

APPENDIX T
GUIDE FOR MARKINGS



U.S. Department
of Transportation

Research and
Special Programs
Administration

GUIDE FOR MARKINGS

USE OF GUIDE - This guide was prepared as an aid to shippers and carriers of hazardous materials. It does not contain or refer to all of the DOT requirements for marking. For specific details, refer to appropriate Sections of Title 49, Code of Federal Regulations (CFR), Parts 100-199.

MARKING - means placing on the outside of a shipping container, one or more of the following: the descriptive name, proper shipping name, hazard class, identification number, instructions, caution and/or weight. Marking also includes any required specification marks on the inside or outside shipping container.

DESCRIPTIVE INFORMATION

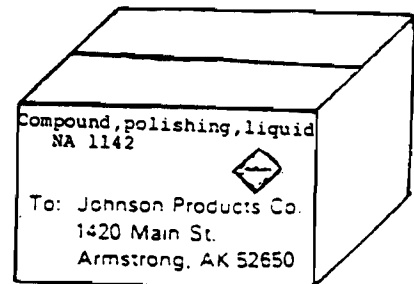
I. GENERAL REQUIREMENTS (49 CFR 172.300-172.304)

A. Unless Specifically Excepted, ALL containers of hazardous materials must be marked with:

- (1) The proper shipping name(s).
- (2) UN or NA Identification number(s) of the contents (49 CFR 172.101 or 172.102), Hazardous Materials Tables.
- (3) If the inhalation toxicity of any material in a package falls within the criteria specified in 49 CFR 173.3a(b)(2), the package shall be marked "Inhalation Hazard" in association with the required label(s).
- (4) The name and address of either the consignee or consignor.

B. All markings must be:

- (1). Durable and in English, printed on or affixed to the surface of the package or on a label, tag or sign.
- (2). On a background of a sharply contrasting color, and unobscured by labels or attachments.
- (3). Placed away from other markings that could reduce effectiveness.



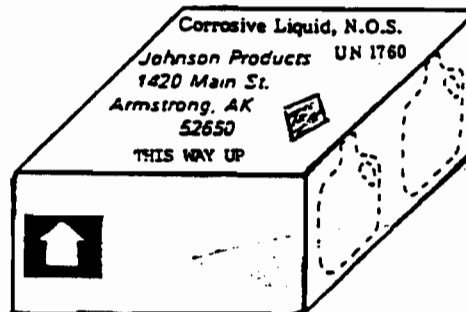
II. SPECIFIC REQUIREMENTS

A. HAZARDOUS SUBSTANCES (49 CFR 172.324)

- (1). For a package of 110 gallons or less that contains a hazardous substance(s) that is not identified by the proper shipping name, the following must be entered, in parentheses, in association with the proper shipping name:
 - (a) name of the hazardous substance from Appendix to 49 CFR 172.101, or
 - (b) for waste streams, the waste stream number, or
 - (c) for waste exhibiting an EPA characteristic of ignitability, corrosivity, reactivity, or EP toxicity, the letters EPA followed by "ignitability," or "corrosivity," or "reactivity," or "EP toxicity", or the corresponding "D" number, as appropriate.
- (2). Each package with a capacity of 110 gallons or less, that contains a hazardous substance, must display "RQ" in association with the proper shipping name.

B. LIQUID HAZARDOUS MATERIALS (49 CFR 172.312)

- (1). Must be packed with the closures of the inside packagings in the upright position.
- (2). Must have marking "THIS END UP" or "THIS SIDE UP" on the outside packaging.
- (3). Must use arrow symbol on the outside packaging to show upright orientation of packages. (See ANSI Standard MH6.11968 "Pictorial Marking for Handling Goods").
Example: "THIS WAY UP."



C. CONTAINERS - OVERPACKS

- (1). The outside container (overpack) must be marked in accordance with 49 CFR 173.25.

D. CONTAINERS - CYLINDERS

- (1). All cylinders must be marked in accordance with 49 CFR 173.34 and 49 CFR 173.301 through 173.306.
- (2). Reinspected and Retested Cylinders must be marked in accordance with 49 CFR 173.34(e)(6).

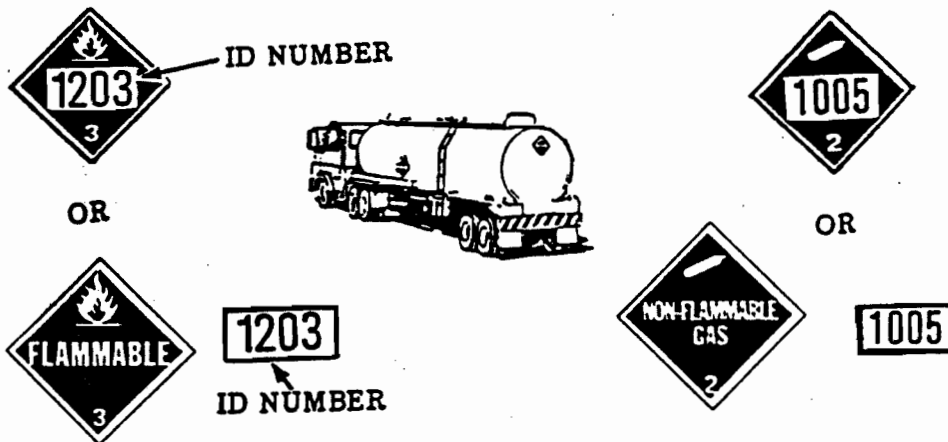
III. TANKS

A. PORTABLE TANKS (49 CFR 172.326 and 49 CFR 172.332) - Portable tanks must be marked with:

- (1). Proper shipping name - in letters at least 2 inches high and on two opposite sides.
- (2). Identification number - UN or NA (United Nation or North American) identification number on: TWO OPPOSITE SIDES (near proper shipping name) on tanks of less than 1,000 gallons capacity; on EACH SIDE AND EACH END on tanks of more than 1000 gallon capacity.
- (3). Name of owner or lessee.
- (4). All inlets and outlets (except safety relief valves) when carrying compressed gases (DOT-51).
- (5). Whether or not the inlets and outlets communicate with vapor or liquid (49 CFR 178.245-6(b)).

B. CARGO TANKS - HIGHWAY (COMPRESSED GASES) (49 CFR 172.328) - Cargo tanks must be marked with:

- (1). Proper shipping name OR appropriate common name such as "Refrigerant Gas." Letters must be at least 2 inches high on each end and each side. (49 CFR 172.101 or 172.102) Hazardous Materials Tables.
- (2). Identification number - (49 CFR 172.101 or 172.102) (See illustration below).
- (3). Inlets and outlets (except safety relief valves) shall be marked to designate whether the inlets and outlets communicate with vapor or liquid, when the tank is filled to its maximum permitted filling density. (49 CFR 178.337-9 (c). (DOT MC 331 tanks).
- (4). The accurate name of contents of the tank.



If the ID number is not displayed on the ends of the vehicle, check the sides of the transport vehicle.

NOTE: When ID numbers are displayed on placards, orange panels are not required. When ID numbers are displayed on orange panels, or white square-on-point display configurations, appropriate placards are ALSO REQUIRED. Materials requiring display of ID numbers placards, where ID number displayed on the placard is not authorized, ID numbers must be displayed on orange panels or on plain white square-on-point display configuration in association with the placard. ID number on white square-on-point display configuration is not a placard.

C. TANKS CARS (49 CFR 172.330) - Certain cars are required to be marked on each side and each end (49 CFR 172.332 and Parts 173 and 179 for specific details). If required to be marked, they must include:

- (1). Proper shipping name OR appropriate common name in letters at least 4 inches high at least 5/8 inch stroke.
- (2). Identification numbers - Display the appropriate number(s) on placards or orange panels or white square-on-point display configurations (49 CFR 172.101 and 172.102).
- (3). The accurate name of the contents contained in the tank.

NOTE: For requirements for multi-unit tank car tanks, See (49 CFR 179.300 through 179.302).

IV. BULK PACKAGINGS - (other than portable tanks, cargo tanks, tank cars and multi-unit tank car tanks) 49 CFR 172.331

A. Includes packages meeting the following criteria:

- (1). Internal volume greater than 118.9 gallons (450 liters) for liquids, or
- (2). A capacity greater than 881.8 pounds (400 kilograms) for solids, or
- (3). A water capacity greater than 1000 pounds (453.6 kilograms) for a gas as defined in 49 CFR 173.300.

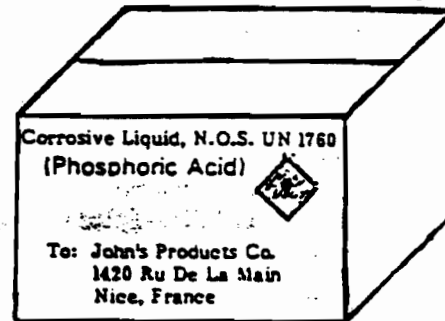
B. Mark packages as prescribed in 49 CFR 172.332 or 172.336(b), as appropriate, with the identification number specified in 172.101 or 172.102, when authorized:

- (1). On two opposite sides for packages of 1000 gallons (3785.4 liters or 133.7 cubic feet) or less capacity.

- (2). On lock side and end for packages greater than 1000 gallons (3785.4 liters or 133.7 cubic feet) capacity. Identification numbers shall be displayed on orange panels or specified placards, or when appropriate on white square-on-point display configuration having the same outside dimensions as a placard.

V. EXPORT BY WATER (49 CFR 172.302)

- A. All authorized "n.o.s." entries for export by water must have the technical name(s) of the material added in parentheses immediately following the proper shipping name.
- B. For mixtures of two or more hazardous materials, the technical name of at least two components most predominately contributing to the hazard or hazards of the mixture must be added in parentheses immediately following the proper shipping name.

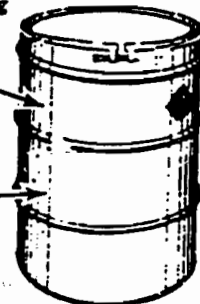


VI. RADIOACTIVE MATERIALS (49 CFR 172.310) - In addition to any other markings required by Subpart D of 49 CFR 172 (Marking), each package must be marked as follows:

- A. Gross weight must be marked on containers weighing over 110 pounds.
- B. "TYPE A" or "TYPE B," (as appropriate) in letters at least 1/2" high.
- C. "USA," must follow the specification markings or package certification on export shipments.

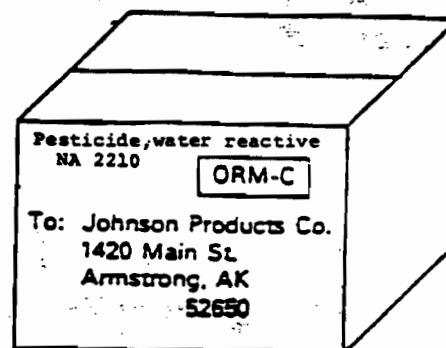
Radioactive Material, Fissile, N.O.S. UN 2918
USA/0777/ B(U)F Gross WT 320Kg
USA Type B

To: John's Products Co.
1420 Ru De La Main
Nice, France



VII. OTHER REGULATED MATERIALS (ORM'S) (49 CFR 172.316)

- A. Place the appropriate ORM designation immediately following, or below, the proper shipping name on at least one side of end of the package.



- B. Marking must be within a rectangular border - approximately 1/4 inch large on each side of "ORM ___." (ORM designation).

NOTE: By these markings, the shipper certifies that the material is properly described, classed, packaged, marked, and labeled and in proper condition for transportation. A certificate is also required on the shipping paper (49 CFR 172.316(c)). When ID numbers are required, they must be displayed on either orange panels (172.332 (b)) or on a plain white square-on-point configuration having the same dimensions as a placard.

OTHER MARKING REQUIREMENTS

- I. REQUALIFIED CONTAINERS - DRUMS (marked by reconditioner) Some steel containers in the DOT Series (DOT 17C, 17E, and 17H) may be qualified for reuse by a DOT registered reconditioner of drums. The drums are stripped of labels, exemption numbers and other markings. They are reconditioned to meet 49 CFR 173.28 (m) and marked with the appropriate registration assigned number.
- II. CYLINDERS & TANKS - (Marked with inspection and/or retest date). Reusable cylinders, portable tanks, cargo tanks and tank cars must be either visually inspected or retested at periodic intervals. The date of requalification must be on the container. (See 49 CFR 173.24, 173.31, 173.32, 173.33, and 173.34).
- III. CARGO HEATERS - Cargo heaters authorized for use with flammable liquid or gas must be marked in accordance with 49 CFR 177.834 (1)(2)(E) and (F).
- IV. MOTOR VEHICLES - A carrier may not move a transport vehicle containing hazardous material unless the vehicle is marked in accordance with Part 172 or unless an emergency exists. (See 49 CFR 177.823 and 177.824 for details).

SPECIFICATION CONTAINERS

- I. GENERAL - Specification containers must be marked with DOT specification numbers under which the containers are made (49 CFR Parts 178 and 179). The manufacturer's name and address or symbol must be registered with the Director, Office of Hazardous Materials Transportation. Duplicate symbols are not authorized.
- II. MARKINGS - All containers must comply with the marking requirements of 49 CFR 173.24, Parts 178 and 179. Exception for Canadian and other import/export situations are found in 49 CFR 171.12 and 173.8.

NOTE: For certain containers, specific detailed information (such as original test date information and type of material) are required. (See Parts 178 and 179). As a final check before offering a shipment for transportation, visually inspect the shipment.

This handout does not contain all the marking requirements. It is designed as a guide only. For details on markings, consult the Title 49, Code of Federal Regulations, Parts 100-199.

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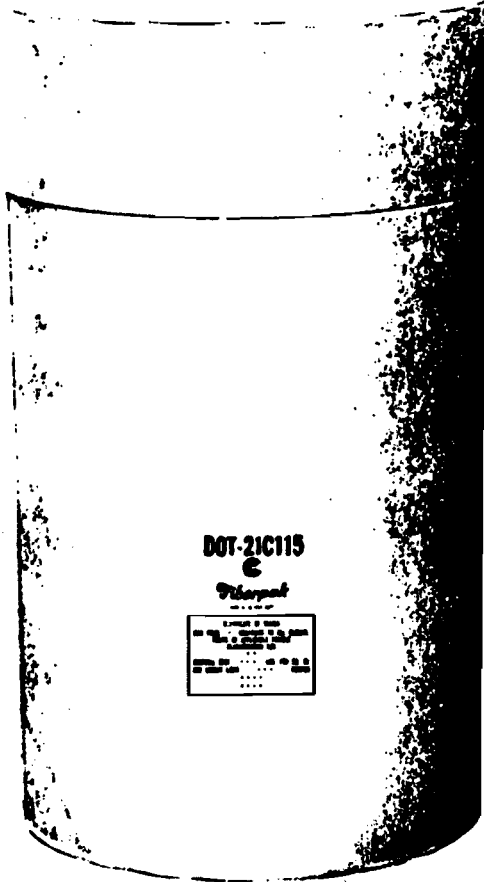
Training Resources Branch, DHM-51
Federal/State and Private Sector Initiatives Division
Office of Hazardous Materials Transportation
Research and Special Programs Administration
U.S. Department of Transportation
Washington, D.C. 20590

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EXAMPLES OF TYPICAL FIBERBOARD DRUM MARKINGS

DETERMINING THE PROPER FIBERBOARD STRENGTH FOR A DOT SPECIFICATION FIBER DRUM

1. Read the authorized net weight from the DOT Specification marking.
2. Consult Applicable Specification requirements in Title 49 CFR Sec. 178.224 or 178.225 to determine fiberboard strength from proper table.
3. Compare fiberboard strength (Bursting Test) with makers certificate.

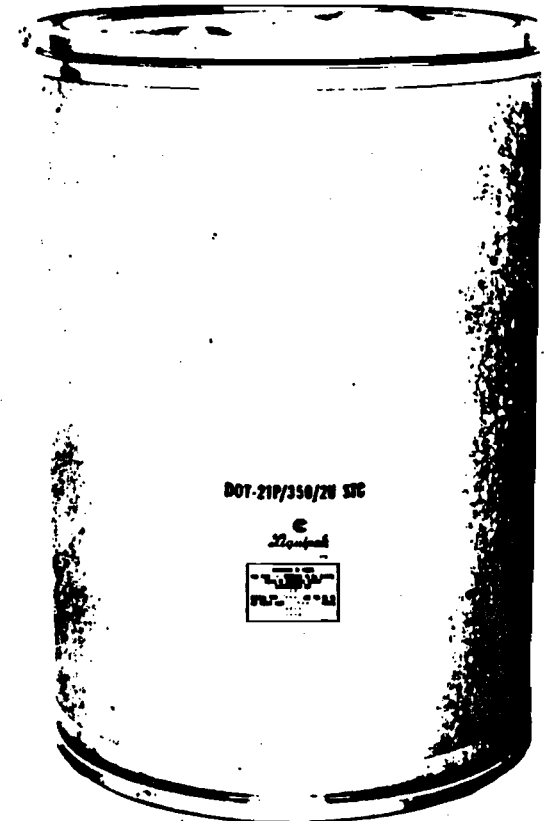


EXAMPLES OF DOT MARKINGS
DOT-21C***
***to be replaced with authorized
net weight

Note: Not a DOT Marking Requirement
Required by National Motor Freight
Classification -

CERTIFICATE OF MAKER	
THIS FIBRE . . . CONFORMS TO ALL REQUIREMENTS OF APPLICABLE FREIGHT CLASSIFICATION FOR	
SIDEWALL TEST	LBS. PER SQ. IN.
NET WEIGHT LIMIT	POUNDS
.	
.	

*Insert type of container (barrel, drum, pail or tub). The words "drums" and "barrels" are used interchangeably to mean a straight-sided cylindrical shipping container.
**Insert "DRY OR SOLID ARTICLES", "SEMI-SOLID ARTICLES", "SEMI-LIQUIDS" OR "LIQUIDS, TYPE No _____" (Insert Type Number) (as the case may be)
***Insert appropriate figures.
****Insert maker's name and address.



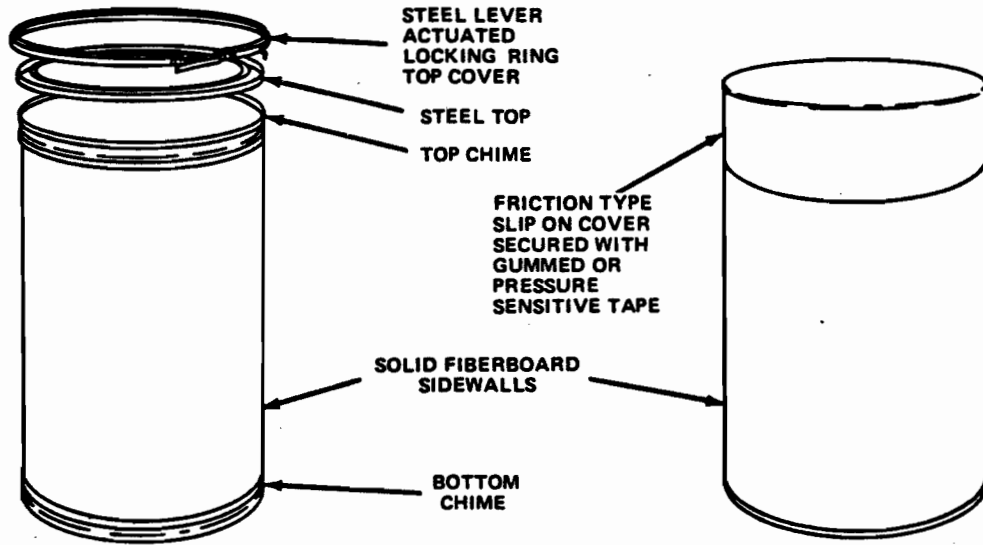
EXAMPLES OF DOT MARKINGS
DOT-21P/***/2U STC
***to be replaced with authorized
net weight

Training Resources Branch, DHM-51
Federal/State and Private Sector Initiatives Division
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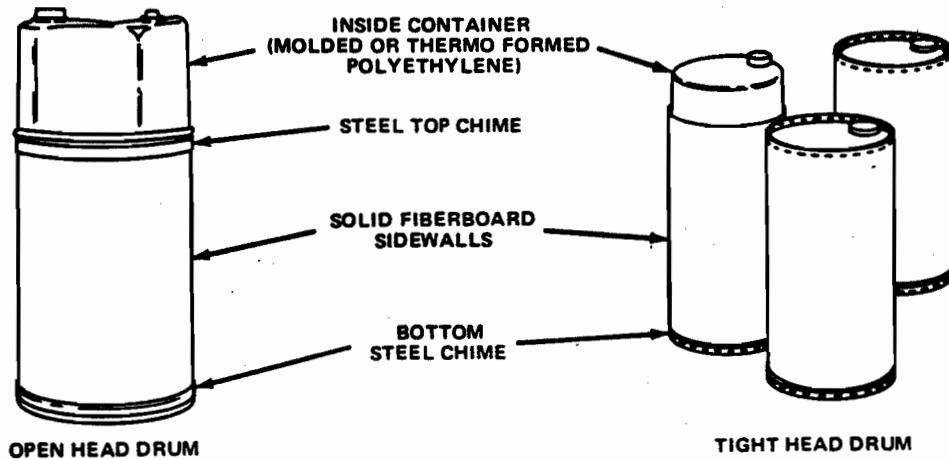
U.S. Department
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Research and
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Administration

EXAMPLES OF TYPICAL DOT SPECIFICATION FIBER DRUMS



FOR DRY PRODUCTS

DOT SPECIFICATION 21-C (Ref. Title 49 CFR Sec. 178.224)



FOR LIQUID PRODUCTS

DOT SPECIFICATION 21-P (Ref. Title 49 CFR Sec. 178.225)
Composite fiber Overpacks for DOT inside Specification 2SL
or 2U inside polyethylene container.