



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

FEB 12 2008

1200 New Jersey Avenue, SE
Washington, D.C. 20590

Mr. Philip Brandt
124 Jim Town Road
Jonesborough, TN 37659

Ref. No. 07-0115

Dear Mr. Brandt:

This responds to your letter dated May 30, 2007, requesting clarification on the Pipeline and Hazardous Materials Safety Administration's (PHMSA) June 16, 2006 response to Mr. Kurt Colborn [Letter Reference No. 06-0063 enclosed] regarding the use of freight containers as Industrial Packagings (IP) Type 2 (IP-2) or Type 3 (IP-3) containers under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you request additional clarification on our response A1(c) and A2 to Mr. Colborn.

Your questions are paraphrased and answered below:

Regarding PHMSA's Response A1(c):

- Q1. Does the containment system (an ISO 1496-1 compliant freight container on a container chassis) described in my May 30, 2007 letter meet the requirements of §§ 173.410(f) and 173.411(b)(6) of the HMR?
- A1. The described "containment system" does not meet all the cited requirements because it does not include a description of the radioactive contents. The ISO 1496/1 tests are permitted as an alternative to the tests normally required for IP-2 and IP-3 packages in § 173.411, but it must be shown that the particular radioactive contents will not be subject to loss or dispersal from the container, or loss of shielding integrity, as a result of those tests. The ISO tests allow some flexing of the freight container body which might be unacceptable for containment of the particular content. The potential for movement of the contents within the container must also be considered to evaluate compliance with the requirement for maintaining shielding integrity.
- Q2. Can the requirements be satisfied by documenting the fact that a specified number of freight containers have been shipped on chassis under conditions of accelerations experienced during routine conditions of transport with no loss of containment?

- A2. The container must be shown to meet either the IP-2, IP-3 or the alternative ISO 1496-1 tests along with preventing loss or dispersal of the particular radioactive contents being transported and loss of shielding under routine conditions of transport.

No specific tests beyond those in the ISO standard have been stipulated. The requirements can be met by testing, by engineering evaluations, or by comparative data, documented as required in § 173.411(c). The documentation should pertain to the entire package, including consideration of the properties of the particular radioactive contents.

Regarding PHMSA's Response A2:

- Q3. May the freight containers meeting the requirements of §§ 173.411(b) and 173.411(c) of the HMR also serve as a waste disposal package when shipping LSA and/or SCO material? If yes, should the freight containers be marked as "TYPE IP-1", "TYPE IP-1", "TYPE IP-2", or "TYPE IP-3" as appropriate?
- A3. The HMR do not regulate waste disposal packages. Radioactive material (RAM) waste disposal is regulated by the Nuclear Regulatory Commission (NRC) and the Environmental Protection Agency (EPA). The freight container should be marked with the appropriate IP Type marking.
- Q4. Does the ISO 1496-1 requirement for the permanent attachment of the CSC Safety Approval Plate with the total gross mass (maximum allowable) of the package meet the requirements of § 172.310(a) for indicating the gross mass of the package or must the total actual gross mass of the shipment be marked on the freight container?
- A4. The container must be marked with the total actual gross mass, unless, in accordance with § 173.427, it is being used to ship less than an A₂ quantity LSA or SCO material domestically in exclusive use, in which case it would be excepted from that marking requirement.
- Q5. Is the international vehicle registration code required to be legibly marked on the freight container? If yes, does the information on the CSC Safety Approval Plate meet this requirement? If not, where/how is the international vehicle registration code obtained for a freight container?
- A5. In accordance with §172.310(c), each package conforming to a Type IP-1, Type IP-2, Type IP-3 or Type A package design must be legibly and durably marked with the international vehicle registration code of the country of origin of the design, unless it is being used to ship less than an A₂ quantity LSA or SCO material domestically in exclusive use, in which case it would be excepted from that marking requirement.

The CSC Safety Approval Plate does not meet the international vehicle registration code marking requirement in § 172.310(c). The CSC plate indicates conformance with CSC requirements. It does not indicate conformance to Type IP-1, Type IP-2, Type IP-3, or Type A package design requirements.

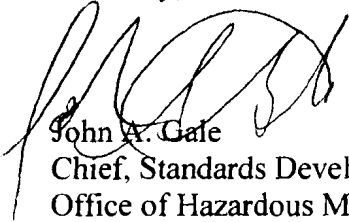
Unless the container supplier has certified the container meets the requirements for the specified contents, the shipper must determine that the package meets the applicable requirements, and the shipper must apply the appropriate code. Note that the party certifying the design meets the requirements must comply with the documentation requirements specified in § 173.411(c).

- Q6. Is it correct to assume that if the freight container is manufactured overseas then you would not mark the package with the “USA” marking?
- A6. If a shipper in the United States is certifying that the freight container meets the applicable design requirements, the shipper is required to mark the package with “USA”.
- Q7. Would you mark the container with the country of origin (e.g., China)?
- A7. It should be marked with the country of certification, not that of manufacture. This should be the country code of the party that holds the documentation required by § 173.411(c). This may not be the same as the country of origin of the freight container (see answer to #6).
- Q8. Are the “Radioactive-LSA” or “Radioactive-SCO” markings, a “Class A Waste” label and the appropriate “IP” marking the only markings/labels required if the freight container is the waste package and the requirements of § 173.427 are met? (The labeling/marketing requirements of §§ 172.310 and 172.403 do not apply).
- A8. If the shipment is in compliance with § 173.427(a)(6)(vi) (less than an A₂ quantity, domestic exclusive use), the only required DOT marking is “RADIOACTIVE-LSA” or “RADIOACTIVE-SCO”, as appropriate and the marking/labeling requirements specified in §§ 172.310 and 172.403 do not apply: The “IP” marking would not be required if the shipment is in compliance with § 173.427(a)(6)(vi). The “Class A Waste” label is not a DOT requirement.
- Q9. Is there a requirement for performing testing and an evaluation report for a freight container that contains LSA and/or SCO waste if the freight container is the waste package and is marked as LSA or SCO-Radioactive and there is no loose radioactive material in the conveyance, no leakage of the radioactive material from the conveyance and the packaged and unpackaged waste in the freight container is braced so as to prevent shifting of lading under conditions normally incident to transportation?

- A9. If the freight container is being used to transport unpackaged LSA-I or SCO-I material, or is being used as an excepted package of less than an A₂ quantity under exclusive use, in accordance with § 173.427(b)(4), then no documentation is required. If the freight container is being used as a Type IP-2 or Type IP-3 package, §173.411(c) requires the offeror to maintain complete documentation of tests and an engineering evaluation or comparative data showing that the construction methods, packaging design, and materials of construction conform to that specification.
- Q10. If all the requirements of § 173.411(b)(6) are met and there are no other test requirements, may LSA-II/III or SCO-II/III material be shipped in a freight container without further testing (e.g. the requirement in § 173.468(b) to conduct a seven day immersion test)?
- A10. The referenced immersion test is to qualify material as LSA-III and is not a packaging requirement. Also, see "A9" above regarding requirements for documentation of tests and evaluations.
- Q11. If the freight container is the LSA or SCO waste package, are the marking requirements discussed in PHMSA's June 16, 2006 "A2" response to Mr. Kurt Colborn [Letter Reference No. 06-0063] abrogated?
- A11. Use of the container as a waste package has no impact on the DOT marking requirements. Freight containers used as a Type IP-2 or Type IP-3 package must be marked and labeled as such, except as provided for under § 173.427(a)(6)(vi) (less than an A₂ quantity, domestic exclusive use) (see "A8" above).

I hope this answers your inquiry.

Sincerely,



John A. Gale
Chief, Standards Development
Office of Hazardous Materials Standards

Enclosure



U.S. Department
of Transportation

**Pipeline and
Hazardous Materials Safety
Administration**

400 Seventh Street, S.W.
Washington, D.C. 20590

JUN 16 2006

Mr. Kurt Colborn
Director, Technical Services
Logistical Solutions
800 Cranberry Woods Drive, Suite 450
Cranberry Township, PA 16066

Ref. No. 06-0063

Dear Mr. Colborn:

This responds to your March 13, 2006 letter requesting clarification on § 173.411(b)(6) to allow the use of freight containers as Industrial Packagings (IP) Type 2 or 3 containers under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180).

Section 173.411(b)(6) authorizes the use of freight containers as industrial packagings Types 2 or 3 (Type IP-2 or (Type IP-3) provided that:

- (i) The radioactive contents are restricted to solid materials;
- (ii) The freight containers satisfy the requirements for Type IP-1 as specified in § 173.410; and
- (iii) The freight containers conform to the standards prescribed in the International Organization for Standardization document ISO 1496-1: "Series 1 Freight Containers-Specifications and Testing-Part 1: General Cargo Containers; excluding dimensions and ratings. They must be designed so that if subjected to the tests prescribed in that document and the accelerations occurring during routine conditions of transport they would prevent loss or dispersal of the radioactive contents and loss of shielding integrity that would result in more than a 20% increase in the radiation level at any external surface of the freight containers.

Your questions are paraphrased and answered below:

Q1. May packages meeting the IP-1 freight container and ISO 1496 standards be used as IP-2 or IP-3 packages when used to consolidate small loads for shipment?



060063

173.411(b)(6)

A1. In accordance with § 173.411(b)(6), freight containers may be used as IP-2 or IP-3 packages, as long all of the following four conditions are met:

- a) The freight container meets the requirements for an IP-1 package.
- b) The freight container is designed to conform to the standards prescribed in: "Series 1 Freight Containers - Specifications and Testing - Part 1: General Cargo Containers for General Purposes; excluding dimensions and ratings. It should be noted that freight containers approved in accordance with the International Maritime Organization International Convention for Safe Containers are not necessarily equivalent to the testing prescribed by ISO 1496-1.
- c) The freight container is designed such that if subjected to the tests prescribed in ISO 1496-1, as well as accelerations occurring during routine conditions of transport, there would be no loss or dispersal of the radioactive contents nor loss of shielding integrity which would result in more than a 20% increase in radiation levels on any external surface of the freight container. It should be noted that the test conditions of accelerations occurring during routine conditions of transport are in addition to the testing prescribed by ISO 1496-1 because the ISO Standard does not include dynamic tests.
- d) The radioactive contents of the freight container are limited to solid materials. Additionally, radioactive contents that have not satisfied the requirements of § 173.411(b)(6) must not be transported in an IP-2 or IP-3 container.

Q2. What marking and labeling requirements apply to a freight container used as an IP-2 or IP-3 package? What marking and labeling requirements apply to internal containers?

A2. Freight containers used as an IP-2 or IP-3 package must be marked and labeled as such, in accordance with §§ 172.310 and 172.403. Inner containers are authorized provided they are specified in the IP-2 or IP-3 test and evaluation report. Inner containers must be marked in accordance with the specification specified in the test and evaluation report. For example, if the test and evaluation report specify the presence of inner IP-1 packages, the packages must be marked as such, in accordance with § 172.310. If the test report specifies inner containers (i.e. wooden boxes, bags, etc.) marking of the inner containers would not be required. Additionally, hazard communication markings and labels are not required for the inner containers.

Q3. May freight containers not meeting the IP-1 and ISO-1496-1 standards be used to transport loose bulk material if testing demonstrates the containers prevent the loss or dispersal of contents while subjected to the ISO-1496-1 test requirements?

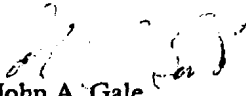
A3. No. The freight container must meet all the requirements outlined in Answer 1.

Q4. Are the requirements in § 173.411(b)(6) intended to be used as an alternative means to certify packagings? If an IP-1 freight container is used an IP-2 or IP-3 package, how should the package be marked?

A4. The provisions of § 173.411(b)(6) are to be used as an alternative means of IP-2 and IP-3 packaging certification. Freight containers used as an IP-2 or IP-3 packaging must be marked accordingly.

I hope this answers your inquiry.

Sincerely,



John A. Gale
Chief, Standards Development
Office of Hazardous Materials Standards

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§ 173.411(b)(6)
Packages
07-0115

May 30, 2007

124 Jim Town Rd.
Jonesborough, TN 37659

Mr. John A. Gale
Chief, Standards Development
U.S. Department of Transportation
Pipeline and Hazardous Materials
Safety Administration
400 Seventh Street, S.W.
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Subj: Request for Clarification Document Ref. No. 06-0063

Dear Mr. Gale:

On June 16, 2006 you responded to questions posed by Mr. Kurt Colborn regarding the use of freight containers as Industrial Packages (IP) Type 2 or 3 containers under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180).

In your response (c) you stated, in part, that the test conditions of accelerations occurring during routine conditions of transport (49 CFR 173.410(f) General Design Requirements are in addition to the testing requirements prescribed by ISO 1496-1 because the ISO Standard does not include dynamic tests. The DOT acceleration test requirement in the regulations does not specify and/or provide a reference as to what constitutes acceptable testing.

For over the highway use a freight container is transported on a container chassis and as such meets the DOT definition of a containment system. Consequently, the requirement to perform acceleration tests during routine conditions of transport must be considered with a freight container mounted on a container chassis. Chassis built to American Bureau of Shipping requirements are designed to have sufficient structural strength to remain serviceable and withstand, without significant permanent deformation, the static and dynamic loads imposed by normal service in highway, railway, and shipboard service when loaded with a freight container to its GVWR of approximately 68,000 lbs. The twist locks that hold a maximally loaded (68,000 lbs. GVWR) freight container on the chassis must meet, in part, the design requirements to withstand a horizontal or longitudinal acceleration force of 3.5G where G represents the acceleration due to gravity. ISO 1496-1 includes as an appendix the Association of American Railroads Specification M-943-80 to assist manufacturers in the design of the chassis to meet this criterion. ISO 1496-1 also has under *Series 1 Freight Containers – Specification and Testing – Part 1: General Cargo Containers for General Purposes* under Section 6 *Testing* the requirements for testing and documenting that a freight container can withstand longitudinal external

restraint under dynamic conditions of railway operations, which implies an acceleration of 2 G. ISO 1496-1 also specifies the design and test requirements for the closure system on the freight containers during conditions of normal transport which is also part of the containment system.

The successful completion of the ISO 1496-1 test (Test No. 4) requires that the container shall, in part, show neither permanent deformation which will render it unsuitable for use nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchanges shall be satisfied. It should be noted that from a design standpoint that the maximum GVWR for the freight container on a chassis, when pulled by a tractor with a sleeper compartment (approximately 20,000 lbs.), is an estimated 60,000 lbs. or 10% lower than the rated design capacity and would yield an even higher G rating than discussed above.

Since the DOT requirements do not specify a required test does the containment system described above meet the requirements of 49 CFR 173.410(f) as well as 49 CFR 173.411(b)(6)? Can the requirements be satisfied by simply documenting the fact that a specified number of freight containers have been shipped on chassis under conditions of accelerations experienced during routine conditions of transport with no loss of containment? If neither of the above satisfies the referenced DOT requirements can the DOT provide references and/or guidance for the testing that does meet the specified requirements?

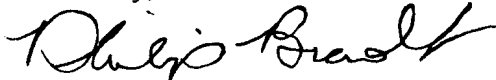
In your A2 response you state, in part, that freight containers used as IP-2 or IP-3 packages must be marked and labeled as such, in accordance with 49 CFR 172.310 and 172.403. 49 CFR 172.310 requires, in part, for non-Type B packages that weigh more than 50 kgs. that they be legibly and durably marked on the outside of the package in letters at least 13 mm high with the appropriate specified markings. Can the freight containers that meet the 49 CFR 411(b)(c) requirements also serve as the waste disposal package when shipping LSA and/or SCO material? If yes, should the freight containers used to ship the LSA or SCO materials be marked as TYPE IP-1, TYPE IP-2 or TYPE IP-3, as appropriate? Does the ISO 1496-1 requirement for the permanent attachment of the CSC Safety Approval Plate with the total gross mass (maximum allowable) of the package meet the requirement of 49 CFR 172.310(a) for indicating the gross mass of the package or must the total actual gross mass of the shipment be marked on the freight container? Is the subpart (c) requirement for the international vehicle registration code to be legibly marked on the freight container applicable? If yes, does the information on the CSC Safety Approval Plate meet this requirement? If not, where/how is the international vehicle registration code obtained for a freight container? Is it correct to assume that if the freight container is manufactured overseas then you would not mark the package with the USA label or marking? Would you mark the container with the country of origin e.g. China?

Are the Radioactive – LSA or Radioactive – SCO, a Class A Waste label and the appropriate IP label the only labels required if the freight container is the waste package and the requirements of 49 CFR 173.427 are met (the labeling/marketing requirements of 49 CFR 172.310 and 172.403 do not apply)?

Is there a requirement for performing testing and an evaluation report for a freight container that contains LSA and/or SCO waste if the freight container is the waste package and is marked as LSA or SCO - Radioactive and there is no loose radioactive material in the conveyance, no leakage of the radioactive material from the conveyance, and the packaged and unpackaged waste in the freight container is braced so as to prevent shifting of lading under conditions normally incident to transportation? If there is no test requirement and all other requirements of 49 CFR 173.411 (b)(6) are met then can LSA-II/III or SCO-II/III material be shipped in the freight container without further testing e.g. the 49 CFR 173.468(b) requirement for a seven day immersion test? If the freight container is the LSA or SCO waste package are the marking requirements discussed in your A2 response abrogated?

Thank you for your assistance in clarifying the interpretation of this regulation.

Sincerely,

A handwritten signature in black ink, appearing to read "Philip Brandt". The signature is written in a cursive, flowing style.

Philip Brandt