



U.S. Department
of Transportation

1200 New Jersey Avenue SE
Washington, DC 20590

**Pipeline and Hazardous
Materials Safety
Administration**

JUL 25 2011

Ms. Robbin L. Miller
Department of the Air Force
403 SCMS/GUEB
5215 Thurlow St. Ste. 5
Wright-Patterson AFB OH 45433-5540

Reference No.: 11-0020

Dear Ms. Miller:

This responds to your letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the hydrostatic pressure and leakproofness requirements for a combination package transported via aircraft. Specifically, you describe a scenario and ask several questions regarding that scenario. The scenario and questions are paraphrased and answered as follows:

In your incoming letter, you describe a combination packaging composed of a 30-gallon steel drum lined with a 4-mil plastic bag containing a 1-gallon plastic bottle surrounded by vermiculite. This completed combination package has been tested to the Packing Group (PG) I level. The combination package was subjected to and successfully passed the stack, drop and vibration tests specified in Subpart M of Part 178 of the HMR. The inner packaging of this combination packaging does not meet pressure requirements specified in § 173.27(c). However, the outer packaging successfully passed a hydrostatic pressure test with a test pressure of 95 kPa. You wish to transport via aircraft a PG I liquid with a vapor pressure of 110 kPa at 50° C in this combination packaging.

Q1. It is your understanding of § 173.27(c)(3)(i), and a previously issued Pipeline and Hazardous Materials Safety Administration (PHMSA) Interpretation issued on July 8, 2003 [Ref. No. 03-0163], that a PG I liquid may be transported aboard an aircraft in the tested combination packaging described in the above scenario. Is this correct?

A1. The answer is yes. For transportation by aircraft, § 173.27(c)(2) requires that packagings must be capable of withstanding, without leakage an internal pressure based on the vapor pressure of the material to be transported when its basic function is retention of liquid. Section 173.27(c)(3)(i) allows inner packagings that are not capable of meeting the pressure requirement to be placed in a supplemental outer packaging which does meet the pressure requirement. In accordance with § 173.27(c)(2)(ii)(B), for transportation by aircraft of a liquid with a vapor pressure of 110 kPa at 50° C, the outer packaging of a combination packaging must be capable of meeting a pressure requirement. The pressure requirement is the greater

of either 95 kPA or 92.5 kPA if the inner packaging is not capable of meeting the pressure requirement. Based on the requirements in § 173.27(c) the combination packaging you describe in your incoming letter does demonstrate it is capable of meeting pressure requirements and, therefore, can be used to meet this requirement.

- Q2. If the above described PG I liquid's vapor pressure was 120 kPA at 50°C, and the inner packaging of the combination packaging does not meet any of the requirements in § 173.27(c), what would the required pressure rating be for the outer packaging?
- A2. In accordance with § 173.27(c)(2)(ii)(B), for transportation by aircraft of a liquid with a vapor pressure of 120 kPA at 50°C, the outer packaging of a combination packaging must be capable of meeting a pressure requirement of 110 kPA at 50°C if the inner packaging is not capable of meeting the pressure requirement.
- Q3. It is your understanding of § 178.604(a)(2), that there is no leakproofness requirement for either the inner or outer packaging of the packaging mentioned above. Is this understanding correct?
- A3. The answer is yes. In accordance with § 178.604(a), the leakproofness test must be performed on all packagings intended to contain liquids, except the test is not required for inner packagings of combination packagings. The outer packaging of the combination packaging you describe in your letter is intended to contain the inner package, not liquids; thus, it is not subject to the leakproofness test specified in § 178.604(a). However, it should be noted that the outer package of this combination package still must meet the requirements specified in § 173.27(c)(3)(i).

I hope this satisfies your inquiry. Please contact us if we can be of further assistance.

Sincerely,



T. Glenn Foster
Chief, Regulatory Review and Reinvention Branch
Standards and Rulemaking Division



DEPARTMENT OF THE AIR FORCE
591st SUPPLY CHAIN MANAGEMENT GROUP (AFGLSC)
WRIGHT-PATTERSON AIR FORCE BASE, OHIO

Benedict
\$173.27
\$178.605
Testing
11-0020
26 January 2011

MEMORANDUM FOR U.S. DOT

PHMSA Office of Hazardous Materials Standards
Attn: PHH-10
East Building
1200 New Jersey Avenue, SE.
Washington DC 20590-0001

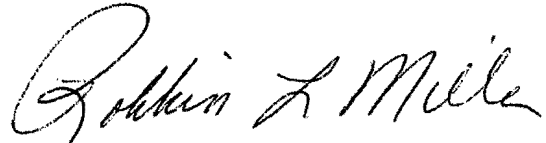
FROM: 403 SCMS/GUEB
5215 Thurlow St. Ste. 5
Wright-Patterson AFB OH 45433-5540

SUBJECT: Pressure Requirements for Outer Packagings of Combination Packagings

1. This office performs testing of UN specification packaging for Air Force and other DOD offices. We request clarification of the issues in paragraphs 2 a and b below, concerning hydrostatic pressure requirements for the outer packaging of a combination packaging described in the following scenario.
2. Packing Group I testing was performed on a combination packaging consisting of one 30-gallon steel open-head drum, lined with a 4-mil plastic bag, and containing one 1-gallon plastic bottle, surrounded by firmly packed vermiculite. The complete packaging underwent the stack, drop, and vibration tests and met all requirements. The inner packaging does not meet any of the pressure requirements of 173.27(c). The outer packaging, however, has been certified by the manufacturer as successfully passing a hydrostatic pressure test with a test pressure of 95 kPa (14 psig). The PG I liquid to be transported in this combination packaging is authorized to be transported aboard aircraft, and its vapor pressure at 50°C is 110 kPa.
 - a) It is our understanding of 173.27(c)(3)(i), and PHMSA Interpretation 03-0163, that the PG I liquid may be transported aboard aircraft in the tested combination packaging described above. Or, in other words, this drum may be used as the outer packaging for PG I, II, and III liquids for all transportation modes (vapor pressure as above, or lower). Is this correct?
 - b) If the above PG I liquid's vapor pressure was, for example, 120 kPa at 50°C, and the inner packaging doesn't meet any of the pressure requirements of 173.27(c), what would the required pressure rating for the above drum be?
3. In addition, it is our understanding of 178.604(a)(2), that there is no leakproofness test requirement for either the inner or outer packagings of the above combination packaging. Is this correct?

4. Thank you in advance for your assistance. If clarification of the scenario or any of the questions is needed, our point of contact is Ms. Susan Evans, GUEB, 937-257-7445.

FOR THE COMMANDER

A handwritten signature in cursive script that reads "Robbin L. Miller". The signature is written in black ink and is positioned above the printed name and title.

ROBBIN L. MILLER
Chief, AF Packaging
Technology & Engineering Facility