



U.S. Department  
of Transportation

1200 New Jersey Avenue SE  
Washington, DC 20590

**Pipeline and Hazardous  
Materials Safety  
Administration**

**AUG 09 2012**

Ms. Natalie Pike  
Quality Manager  
Robertshaw Industrial Products  
1602 Mustang Drive  
Maryville, TN 37801

Ref. No. 12-0047

Dear Ms. Pike:

This responds to your February 2, 2012 request for written clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the shipment of thermal assemblies. You state that you offer for transportation thermal assemblies that are shipped by themselves or as part of a temperature regulator. In addition, you state that depending on the operating temperature range and bulb size required for the thermal assembly, the chemicals and quantities may vary. Your thermal assemblies contain chemicals such as ethyl ether, normal propyl alcohol, isopropyl alcohol, and acetone. You also add that the thermal assemblies are filled with up to or over 1 liter of liquid in each assembly. Specifically, you ask what would be the most appropriate way to ship your thermal assemblies by ground and air under the HMR.

The materials described in your letter could be offered for transportation as fully regulated Class 3 (flammable liquid) hazardous materials as contained in the thermal assemblies. For example, a thermal assembly containing acetone, could be described under the proper shipping name "Acetone" and packaged in an authorized non-bulk packaging as prescribed in § 173.202 of the HMR.

The HMR also provides a number of exceptions for the transportation of Class 3 materials, based on flashpoint, quantity, and how they are packaged and offered for transportation. Consequently, Class 3 materials may be offered for transportation and transported in accordance with the small quantity exception provided in § 173.4, or the limited quantity exception provided in § 173.150. Please note that limited and small quantity packages intended for transportation by aircraft must also be prepared in accordance with §§ 173.27(f) and 173.4a, respectively. If none of the HMR packaging provisions are practical for your thermal assemblies, you may consider applying for a special permit as prescribed in § 107.105, or online at:

<https://hazmatonline.phmsa.dot.gov/Online%20Approvals/pages/welcome.aspx>. The exceptions are described in greater detail as follows:

Small Quantity Exception.

Under the small quantity exception prescribed in § 173.4, high-integrity packagings containing small amounts of hazardous materials that are packaged as specified are not subject to regulation under the HMR when transported by highway or rail. Eligible Class 3 materials are placed in inner packagings or are contained in articles in amounts up to 30 mL (1 ounce) that are further placed in strong outside packagings. The inner packagings must not be liquid full at 55 °C (131 °F) and must have removable closures held securely in place with wire, tape, or other positive means. Cushioning and absorbent material that will not react chemically with the hazardous material and is capable of absorbing the entire contents must surround either each inner packaging or the inside of the outer packaging. The completed package must be capable of withstanding without leakage, or a substantial reduction in effectiveness, the drop tests prescribed in § 173.4(a)(6) from a height of 1.8 meters (5.9 feet). The gross mass of the completed package must not exceed 29 kg (64 pounds). A shipper certifies the completed package conforms to the small quantity exception by marking the outside of the package with the statement "This package conforms to 49 CFR 173.4."

Limited Quantity Exception.

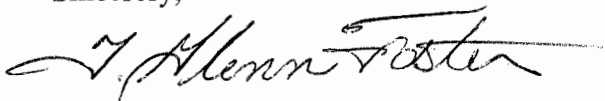
A limited quantity is the maximum amount of a hazardous material for which there is a specific labeling and packaging exception indicated in Column (8A) of the § 172.101 Hazardous Materials Table (HMT). See § 171.8. Section 173.150(b) authorizes Class 3 materials to be offered for transportation and transported as a limited quantity when packaged in inner packagings containing up to 1 L (0.3 gallons) for a Packing Group II material and up to 5 L (1.3 gallons) for a Packing Group III material, further packaged in strong outer packagings weighing no more than 30 kg (66 pounds) gross mass. When complete, packages must conform to the general packaging requirements prescribed in §§ 173.24 and 173.24a. For transportation by aircraft, the Class 3 material must be eligible for transportation aboard passenger-carrying aircraft, and the package must conform to the general requirements for transportation by aircraft prescribed § 173.27(f). Limited quantity packages are excepted from labeling, unless transported by aircraft, and placarding, as prescribed in subparts E and F of part 172, respectively.

Dangerous Good in Equipment, Machinery, or Apparatus.

The thermal assemblies you describe may be eligible for transportation as "UN3363, Dangerous goods in apparatus," provided the requirements prescribed in § 173.222 are met, the applicable requirements specific to air transport are met, and the devices do not contain any materials forbidden for transportation aboard a passenger-carrying or cargo-only aircraft, as applicable. The requirements prescribed in § 173.222 for such articles are in addition to any applicable requirements prescribed in § 172.102(c)(1), Special Provision 136, for such articles.

I trust 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

Andrews

§173.13

§173.150

§173.4

Exceptions

12-0047

**Drakeford, Carolyn (PHMSA)**

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**From:** INFOCNTR (PHMSA)  
**Sent:** Thursday, February 02, 2012 10:27 AM  
**To:** Drakeford, Carolyn (PHMSA)  
**Subject:** FW: Request Formal Letter of Interpretation

Hi Carolyn,

We received the following request for a letter of interpretation.

Thanks,  
Victoria

Victoria Lehman  
Hazmat Information Center (HMIC)  
<http://phmsa.dot.gov/hazmat/info-center>  
(202) 366-1035

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**From:** Pike, Natalie [mailto:Natalie.Pike@invensys.com]  
**Sent:** Thursday, February 02, 2012 9:57 AM  
**To:** INFOCNTR (PHMSA)  
**Subject:** Request Formal Letter of Interpretation

I have spoken with a regulatory specialist but would like a formal letter of interpretation for the request below.

Thank you,  
Natalie

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**From:** Pike, Natalie  
**Sent:** Wednesday, February 01, 2012 11:34 AM  
**To:** 'phmsa.hm-infocenter@dot.gov'  
**Subject:** Shipping Regulation Question

To Whom It May Concern:

I submitted this information request to PHMSA via the online feedback form on 1/26/12 but have not yet received a response.

<http://phmsa.dot.gov/phmsa-ext/feedback/HQFeedbackForm.jsp>

Also, the server at this website is unavailable.

<http://www.phmsa.dot.gov/phmsa-ext/feedback/hazmatInformationCenterFeedbackForm.jsp>

I am sending this email in case my original request was not submitted to the correct group.

We have thermal assemblies (temperature sensing elements) that contain chemicals charged and hermetically sealed in a metal tube, then secured/enclosed in a metal socket. The thermal assemblies may ship by themselves or as part of a temperature regulator. Depending on the operating temperature range and bulb size required for the thermal assembly, the chemical and quantity vary. Chemicals include ethyl ether, normal propyl alcohol, isopropyl alcohol, and

acetone. Charge volume may be 270 CC, 450 CC, 725 CC, 840 CC, etc., up to over 1 Liter if an extra long bulb is requested. It appears that thermal assemblies using <=1.0 Liter normal propyl alcohol, for example, are excepted from HMR requirements by 173.150(b)(2). However, it appears that ethyl ether does not have the same exception, or 173.4, but it might be excepted under 173.13 (no barrier bags are part of the packaging). Or would it fall under "Dangerous goods in apparatus" or another category? If thermal assemblies are shipped on their own, they are cushioned and packaged in a corrugated, fiberboard box. If shipped as part of a regulator, units are crated and thermal elements secured. Damage is unlikely; leakage is highly unlikely and not dangerous. We will request special permit if necessary, but I would appreciate advice and recommendations for road and air shipping based on the information provided. Thank you.

Thank you for your assistance.  
Natalie

**Natalie Pike**  
Quality Manager

Robertshaw Industrial Products  
1602 Mustang Drive  
Maryville, TN 37801

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[www.Centeron.net](http://www.Centeron.net)  
[www.InvensysControls.com](http://www.InvensysControls.com)

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