presented in the correct sequence.
Slash marks should be used to separate
this information. A packaging con-
forming to a UN standard must be
marked as follows:

(1) Except as provided in paragraph
(e)(1)(ii) of this section, the United Na-
tions symbol as illustrated in para-
graph (e)(1)(i) of this section (for em-
bossed metal receptacles, the letters
"UN" may be applied in place of the
symbol);

(2) A packaging identification code
designating the type of packaging, the
material of construction and, when ap-
propriate, the category of packaging
under §§ 178.504 through 178.523 of this
subpart within the type to which the
packaging belongs. The letter "V"
must follow the packaging identifica-
tion code on packagings tested in ac-
cordance with §178.601(g)(2); for exam-
ple, "4GV". The letter "W" must fol-
low the packaging identification code
on packagings when required by an ap-
proval under the provisions of §178.601(h)
of this part;

(3) A letter identifying the perform-
ance standard under which the pack-
aging design type has been successfully
tested, as follows:

(i) X—for packagings meeting Pack-
ing Group I, II and III tests;
(ii) Y—for packagings meeting Pack-
ing Group II and III tests; or
(iii) Z—for packagings only meeting
Packaging Group III tests;

(4) A designation of the specific grav-
ity or mass for which the packaging de-
sign type has been tested, as follows:

(i) For packagings without inner
packagings intended to contain liquids,
the designation shall be the specific
gravity rounded down to the first dec-
imal but may be omitted when the spe-
cific gravity does not exceed 1.2; and

(ii) For packagings intended to con-
tain solids or inner packagings,
the designation shall be the maximum
gross mass in kilograms;

(5)(i) For single and composite pack-
agings intended to contain liquids, the
test pressure in kilopascals rounded
down to the nearest 10 kPa of the hy-
drostatic pressure test that the pack-
aging design type has successfully
passed;

(ii) For packagings intended to con-
tain solids or inner packagings, the let-
ter "S";

(6) The last two digits of the year of
manufacture. Packagings of types 1H
and 3H shall also be marked with the
month of manufacture in any appro-
priate manner; this may be marked on
the packaging in a different place from
the remainder of the markings;

(7) The state authorizing allocation
of the mark. The letters 'USA' indicate
that the packaging is manufactured
and marked in the United States in
compliance with the provisions of this
subchapter;

(8) The name and address or symbol
of the manufacturer or the approval
agency certifying compliance with sub-
part L and subpart M of this part.
Symbols, if used, must be registered
with the Associate Administrator;

(9) For metal or plastic drums or
jerricans intended for reuse or recondi-
tioning as single packagings or the
outer packagings of a composite pack-
aging, the thickness of the packaging
material, expressed in mm (rounded to
the nearest 0.1 mm), as follows:

(i) Metal drums or jerricans must be
marked with the nominal thickness
of the metal used in the body. The
marked nominal thickness may not
exceed the minimum thickness of the
steel used by more than the thickness
tolerance stated in ISO 3574 (IBR, see
§171.7 of this subchapter). (See appen-
dix C of this part.) The unit of measure
is not required to be marked. When the
nominal thickness of either head of a
metal drum is thinner than that of the
body, the nominal thickness of the top
head, body, and bottom head must be
marked (e.g., "1.0–1.2–1.0" or "0.9–1.0–
1.0")

(ii) Plastic drums or jerricans must
be marked with the minimum thick-
ness of the packaging material. Min-
imum thicknesses of plastic must be as
determined in accordance with
§ 173.28(b)(4). The unit of measure is not required to be marked:

(10) In addition to the markings prescribed in paragraphs (a)(1) through (a)(9) of this section, every new metal drum having a capacity greater than 100 L must bear the marks described in paragraphs (a)(1) through (a)(6), and (a)(9)(i) of this section, in a permanent form, on the bottom. The markings on the top head or side of these packagings need not be permanent, and need not include the thickness mark described in paragraph (a)(9) of this section. This marking indicates a drum’s characteristics at the time it was manufactured, and the information in paragraphs (a)(1) through (a)(6) of this section that is marked on the top head or side must be the same as the information in paragraphs (a)(1) through (a)(6) of this section permanently marked by the original manufacturer on the bottom of the drum; and

(11) Rated capacity of the packaging expressed in liters may be marked.

(b) For a packaging with a removable head, the markings may not be applied only to the removable head.

(c) Marking of reconditioned packagings. (1) If a packaging is reconditioned, it shall be marked by the reconditioner near the marks required in paragraphs (a)(1) through (6) of this section with the following additional information:

(i) The name of the country in which the reconditioning was performed (in the United States, use the letters “USA”);

(ii) The name and address or symbol of the reconditioner. Symbols, if used, must be registered with the Associate Administrator;

(iii) The last two digits of the year of reconditioning;

(iv) The letter “R”; and

(v) For every packaging successfully passing a leakproofness test, the additional letter “L”.

(2) When, after reconditioning, the markings required by paragraph (a)(1) through (a)(5) of this section no longer appear on the top head or the side of the metal drum, the reconditioner must apply them in a durable form followed by the markings in paragraph (c)(1) of this section. These markings may identify a different performance capability than that for which the original design type had been tested and marked, but may not identify a greater performance capability. The markings applied in accordance with this paragraph may be different from those which are permanently marked on the bottom of a drum in accordance with paragraph (a)(10) of this section.

(d) Marking of remanufactured packagings. For remanufactured metal drums, if there is no change to the packaging type and no replacement or removal of integral structural components, the required markings need not be permanent (e.g., embossed). Every other remanufactured drum must bear the marks required in paragraphs (a)(1) through (a)(6) of this section in a permanent form (e.g., embossed) on the top head or side. If the metal thickness marking required in paragraph (a)(9)(i) of this section does not appear on the bottom of the drum, or if it is no longer valid, the remanufacturer also must mark this information in permanent form.

(e) The following are examples of symbols and required markings.

(1)(i) The United Nations symbol is:
(ii) The circle that surrounds the letters “u” and “n” may have small breaks provided the following provisions are met:

(A) The total gap space does not exceed 15 percent of the circumference of the circle;
(B) There are no more than four gaps in the circle;
(C) The spacing between gaps is separated by no less than 20 percent of the circumference of the circle (72 degrees); and
(D) The letters “u” and “n” appear exactly as depicted in §178.503(e)(1)(i) with no gaps.

(2) Examples of markings for a new packaging are as follows:

(i) For a fiberboard box designed to contain an inner packaging:

![Image of UN symbol with 4G/Y145/S/83 and USA/RA]

(as in §178.503 (a)(1) through (9) of this subpart).

(ii) For a steel drum designed to contain liquids:

![Image of UN symbol with 1A1/Y1.4/150/83 and USA/VL824 1.0]

(as in §178.503 (a)(1) through (10) of this subpart).

(iii) For a steel drum to transport solids or inner packagings:

![Image of UN symbol with 1A2/Y150/S/83 and USA/VL825]

(as in §178.503 (a)(1) through (10) of this subpart).
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(3) Examples of markings for reconditioned packagings are as follows:

(1) The United Nations symbol as illustrated in paragraph (e) of this section.

(2) The code designating the type of packaging and material of construction according to the identification codes for packagings specified in §178.502.

(3) The text “CLASS 6.2”.

(4) The last two digits of the year of manufacture of the packaging.

(5) The country authorizing the allocation of the mark. The letters “USA” indicate the packaging is manufactured and marked in the United States in compliance with the provisions of this subchapter.

(6) The name and address or symbol of the manufacturer or the approval agency certifying compliance with subparts L and M of this part. Symbols, if used, must be registered with the Associate Administrator for Hazardous Materials Safety.

(7) For packagings meeting the requirements of §178.609(i)(3), the letter “U” must be inserted immediately following the marking designating the type of packaging and material required in paragraph (f)(2) of this section.

(f) A manufacturer must mark every UN specification package represented as manufactured to meet the requirements of §178.609 for packaging of infectious substances with the marks specified in this section. The markings must be durable, legible, and must be readily visible, as specified in §178.3(a). An infectious substance packaging that successfully passes the tests conforming to the UN standard must be marked as follows:

(1) The United Nations symbol as illustrated in paragraph (e) of this section.

(2) The code designating the type of packaging and material of construction according to the identification codes for packagings specified in §178.502.

(3) The text “CLASS 6.2”.

(4) The last two digits of the year of manufacture of the packaging.

(5) The country authorizing the allocation of the mark. The letters “USA” indicate the packaging is manufactured and marked in the United States in compliance with the provisions of this subchapter.

(6) The name and address or symbol of the manufacturer or the approval agency certifying compliance with subparts L and M of this part. Symbols, if used, must be registered with the Associate Administrator for Hazardous Materials Safety.

(7) For packagings meeting the requirements of §178.609(i)(3), the letter “U” must be inserted immediately following the marking designating the type of packaging and material required in paragraph (f)(2) of this section.


§ 178.504 Standards for steel drums.

(a) The following are identification codes for steel drums:

(1) 1A1 for a non-removable head steel drum; and

(2) 1A2 for a removable head steel drum.

(b) Construction requirements for steel drums are as follows:

(1) Body and heads must be constructed of steel sheet of suitable type and adequate thickness in relation to the capacity and intended use of the drum. Minimum thickness and marking requirements in §§173.28(b)(4) and 178.503(a)(9) of this subchapter apply to drums intended for reuse.

(2) Body seams must be welded on drums designed to contain more than 40 L (11 gallons) of liquids. Body seams must be mechanically seamed or welded on drums intended to contain only solids or 40 L (11 gallons) or less of liquids.

(3) Chimes must be mechanically seamed or welded. Separate reinforcing rings may be applied.

(4) The body of a drum of a capacity greater than 60 L (16 gallons) may have at least two expanded rolling hoops or two separate rolling hoops. If there are separate rolling hoops, they must be