

## Placarding for Radioactive Materials

Three recent letters of interpretation from DOT concerning placarding for radioactive materials have made their expectations clear. However, it is a little complicated. This special newsletter will hopefully take the reader step by step to determine how to placard under any situation. All letters of interpretation are attached for your reference.

Beginning in 49 CFR 172.504, radioactive placards are required for either of the following conditions:

- A package bearing radioactive Yellow-III labels
- Exclusive use shipments of Low Specific Activity (LSA) or Surface Contaminated Objects (SCO) transported in accordance with 173.427(b)(4) or (b)(5) or (c).



When transporting LSA/SCO as exclusive-use, 173.427(a)(6)(v) requires the transport *vehicle* to be placarded in accordance with Part 172 Subpart F. This is true for any size package.

If you are shipping LSA/SCO exclusive use in a non-bulk package, then only the vehicle must be placarded.

A non-bulk packaging by definition (171.8) is a packaging which has a maximum liquid or solid capacity of 450 liters or 119 gallons and for gases a maximum water capacity of 454 kilograms or 1,000 pounds. On a side note, if you are using the DOT letter of interpretation #01-0153, it is not clear if this letter can still be used after October 1, 2010 due to a recent federal register published on February 2, 2010 that will remove the statement “with no intermediate form of containment” from the bulk packaging definition.



If you are shipping in a freight container with a capacity of 640 cubic feet or more, 172.512(a) requires the freight container to be placarded. Just as a review, a freight container is defined in 49 CFR 171.8 and 173.403 as a reusable container having a volume of 64 cubic feet or more, designed and constructed to permit being lifted with its contents intact and intended primarily for containment of packages (in unit form) during transportation. Intermodal containers and B-25 boxes could be examples of a freight container.



## Placarding for Radioactive Materials - Cont'd



If you are shipping a bulk package, 172.514(a) requires placards to be affixed to the package itself. The exceptions in paragraph (c) allow placards to be affixed to only two opposite sides of the bulk package *or* labels instead of placards *if it is a bulk bag or box with a capacity less than 640 cubic feet*. A bulk packaging will be defined after October 1, 2010 as a packaging, other than a vessel or a barge, including a transport vehicle or freight container, in which hazardous materials are loaded and which have a liquid or solid capacity greater than 450 liters or 119 gallons and for gases a water capacity greater than 454 kilograms or 1,000 pounds.

Section 172.516, requires placards on each motor vehicle and each railcar to be clearly visible from the direction it faces, except from the direction of another transport vehicle or railcar to which it is coupled. This requirement may be met by the placards displayed on freight containers or portable tanks loaded on the motor vehicle or rail car. So this allows an exception to placarding the vehicle, if the placards on the freight container are visible, but the placards must still be on the freight container. Note that this does not include other types of bulk packages. For review, a portable tank is defined as a bulk packaging designed primarily to be loaded onto, or on, or temporarily attached to a transport vehicle or ship and equipped with skids, mountings, or accessories to facilitate handling of the tank by mechanical means.



**Placarding for Radioactive Materials - Cont'd**

So, when shipping LSA or SCO exclusive use, your placarding determination will depend on the type of bulk packaging. The various packaging options and the placarding requirements as discussed above are shown in the table below:

Packaging Type	Placards on Package	Placards on Transport Vehicle	Reference
Non-bulk	None	4 Placards	172.504; 172.516; 173.427(a)(6)(v)
Bulk <640 ft <sup>3</sup> (non-freight container)	4 Placards	4 Placards	172.504; 172.514; 173.427(a)(6)(v)
	2 Placards	4 Placards	172.504; 172.514(c)
	2 Labels	4 Placards	172.504; 172.514(c)
Bulk ≥640 ft <sup>3</sup>	4 Placards	4 Placards	172.504; 172.514(a); 173.427(a)(6)(v)
Freight Container <640 ft <sup>3</sup>	4 Placards	None if visible *	172.504; 172.516(a)
	2 Placards	4 Placards	172.504; 172.514(c)
	2 Labels	4 Placards	172.504; 172.514(c)
Freight Container ≥640 ft <sup>3</sup>	4 Placards	None if visible *	172.504; 172.512(a) 172.516(a)

\* If not visible, then 4 placards are required on the transport vehicle.

**EXAMPLES**

Freight Containers (49 CFR 172.512) that have a capacity ≥640 ft<sup>3</sup> require that the placards be applied directly on each side and each end of the freight container. This includes all 20' & 40' SeaLand and intermodal containers. If the four (4) placards on the freight container are visible in each direction from the conveyance during transport, then placarding the vehicle or rail car is optional (49 CFR 172.516).



**EXAMPLES – Cont'd**

Bulk packagings (49 CFR 171.8 & 172.514) that are between 119 gallons (15.9 ft<sup>3</sup>) and 4,788 gallons (640 ft<sup>3</sup>) in capacity have a few options. This includes B-25 boxes and your garden variety of casks. One option is to apply 2 placards on the package, and ensure that 4 placards are visible on each side and each end of the vehicle or rail car.



Another option for bulk packagings (<640 ft<sup>3</sup>) is to label each package and include 4 placards on the trailer. Yes, DOT stated that the labeling exception for LSA/SCO exclusive use, domestic, ground and <A<sub>2</sub> quantity in an excepted general design package is just that, an exception. You may still choose to label the package and then placard the vehicle.

For a Type B cask, it is recommended that the placards be applied to the lower impact limiter to prevent damage to the painted surface on the shielded part of the cask. Pictured is a bulk packaging <640 ft<sup>3</sup> that requires radioactive Yellow-III labels and is utilizing the placarding exception in 49 CFR 172.514(c) because this smaller bulk packaging is labeled.

Please note that DOT is currently reviewing the accuracy of their reply in the answer to Scenario #4 in the April 02, 2010 letter (#10-0032). This is in reference as to whether placards are required or not on the packaging and/or the vehicle for this specific scenario.



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