



U.S. Department  
of Transportation  
**Research and  
Special Programs  
Administration**

NOV 25 2002

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Washington, D.C. 20590

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Ref. No. 02-0256

Dear Mr. Jones:

This responds to your September 16, 2002 letter regarding the applicability of the small quantity exception in § 173.4 under the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) to your client's product. Your client, Tempra Technology, Inc. has developed a sealed ration heater (SRH) to provide a flameless means of heating individual meals. The SRH includes two hermetically sealed plastic pouches, each of which contains approximately 22.6 grams of a Division 5.1 (Oxidizer), PG II.

In your September letter, on behalf of Tempra Technology, you requested clarification of the applicability of the "small quantity exception" in § 173.4 to your client's product. Multiple units of a SRH with the meals will be shipped in a strong outside fiberboard box. The gross mass of the filled box will not exceed 29 kg (64 pounds). The fiberboard box meets the drop and compressive load tests, and will be marked "This package conforms to 49 CFR 173.4."

The hazardous material at issue, a Division 5.1 (Oxidizer), PG II, may be transported under the small quantity exception if it meets the quantity limits and packaging requirements in § 173.4. Based on the information you submitted, we agree that your client's SRH may be transported under the small quantity exception provided the quantity of the Division 5.1, PG II, oxidizer in the inner packaging is less than 30 grams (1 ounce) and all other provisions of § 173.4 are met. Packing different or nonhazardous material (e.g., the meal) in the same package is permitted provided it does not result in a violation of § 173.21.

I hope this information is helpful. If we can be of further assistance, please contact us.

Sincerely,

Delmer F. Billings  
Chief, Standards Development  
Office of Hazardous Materials Standards



020256

173.4

WRITER'S DIRECT ACCESS

September 16, 2002

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Research and Special Programs Administration  
Office of Hazardous Materials Standards (DHM-10)  
U.S. Department of Transportation  
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**Re: Tempra Technology Inc. - Request for Clarification of Applicability of Small Quantity Exception**

Dear Sir or Madam:

Our client, Tempra Technology Inc. (Tempra), has developed a sealed ration heater (SRH) that relies on the reaction between [REDACTED] (a Division 5.1, PG II, material) to provide a flameless means of heating individual meals. These SRHs are principally designed for use by the nation's military in the heating of Meals, Ready-to-Eat (MREs). The purpose of this letter is to request clarification of the applicability of the U.S. Department of Transportation's (DOT's) "small quantity exception" (SQE) (49 C.F.R. § 173.4) to the shipment of Tempra's SRHs when packaged as described herein.<sup>1</sup>

Tempra's SRH consists of two hermetically sealed, plastic pouches that are connected together to form a two-plane assembly (see Attachment 1). Each SRH pouch contains an oxidizer [REDACTED] in one compartment and a "fuel" [REDACTED] in a second "blister pouch" compartment. To activate the heater, the blister pouch must be ruptured; this action releases the [REDACTED] solution into the compartment that contains the [REDACTED]. The water slowly dissolves the [REDACTED] to generate a slow, steady flow of heat. The [REDACTED] serves to

<sup>1</sup> Tempra has engaged in prior correspondence and discussions with DOT regarding the applicability of DOT's hazardous materials regulations to the shipment of the SRH products. In a July 3, 2002 letter from Delmer F. Billings, Chief, Standards Development, Research and Special Programs Administration to Mr. Martin Sabin of Tempra, DOT confirmed that the individual food heater (*i.e.*, the SRH) is subject to the requirements of the hazardous materials regulations, but noted that the "MRE ration package, containing an individual food heater, may qualify for... the small quantity packaging exceptions in § 173.4." By the present letter, Tempra is requesting confirmation of the applicability of this exception.

moderate the rate of reaction, since [REDACTED] will not react with water and [REDACTED] will not dissolve in [REDACTED]. To heat a MRE, the SRH assembly is activated and then folded around the pouch that contains the MRE entrée in a manner analogous to a book jacket.<sup>2</sup>

Each of the two SRH pouches contains approximately [REDACTED] grams of the oxidizer material [REDACTED]. The pouches are tough and puncture-resistant and are constructed of [REDACTED] as a protective outer layer. Attached to each SRH pouch is a small blister pouch that contains [REDACTED].

Each SRH will be packaged with a MRE (e.g., drink mix, entrée, spread, bread substitute, etc.) in a hermetically sealed pouch constructed of [REDACTED]. The SRH/MRE units will be shipped in fiberboard boxes. Each box will contain twelve units (i.e., two rows of six).

Tempra and its customers desire to ship the SRH/MRE units in fiberboard boxes under the DOT's SQE. Tempra believes that shipments of these products will satisfy the terms of the SQE [49 C.F.R. §§ 173.4(a)(1) to 173.4(a)(10)] in that:

- The maximum quantity of material per inner receptacle is no more than 30 grams. The SRH is comprised of two pouches and each of these pouches serves as a separate inner receptacle containing [REDACTED].
- Each pouch is constructed of [REDACTED]. These tough, puncture-resistant pouches receive additional protection from an outer pouch that is constructed of [REDACTED]. This outer pouch encases the complete SRH/MRE unit.
- The two inner pouches that contain the [REDACTED], as well as the outer pouch that contains the SRH and MRE, are hermetically sealed to prevent any leakage during shipment.
- The [REDACTED] pouches will be protected and cushioned during shipment by folding the two-plane assembly over on itself (blister

<sup>2</sup> See the photographs in Attachment 1.

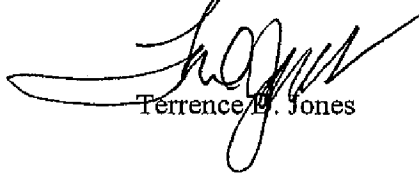
pouches facing inward) and placing the various MRE items on either side of the assembly (e.g., cardboard box containing main entrée on one side and a rigid bread/cracker product on the other side). The trapped air in the hermetically sealed outer MRE/SRH packaging will provide additional cushioning for the SRH.

- The MRE/SRH products will be packaged in a strong outside packaging. The products will be packaged in an ASTM D 5118 compliant fiberboard box with a bursting strength of 550 pounds. The boxes will measure 9.5" x 17" x 10.5" and contain an inner, fiberboard liner to afford the MRE/SRH products additional protection.
- The fiberboard boxes containing the MRE/SRH units satisfy the "drop" and "compressive load" tests specified in 49 C.F.R. § 173.4(a)(6). Temptra has conducted the prescribed testing and a prototype of the proposed packaging meets the requisite performance level.
- The placement of the materials in the package will not result in a violation of 49 C.F.R. § 173.21. When activated, the [REDACTED]  
[REDACTED]  
The oxidizer [REDACTED] is packaged in a separate, puncture-resistant compartment from the activating fuel [REDACTED] and surrounded by various elements of the MRE, which serve to protect the SRH from being prematurely punctured and, in turn, activated during shipment. Even if the pouches were somehow punctured during shipment and the [REDACTED] [REDACTED] were able to mix and react, a dangerous quantity of heat would not be generated, as the [REDACTED] coating on the [REDACTED] would serve to control the rate of reaction and thereby limit the evolution of heat to a slow, steady flow. Furthermore, the surrounding MRE entrées will be situated in such a manner that they would absorb all of the heat generated by such a reaction.
- Per § 173.4(a)(8), the gross mass of each package will not exceed 29 kilograms (64 pounds). Temptra intends to ship approximately 12 units per package (i.e., box). A typical SRH/MRE unit will weigh between [REDACTED]  
[REDACTED]

- The package will not be opened or altered until it is no longer in commerce. Each fiberboard box will remain sealed with packing tape until delivery is completed.
- Each fiberboard box will bear the marking "This package conforms to 49 CFR 173.4."

Please advise whether you agree that Temptra's products, as described, may be shipped pursuant to the terms of the SQE. Should you have any questions or require further information, please do not hesitate to contact us. We look forward to receiving your response as soon as possible, so that Temptra and its U.S. military customers can ship the products accordingly.

Sincerely,



Terrence B. Jones

Attachment

1. [REDACTED]