

## Conversion Factors \$171.10

For compatibility with international transportation standards, most units of measure used in Subchapter C of the 49 CFR are expressed using International System of Units (SI).

Where SI units appear (L, kg, kPa) they are the regulatory standard. U.S. standard or customary units, (gal, lbs, psi) appearing in parentheses following SI units are for information only and not intended to be the regulatory standard.

10 kPa = 1.45 psi  
75 kPa = 10.9 psi  
95 kPa = 13.8 psi  
100 kPa = 14.5 psi  
150 kPa = 21.8 psi  
250 kPa = 36.3 psi  
1 kg = 2.2 lb  
25 kg = 55 lb  
50 kg = 110 lb  
100 kg = 220 lb  
150 kg = 330 lb  
200 kg = 440 lb  
250 kg = 551 lb  
0.47 L = 1 pint (US)  
0.95 L = 1 quart (US)  
1 L = .264 gal (US)  
3.8 L = 1 gal (US)  
4 L = 1.06 gal (US)  
5 L = 1.32 gal (US)  
10 L = 2.6 gal (US)

## Packing Group (PG)

Packing group means a grouping according to the degree of danger presented by hazardous materials. Class 2, Class 7, Division 6.2 (other than regulated medical wastes), and ORM-D materials do not have packing groups.

**Packing Group I-Great Danger**

**Packing Group II-Medium Danger**

**Packing Group III-Minor Danger**

References for all  
Hazardous Materials  
Performance Packaging  
Standards and Tests  
can be found in the  
Code of  
Federal Regulations,  
Title 49, Part 178.



U.S. Department of Transportation  
Pipeline and Hazardous Materials  
Safety Administration

## TO LEARN MORE...

For information about hazmat publications and other training materials:

**Visit our web site:**

<http://hazmat.dot.gov>

**Write:**

Office of Hazardous Materials  
Initiatives and Training  
1200 New Jersey Ave, SE, PHH-50  
Washington, DC 20590-0001

**Fax:** (202) 366-7342

**E-mail:** [training@dot.gov](mailto:training@dot.gov)

**Phone:** (202) 366-2301



For information about  
Hazmat Regulations

**Contact our**

**Hazmat INFO-LINE:**

**Phone: 1-800-467-4922**

**E-mail:** [infocntr@dot.gov](mailto:infocntr@dot.gov)



U.S. Department of Transportation  
Pipeline and Hazardous Materials  
Safety Administration



G U I D E T O

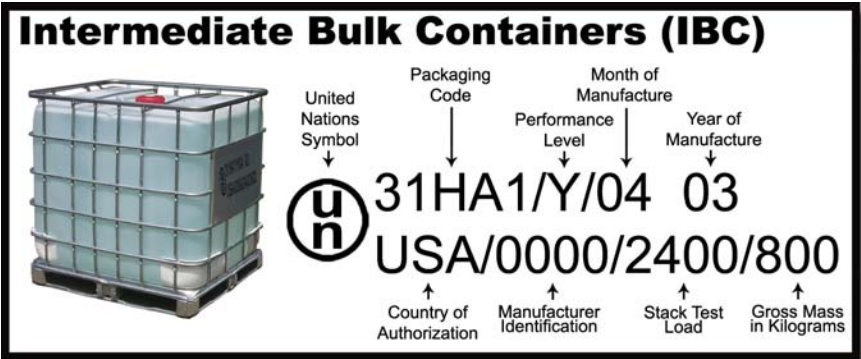
PERFORMANCE  
PACKAGING  
CODES

FOR USE IN HAZARDOUS MATERIALS TRANSPORTATION

NOTE: This document is for general guidance only and must not be used to determine compliance with 49 CFR, Parts 100-185.

Non-Bulk Packaging Codes			
§§178.504 - 178.521			
1A1	Steel drum, non-removable head	4A	Steel box
1A2	Steel drum, removable head	4B	Aluminum box
1B1	Aluminum drum, non-removable head	4C1	Wood box, ordinary
1B2	Aluminum drum, removable head	4C2	Wood box, sift-proof walls
1D	Plywood drum	4D	Plywood box
1G	Fiber drum	4F	Reconstituted wood box
1H1	Plastic drum, non-removable head	4G	Fiberboard box
1H2	Plastic drum, removable head	4H1	Plastic box, expanded
1N1	Metal drum, non-removable head	4H2	Plastic box, solid
1N2	Metal drum, removable head	5H1	Woven plastic bag,unlined or non-coated
2C1	Wooden barrel, bung type	5H2	Woven plastic bag, sift-proof
2C2	Wooden barrel, slack type, removable head	5H3	Woven plastic bag, water-resistant
3A1	Steel jerrican, non-removable head	5H4	Plastic film bag
3A2	Steel jerrican, removable head	5L1	Textile bag, unlined or non-coated
3B1	Aluminum jerrican, non-removable head	5L2	Textile bag, sift-proof
3B2	Aluminum jerrican, removable head	5L3	Textile bag, water-resistant
3H1	Plastic jerrican, non-removable head	5M1	Paper bag, multi-wall
3H2	Plastic jerrican, removable head	5M2	Paper bag, multi-wall water-resistant

§§178.522 and 178.523	
6HA1	Plastic receptacle within a protective steel drum
6HA2	Plastic receptacle within a protective steel crate or box
6HB1	Plastic receptacle within a protective aluminum drum
6HB2	Plastic receptacle within a protective aluminum crate or box
6HC	Plastic receptacle within a protective wooden box
6HD1	Plastic receptacle within a protective plywood drum
6HD2	Plastic receptacle within a protective plywood box
6HG1	Plastic receptacle within a protective fiber drum
6HG2	Plastic receptacle within a protective fiberboard box
6HH1	Plastic receptacle within a protective plastic drum
6HH2	Plastic receptacle within a protective plastic box
6PA1	Glass, porcelain, or stoneware receptacles within a protective steel drum
6PA2	Glass, porcelain, or stoneware receptacles within a protective steel crate or box
6PB1	Glass, porcelain, or stoneware receptacles within a protective aluminum drum
6PB2	Glass, porcelain, or stoneware receptacles within a protective aluminum crate or box
6PC	Glass, porcelain, or stoneware receptacles within a protective wooden box
6PD1	Glass, porcelain, or stoneware receptacles within a protective plywood drum
6PD2	Glass, porcelain, or stoneware receptacles within a protective wickerwork hamper
6PG1	Glass, porcelain, or stoneware receptacles within a protective fiber drum
6PG2	Glass, porcelain, or stoneware receptacles within a protective fiberboard box
6PH1	Glass, porcelain, or stoneware receptacles within a protective expanded plastic packaging
6PH2	Glass, porcelain, or stoneware receptacles within a protective solid plastic packaging



Interpreting Markings §§178.502 and 178.503	
<b>United Nations Symbol:</b> For embossing metal receptacles, the letters UN may be applied in place of the symbol.	
<b>Packaging Code:</b> Designates the type of packaging and material of construction. A letter "W" designates associate administrator approval. A letter "V" designates special "variation" packaging.	
<b>Performance Level:</b> Identifies the performance standard for successful testing of the packaging. <b>X</b> - For packagings meeting <b>Packing Group I, II and III tests.</b> <b>Y</b> - For packagings meeting <b>Packing Group II and III tests.</b> <b>Z</b> - For packagings meeting <b>Packing Group III tests.</b>	
<b>Specific Gravity:</b> Specific gravity for which the packaging design type has been tested. If the specific gravity does not exceed 1.2, the designation may be omitted.	
<b>Gross Mass:</b> Packaging type tested for maximum gross mass in kilograms.	
<b>S:</b> Designates that the packaging is intended to contain solids or inner packagings.	
<b>Hydrostatic Test Pressure:</b> Internal Hydrostatic Test Pressure in Kilopascals. This test is not required for inner packaging of combination packaging.	
<b>Year of Manufacture:</b> Last two digits of year of manufacture. Plastic drums and jerricans (1H and 3H) must be marked with the month of manufacture. The month marking may be located elsewhere on the package.	
<b>Country of Authorization:</b> Country designation code indicates where the package is manufactured and marked.	
<b>Manufacturer Identification:</b> Name and address or authorized symbol of packaging manufacturer or certifying agency.	
<b>Minimum Thickness:</b> For metal or plastic drums, jerricans or the outer packaging of composite packaging intended for reuse or reconditioning.	
<b>R:</b> Reconditioned packaging.	
<b>L:</b> Reconditioned packaging having successfully passed a leakproofness test. This test is not required for inner packaging of combination packaging.	
Note: Additional marking requirements for Reconditioned packaging are found in §178.503.	
<b>Additional Requirements for Intermediate Bulk Containers (IBC)</b>	
<b>Month and Year:</b> For IBCs, the month and year of manufacture.	
<b>Stacking Test Load:</b> For IBCs, the stacked test load in kilograms. A number "0" shows that the IBC is not designed for stacking.	
Note: Standards and codes for IBCs are found in §178.702 - 178.710	

Required Tests for Non-Bulk Packaging	
<b>Drop Test</b> (§178.603) All packaging design types.	
<b>Leakproofness Test</b> (§178.604) All packaging design types intended for liquids.	
<b>Hydrostatic Test</b> (§178.605) All metal, plastic, and composite design types intended to contain liquids.	
<b>Stacking Test</b> (§178.606) All packaging design types other than bags.	
<b>Cooperage Test</b> (§178.607) All bung-type wooden barrels.	
<b>Vibration Test</b> (§178.608) All packaging design types.	
<b>Infectious Substances</b> See §178.609 for test requirements for packagings for infectious substances.	
<b>Pressure Differential</b> (§173.27) Packagings intended for air transport.	