



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

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

III 3 ~ 2002

Mr. Martin Sabin  
Design Engineer  
Tempra Technology, Inc  
5149 15<sup>th</sup> Street East  
Bradenton, FL 34203

Ref. No.: 01-0318

Dear Mr. Sabin:

This responds to your letter requesting clarification of the requirements for shipping your product, a new individual food heater inside of a meals, ready-to-eat (MRE) ration package. Specifically, you asked whether the individual food heater, containing a Division 5.1 (oxidizer), in Packing Group II, and glycerin-water solution, would be excepted from the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). A facsimile of several photographs of the individual food heater, MRE ration package, and accompanying test report were enclosed. You provided information, as follows:

The individual food heater consists of two pouches with a total of 29.9 grams of potassium permanganate. Each of the hermetically sealed, vacuum packed pouches contains approximately 15 grams of potassium permanganate. The potassium permanganate is covered with an inert coating and meets the definition of Division 5.1 (Oxidizer) in Packing Group II, tested in accordance with the UN Manual of Tests and Criteria, 34.1, Test 0.1, as specified in § 173.127(a)(1). The amount of oxidizer in the combined two-pouch heater is less than the reportable quantity (RQ) of potassium permanganate (RQ, 100 lbs.) per package, and each pouch weighs 22.6 grams. The fuel is a glycerin-water solution. When the fuel pouch is ruptured, the fuel spreads throughout the oxidizer; the water slowly dissolves the coating of the permanganate crystals, which then react with the glycerin.

Based on the information you provided, it is our determination that the individual food heater described above when shipped as components of a MRE ration package is subject to the requirements of the HMR. This determination also applies to the individual food heater devices when shipped separately from MREs. The MRE ration package, containing an individual food heater, may qualify for the limited quantity or consumer commodity packaging exceptions specified in § 173.152(b) and (c), respectively, for Division 5.1 (oxidizers), or the small quantity packaging exceptions in § 173.4.

I hope this satisfies your inquiry. If we can be of further assistance, please contact us.

Sincerely,

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

172.101 (v)

Engram  
§ 172.101 (D)  
Applicability  
01-0318

**Tempra**  
Technology  
For Thermal Process Heating  
Martin Sabin  
Design Engineer  
Tempra Technology, Inc.  
6140 15<sup>th</sup> Street East  
Bradenton, FL 34203

Date: 12/03/01

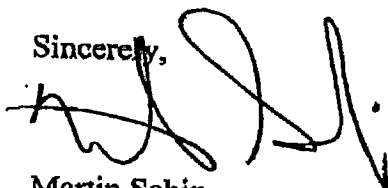
To: Suzanne Hedgepedth, Director  
Office of Hazardous Materials Exemptions and Approvals  
Fax: 202-366-3308

Subject: Request for Letter of Opinion

Dear Ms. Hedgepedth,

Our company is requesting a letter of opinion for a new individual food heater for shipment without special labeling. The requested letter is required by the U.S. Army in order to qualify our product for replacement of the existing magnesium/aluminum heater in military ration applications. When I called today, I was informed that faxing this document was probably the most effective method of delivering this document to you. If you should want a hard copy or an electronic copy of this document, you can e-mail me at [Msabin@tempratech.com](mailto:Msabin@tempratech.com). If you should have any questions regarding any of this material, please don't hesitate to call me at 1-800-867-9189. Your prompt reply to this matter would be greatly appreciated.

Sincerely,



Martin Sabin  
Tempra Technology, Inc.

7 page document enclosed

The Tempra Technology Military Ration Heater  
November 6, 2001

Tempra Technology is requesting a letter of opinion for a new individual food heater for shipment without special labeling. The requested letter is required by the US Army in order to qualify our product for replacement of the existing magnesium/aluminum heater in military ration applications. This approval is perceived to be necessary because our heater contains a small amount of modified Division 5.1, Packing Group II material.

The MRE (Meal-Ready-to-Eat) Ration package, which is hermetically sealed, contains drink mixes, bread substitutes, jam, peanut butter, and other accessory items, together with an entrée. The entrée may be one of twenty-four formulations, such as spaghetti with meat and sauce, and comes in a rectangular retort pouch, usually weighing 8 ounces. The MRE package usually contains a heater. A photograph of one MRE package accompanies this application.

The Tempra heater is a double pouch arrangement, which is folded around the entrée pouch like a book cover. The accompanying photographs show the heater and its method of use. As per DOT Regulation 171.8, it is our assessment that the Tempra heater is a composite package consisting of 2 isolated inner receptacles. Each of the pouches is a complete and separate heating unit, including both fuel and oxidizer, and is hermetically sealed. These pouches are also evacuated internally in order to keep the powder from shifting and to improve fuel distribution, since upon activation the external atmospheric pressure presses the fuel throughout the pack. The packaging film consists of a 3 mil coextrusion of linear low-density polyethylene and EVOH oxygen barrier as seal layer, and 60 gauge biaxial nylon as an outer protectant. In normal operation the heater maintains its self-contained, completely sealed condition during shipment, use, and disposal.

As can be seen in the photographs, the fuel is contained in a pouch within the hermetic package. The oxidizer, a granular potassium permanganate in which the individual grains are coated with a soluble inert material, is formulated to provide a slow, steady flow of heat. The fuel is a glycerin-water solution. When the fuel pouch is ruptured, the fuel spreads throughout the oxidizer; the water slowly dissolves the coating on the permanganate crystals, which then react with the glycerin. There are no toxic or hazardous gaseous products of this reaction. Enough glycerin is incorporated into the heater to completely react all of the oxidizer with some excess. This insures that the residues contain no potassium permanganate. As shown in an accompanying test report, the residues are non-toxic.

These heaters have been extensively tested. In the form of a single pouch with as much reactant as in the two (proposed) pouches put together, over 500 of these heaters have been field tested by the U.S. Army and shown to be safe and reliable. They do not under any circumstances self-ignite. In the case of fuel pouch leakage, the reaction goes forward at low temperature until the chemical energy is expended.

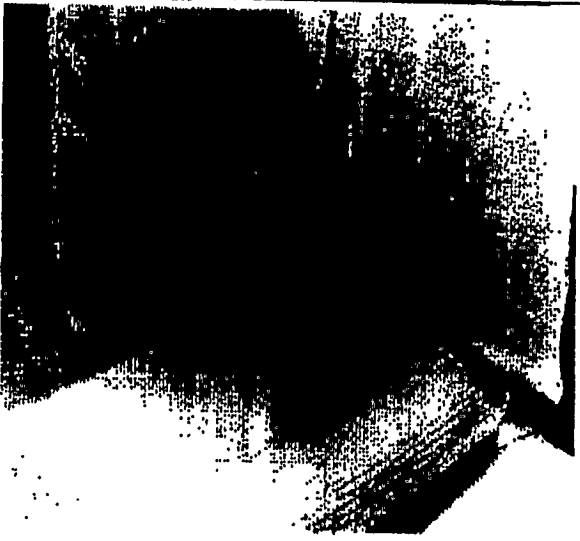
The heater, consisting of the two pouches, contains a total of 29.9 grams of potassium permanganate. Each of the hermetically sealed, vacuum packed pouches contains less than 15 grams of potassium permanganate. Pure potassium permanganate is a Division 5.1, Packing Group II oxidizer, as per DOT 172.101. With our inert coating, though the time to burn is markedly increased, our active powder still falls in the middle of Packing Group II, as per DOT 173.127(a)(1) which references the UN Manual of Tests and Criteria, 34.1 Test 0.1. For details on this rating, please refer to the accompanying test report. However, the amount of oxidizer in the combined two-pouch heater is less than the reportable quantity for this material, as per 49 CFR 173.4(a)(1)(ii), and the total solid contents of each pouch weighs 22.6 grams.



MRE contents open display



Tempra SRH open view



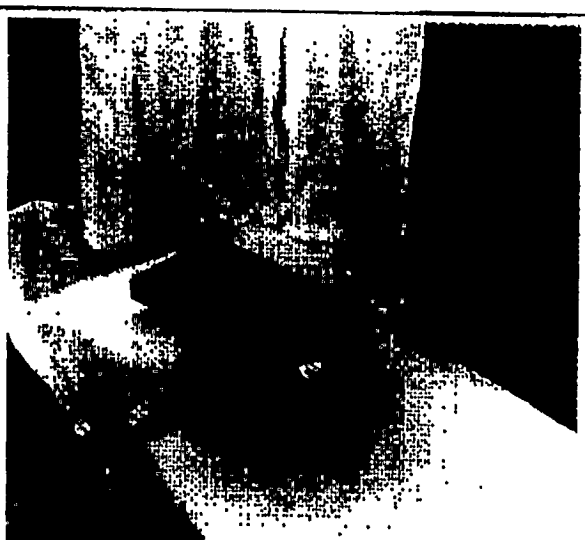
SRH side view to reveal thin profile



SRH with Meal Pouch unloaded



SRH and Meal Pouch assemble



SRH and Meal final stage for Heating



SGS U.S. Testing Company Inc.

75 Passaic Avenue • Fairfield, NJ 07004-3833 • Tel: 973-575-5252 • Fax: 973-244-1584

CLIENT: Temptra Technology  
 Attn: Martin Sabin  
 6140 - 15<sup>th</sup> Street East  
 Bradenton, FL 34203

UM-D-OPS-04-01-T

Test Report No: 148737

Date: 12/06/00

The following sample was submitted by the client as:

Temptra Oxidizer

DATE OF RECEIPT: 11/07/00

TESTING PERIOD: 12/05/00 - 12/06/00

AUTHORIZATION: Client's prepayment check #6484.

TESTS REQUESTED: To conduct an oxidizer test on the submitted sample.

TEST RESULTS: See page 2

CONCLUSIONS/  
 COMMENTS: According to the result of the test, the sample meets the criteria of  
 Packing Group II.

PREPARED BY:

SIGNED FOR AND ON BEHALF OF  
 SGS U.S. TESTING COMPANY INC.

*M Santos*  
 Bernardita Santos  
 Laboratory Supervisor  
 /mo

*Lisa Van Savage*  
 Lisa Van Savage  
 Manager, Specialty & Applied Chemistry

Page 1 of 2

This report is issued by SGS U.S. Testing Company Inc. under its General Conditions for Testing Services (copy available upon request). SGS U.S. Testing's responsibility under this report is limited to proven negligence and will in no case be more than the amount of the testing fee. Except by special arrangement, samples are not retained by SGS U.S. Testing for more than 20 days. The results shown on this test report refer only to the sample(s) tested unless otherwise stated, under the conditions agreed upon. Anyone relying on this report should understand all of the details of the engagement. Neither the name, seal, marks nor insignia of SGS U.S. Testing may be used in any advertising or promotional materials without the prior written approval of SGS U.S. Testing. The test report cannot be reproduced, except in full, without prior written permission of SGS U.S. Testing Company Inc.

Member of the SGS Group (Société Générale de Surveillance)



SGS U.S. Testing Company Inc.

US-D-078-04-03-T

Report No.: 148737  
Date: 12/05/00  
Page: 2 of 2

CLIENT: Temptra Technology

**PROCEDURE:** Recommendations on the Transport of Dangerous Goods. Manual of tests and Criteria. Second Revised Edition, UN, 1995.

The sample was tested as received per client's request.

**TEST RESULTS:**Time, seconds, average of five

4:1 sample:cellulose	47
1:1 sample:cellulose	128
3:7 Potassium Bromate:Cellulose	111
3:2 Potassium Bromate:Cellulose	15
2:3 Potassium Bromate:Cellulose	52

**Test Criteria:**

- Packing Group I:** any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time less than the mean burning time of a 3:2 mixture, by mass, of potassium bromate and cellulose.
- Packing Group II:** any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 2:3 mixture (by mass) of potassium bromate and cellulose and the criteria for Packing Group I are not met.
- Packing Group III:** any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, exhibits a mean burning time equal to or less than the mean burning time of a 3:7 mixture (by mass) of potassium bromate and cellulose and the criteria for Packing Groups I and II are not met.
- Not Division 5.1** any substance which, in the 4:1 or 1:1 sample-to-cellulose ratio (by mass) tested, does not ignite and burn, or exhibits mean burning times greater than that of a 3:7 mixture (by mass) of potassium bromate and cellulose.

\*\*\*\*\*  
End of Report

## Appendix

## Research and Special Programs Admin., DOT

§ 173.127

(B) A positive test result is obtained in a test using a 104 mm sample cube at 120 °C and a negative result is obtained in a test using a 25 mm sample cube at 140 °C and the substance is transported in packaging with a volume of more than 490 liters; or

(C) A positive result is obtained in a test using a 104 mm sample cube at 100 °C and a negative result is obtained in a test using a 25 mm sample cube at 100 °C and the substance is transported in packaging with a volume of less than 490 liters.

(d) A Division 4.3 dangerous when wet material is assigned to—

(i) Packing Group I, if the material reacts vigorously with water at ambient temperatures and demonstrates a tendency for the gas produced to ignite spontaneously, or which reacts readily with water at ambient temperatures such that the rate of evolution of flammable gases is equal or greater than 10 liters per kilogram of material over any one minute;

(ii) Packing Group II, if the material reacts readily with water at ambient temperatures such that the maximum rate of evolution of flammable gases is equal to or greater than 20 liters per kilogram of material per hour, and which does not meet the criteria for Packing Group I; or

(iii) Packing Group III, if the material reacts slowly with water at ambient temperatures such that the maximum rate of evolution of flammable gases is greater than 1 liter per kilogram of material per hour, and which does not meet the criteria for Packing Group I or II.

[Amend. 173-224, 55 FR 4264 Dec. 22, 1990, as amended by Amend. 173-221, 61 FR 5882, Sept. 26, 1996; Amend. 173-261, 62 FR 24751, May 2, 1997; 62 FR 51546, Oct. 7, 1997]

§ 173.127 Class 5, Division 5.1—Definition and assignment of packing groups.

(a) *Definition.* For the purpose of this subchapter, *oxidizer* (Division 5.1) means a material that may, generally by yielding oxygen, cause or enhance the combustion of other materials.

(i) A solid material is classified as a Division 5.1 material if, when tested in accordance with the UN Manual of Tests and Criteria, its mean burning

time is less than or equal to the burning time of a 3:7 potassium bromate/cellulose mixture.

(ii) A liquid material is classified as a Division 5.1 material if, when tested in accordance with the UN Manual of Tests and Criteria, it spontaneously ignites or its mean time for a pressure rise from 689 kPa to 2070 kPa gauge is less than the time of a 1:1 nitric acid (65 percent)/cellulose mixture.

(b) *Assignment of packing groups.* (i) The packing group of a Division 5.1 material which is a solid shall be assigned using the following criteria:

(i) Packing Group I, for any material which, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3:2 potassium bromate/cellulose mixture.

(ii) Packing Group II, for any material which, in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met.

(iii) Packing Group III for any material which, in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met.

(ii) The packing group of a Division 5.1 material which is a liquid shall be assigned using the following criteria:

(i) Packing Group I for:

(A) Any material which spontaneously ignites when mixed with cellulose in a 1:1 ratio; or

(B) Any material which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (60 percent)/cellulose mixture.

(ii) Packing Group II, any material which exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 aqueous sodium chlorate solution (60 percent)/cellulose mixture and the criteria for Packing Group I are not met.

(iii) Packing Group III, any material which exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65 percent)/cellulose mixture and the criteria for Packing Group I and II are not met.

[Amend. 173-261, 62 FR 24752, May 2, 1997]



## §173.4

## 49 CFR Ch. I (10-1-00 Edition)

kPa (2 psi). Alternatively, a drum manufactured and marked prior to October 1, 1998 as a salvage drum, in accordance with the provisions of this section in effect on September 30, 1997, is authorized. Capacity of the drum may not exceed 459 L (120 gallons).

(2) Each drum shall be provided when necessary with sufficient cushioning and absorption material to prevent excessive movement of the damaged package and to eliminate the presence of any free liquid at the time the salvage drum is closed. All cushioning and absorbent material used in the drum must be compatible with the hazardous material.

(3) Each salvage packaging must be marked with the proper shipping name of the hazardous material inside the packaging and the name and address of the consignor. In addition, the packaging must be marked "SALVAGE" or "SALVAGE DRUM".

(4) Each drum shall be labeled as prescribed for the respective material.

(5) The shipper shall prepare shipping papers in accordance with subpart C of part 172 of this subchapter.

(6) The overpack requirements of §173.23 do not apply to drums used in accordance with this paragraph.

(7) A salvage packaging marked "T" in accordance with applicable provisions in the UN Recommendations may be used.

[Amend. 173-24, 26 FR 5289, Dec. 21, 1969, as amended at 24 FR 6596, Dec. 26, 1969; Amend. 173-24, 28 FR 5158, Oct. 1, 1969; Amend. 173-24, 32 FR 5478, May 8, 1967]

## §173.4 Small quantity exceptions.

(a) Small quantities of Class 2, Division 4.1, Division 4.2 (PG II and III), Division 4.3 (PG II and III), Division 5.1, Division 5.2, Division 6.1, Class 7, Class 8, and Class 9 materials that also meet the definition of one or more of these hazard classes, are not subject to any other requirements of this subchapter when—

(1) The maximum quantity of material per inner receptacle is limited to:

(i) Thirty (30) mL (1 ounce) for authorized liquids, other than Division 6.1, Packing Group I, Hazard Zone A or B materials;

(ii) Thirty (30) g (1 ounce) for authorized solids, other than Division 6.1,

Packing Group I, Hazard Zone A or B materials;

(iii) One (1) g (0.04 ounce) for authorized materials meeting the definition of a Division 6.1, Packing Group I, Hazard Zone A or B material; and

(iv) An activity level not exceeding that specified in §§173.421, 173.424, 173.425 or 173.466, as appropriate, for a package containing a Class 7 (radioactive) material.

(2) With the exception of temperature sensing devices, each inner receptacle:

(i) Is not liquid-full at 25 °C (77 °F); and

(ii) Is constructed of plastic having a minimum thickness of no less than 0.2 mm (0.008 inch), or earthenware, glass, or metal;

(3) Each inner receptacle with a removable closure has its closure held securely in place with wire, tape, or other positive means;

(4) Unless equivalent cushioning and absorbent material surrounds the inside packaging, each inner receptacle is securely packed in an inside packaging with cushioning and absorbent material that:

(i) Will not react chemically with the material; and

(ii) Is capable of absorbing the entire contents (if a liquid) of the receptacle;

(5) The inside packaging is securely packed in a strong outside packaging;

(6) The completed package, as demonstrated by prototype testing, is capable of withstanding—

NOTE TO PARAGRAPH (6)(6): Each of the tests in this paragraph (6)(6) may be performed on a different, but identical, package. i.e., all tests need not be performed on the same package.

(i) Each of the following free drops made from a height of 1.8 m (5.9 feet) directly onto a solid unyielding surface without breakage or leakage from any inner receptacle and without a substantial reduction in the effectiveness of the package:

(A) One drop flat on bottom;

(B) One drop flat on top;

(C) One drop flat on the long side;

(D) One drop flat on the short side; and

(E) One drop on a corner at the junction of three intersecting edges; and

(ii) A compressive load as specified in §173.505(c) of this subchapter.

**FAX TRANSMITTAL FORM  
ADVANCED CHEMICAL SAFETY**

8909 C Complex Drive  
San Diego, CA 92123-1418

DATE: November 16, 1998

TO: HELEN INGRUM

COMPANY: U.S. DOT

FAX NUMBER: 202 366-3012

TELEPHONE NUMBER:

TOTAL PAGES, INCLUDING THIS ONE: 4

FROM: NEAL LANGERMAN

ACSafety File:

IF THERE ARE ANY PROBLEMS WITH THE CONDITION OF THESE PAGES CONTACT ME  
AT THE FOLLOWING PHONE: 619/874-5577

OUR FAX PHONE: 619/874-8239

Helen:

I have attached the letter we discussed on Friday, November 13, 1998. At this point, I need a very clear statement (verbally or written) regarding shipping these items. The flameless ration heater (FRH) is a device packaged in a tough plastic envelop which, when water is added, generates heat to warm a field ration. It is used in military meals ready to eat (MREs). Each MRE includes one FRH. When activated with water, 8 grams of the magnesium alloy generates 9 liters of hydrogen.

Based on this, the alloy clearly meets the hazard class 4.3 definition as UN2813.

Issue #1

Individually packaged, these FRH with or without a MRE, are exempt from regulation for shipment by highway, because of the exempt quantity (less than 30 grams). If 12 FRHs or FRH/MRE units are placed in a single outside package, the package is fully regulated as UN2813. Is this correct?

Issue #2

Is a shipment of pallet quantities of MREs (with FRHs included) regulated as UN2813? This is different from Issue #1, since that addresses a small shipment of one package and issue #2 addresses a full truck load.

98-0345

Consultant

Engrum

\$ 173.124

I would like to find out if any follow-up to the July 7, 1992 letter occurred. At this point, it has become very important that this regulatory issue be fully and finally resolved. It is urgent that an answer is developed within the next seven to fourteen days.

Please call me after you review this FAX and we can discuss how to proceed. Thank you for your cooperation.

Neal Langerman, Ph.D.

07-08-92 10:11 AM

100



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

*202 366-3012*

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

JUL 07 1992

Mr. Arnold Daxe, Jr.  
Colonel, U.S. Army  
Deputy Chief of Staff for Safety  
Security, and Intelligence  
Department of The Army  
Headquarters, Military Traffic Management Command  
Fall Columbia Pike  
Fall Church, VA 22041-4050

Dear Mr. Daxe:

This is in response to your letter of May 28, 1992 requesting a competent authority approval for the shipment of a flameless ration heater (FRH) shipped in full pack quantities or in single units as components of meals, ready-to-eat (MRE). In addition, information and samples were submitted on the functioning and packaging of FRHs.

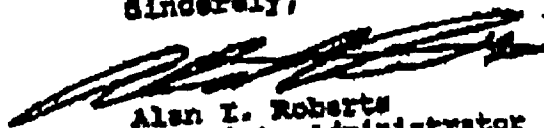
Based on a technical review of a FRH single unit packed with a MRE, we have determined that this unit is not subject to the Department's Hazardous Materials Regulations (HMR). This determination is based on the small quantity of hazardous material (maximum quantity of 8 grams of magnesium powder per single unit) in relation to the total mass of each MRE package.

With regard to the shipment of <sup>bulk pack</sup> full pack quantities of FRHs, it is our preliminary opinion that a substantial quantity of the hazardous material would be present, particularly in full freight container or transport vehicle shipments, and that application of the full scope of the HMR is appropriate. We recognize the importance of authorizing the shipment of FRHs in quantities other than single units and are willing to discuss our opinion further before making a final determination.

01-08-92 10:11AM

Because of the UN meetings and other commitments, the individuals necessary to be in attendance at any discussions on this subject will not be available before July 24. Please confirm this date with Joseph Morning of my staff who may be reached at (202) 365-4511.

Sincerely,



Alan E. Roberts  
Associate Administrator  
for Hazardous Materials Safety



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

DOT-E 10897  
(FIFTH REVISION)

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

**APR 26 2002**

**EXPIRATION DATE: March 31, 2004**

(FOR RENEWAL, SEE 49 CFR § 107.109)

1. GRANTEE: U.S. Department of Defense  
Alexandria, Virginia
2. PURPOSE AND LIMITATION:
  - a. This exemption authorizes the transportation of a water reactive material in special packaging without being labeled or marked with the proper shipping name, and when in the quantities as specified herein, in transport vehicles or freight containers that are not placarded with Division 4.3 placards. This exemption provides no relief from the Hazardous Materials Regulations (HMR) other than as specifically stated herein.
  - b. The safety analyses performed in development of this exemption only considered the hazards and risks associated with transportation in commerce.
3. REGULATORY SYSTEM AFFECTED: 49 CFR Parts 106, 107 and 171-180.
4. REGULATIONS FROM WHICH EXEMPTED: 49 CFR § 172.301, § 172.400, § 172.504(a) in that certain marking, labeling & placarding provisions are waived; and § 173.211 insofar as non-DOT specification packaging is not authorized, except as specified herein.
5. BASIS: This exemption is based on the application of U.S. Department of Defense dated April 25, 2002, submitted in accordance with § 107.109.
6. HAZARDOUS MATERIALS (49 CFR § 172.101):

Proper Shipping Name Hazardous Materials Description	Hazard Class/ Division	Identi- fication Number	Packing Group
Water-reactive solid, n.o.s. (Magnesium-iron alloy)	4.3	UN2813	I

7. SAFETY CONTROL MEASURES:

APR 26 2002

a. Packaging prescribed is a non-DOT specification packaging as described below -

- (1) Each Flameless Ration Heater is hermetically sealed in a 2.5 mil high density polyethylene bag.
- (2) Twelve of these units are shrink wrapped in a polyethylene sleeve.
- (3) Twenty-four shrink-wrapped packs are assembled in three rows of eight into a fire-retardant fiberboard box. This packaging is shown in detail in Attachment 3 to the application.
- (4) The gross weight of the bulk pack unit may not exceed 30 pounds.
- (5) Palletized unit loads of bulk pack units are strapped tightly to the pallet base, capped with weather resistant fiberboard and wrapped in polymeric stretch or shrink wrap material.

b. OPERATIONAL CONTROLS - The placarding requirements of § 172.504 pertaining to Division 4.3 materials are applicable to shipments made under the terms of this exemption, except that Division 4.3 placarding is not required when the aggregate gross weight of packages covered by this exemption in any transport vehicle or freight container does not exceed 100 kg (220 pounds), and the transport vehicle or freight container contains no other material requiring Division 4.3 placards.

8. SPECIAL PROVISIONS:

a. A person who is not a holder of this exemption who receives a package covered by this exemption may reoffer it for transportation provided no modifications or change are made to the package and it is reoffered for transportation in conformance with this exemption and the HMR.

b. A current copy of this exemption must be maintained at each facility where the package is offered or reoffered for transportation.

9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only.

APR 26 2002

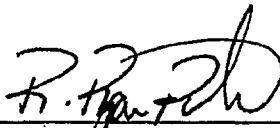
10. MODAL REQUIREMENTS: A current copy of this exemption must be carried aboard each cargo vessel and aircraft used to transport packages covered by this exemption. The shipper must furnish a current copy of this exemption to the air carrier before or at the time the shipment is tendered.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. 5101 et seq:
- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
  - o Registration required by § 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in § 171.8 who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by §§ 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (Sections 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must inform the AAHMS, in writing, of any incidents involving the package and shipments made under the terms of this exemption.

Issued in Washington, D.C.:



Robert A. McGuire  
Associate Administrator  
or Hazardous Materials Safety

APR 26 2002

(DATE)



APR 26 2002

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590.  
Attention: DHM-31.

Copies of this exemption may be obtained by accessing the Hazardous Materials Safety Homepage at <http://hazmat.dot.gov/exemptions> Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

PO: sln

JUN 19 1998



U.S. Department  
of Transportation

Research and  
Special Programs  
Administration

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

**APPROVAL CA-9806018**

**ISSUED BY THE COMPETENT AUTHORITY OF THE UNITED STATES**

1. **APPROVAL HOLDER:** The Department of the Army  
Headquarters, Military Traffic Management Command  
5611 Columbia Pike  
Falls Church, VA 22041-5050
2. **REGULATORY AUTHORITY:** 49 CFR 173.4, Part 1;1.1.1 of the  
International Civil Aviation Organization Technical Instructions for the Safe Transport  
of Dangerous Goods by Air (ICAO TI) and Section 22 of the International Maritime  
Dangerous Goods Code (IMDG) Code.
3. **SYNOPSIS:** This approval authorizes the shipment of flameless ration heater  
(FRH) single unit packed with a Meal, Ready-to-Eat (MRE) not subject to Department's  
Hazardous Materials Regulations (HMR). This approval is granted based on the small  
quantity of hazardous materials (maximum quantity of 8 grams of magnesium powder  
per single unit) in relation to the total mass of each MRE package.
4. **BASIS:** This approval is issued in response to the Department of the Army  
and the Air Force's request dated April 17, 1998 and is based on the Department of  
Transportation's letter dated July 7, 1992, addressed to Mr. Arnold Daxe, Jr.,  
Colonel, U.S. Army, The Department of the Army, Falls Church, VA.
5. **PERIOD OF VALIDITY AND CONDITIONS OF APPROVAL:** This approval  
does not provide relief from any requirements of the Hazardous Materials  
Regulations, ICAO TI or the IMDG Code except as expressly stated herein and is  
subject to the conditions indicated in paragraphs 5, 6 and 7.

(a) **Material Authorized:**

**Proper Shipping Name, Hazard Class and U.N. Identification Number:**

Not required when the product is packaged in accordance with this approval.

**(b) Packaging Description:**

The package consists of twelve individual MRE packages inside a MRE shipping case (cardboard box). The gross weight of the box is about 20.6 pounds with each of the twelve MRE packages weighing approximately 1.5 pounds. Each MRE package contains a meal bag which consists of an entree/starch, crackers, a spread (cheese, peanut butter, or jelly), a desert snack, beverages, an accessory packet, a plastic spoon and a FRH system. This FRH system consists of a heater element, packaged in a paperboard cover and sealed in a high density polyethylene bag. Each MRE package is placed inside a tear resistant waterproof bag which is packed in a cardboard box sealed in a wax paper wrapping.

**6. SPECIAL PROVISIONS:**

(a) A copy of this competent authority approval must accompany each shipment made under the authority of this approval.

(b) Each "Hazmat employee", as defined in 49 CFR 171.8 who performs a function subject to this approval must receive training on the requirements and conditions of this approval in addition to the training required by 49 CFR 172.700 through 172.704.

(c) The authority to grant the relief provided within this approval is limited to the extent that the United States government has authority over the transportation of the materials subject to this approval. Transportation in accordance with this approval outside of the jurisdiction of the United States may require the approval of governments of countries where these materials are so transported.

**7. GENERAL PROVISIONS:**

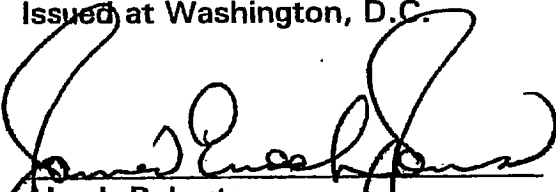
(a) The Department of the Army is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable.

(b) The Department of the Army is responsible for compliance of this shipment with the terms of this approval. Failure by any person to comply with the terms and conditions of this approval, the Hazardous Materials Regulations, 49 CFR Parts 171-180, the ICAO TI or the IMDG Code may result in the suspension or revocation of that person's authority to use this approval. Failure to comply may also subject that person to penalties prescribed by 49 U.S.C. §§ 5123 and 5124. This approval may

be modified, suspended or terminated in its entirety if that action is justified in light of changes in circumstances, including additional information not available when this approval was issued. Unless immediate modification, suspension or termination is necessary to avoid imminent, material harm to person or property, before action is taken, that person will be notified and provided with an opportunity to show why the proposed action should not be taken.

(c) Please refer to the aforementioned approval number in any future correspondence regarding this authorization.

Issued at Washington, D.C.



Alan I. Roberts  
Associate Administrator for  
Hazardous Materials Safety

JUN 19 1998

DATE

Address all inquiries to: Associate Administrator for Hazardous Materials Safety,  
Research and Special Programs Administration, Department of Transportation,  
Washington, D.C. 20590. Attention: DHM-32



U.S. Department  
of Transportation

Research and  
Special Programs  
Administration

MAY 11 1993

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

DOT-E 10897  
(THIRD REVISION)

EXPIRATION DATE: April 30, 2000

(FOR RENEWAL, SEE 49 CFR SECTION 107.109)

1. **GRANTEE:** U.S. Department of Defense  
Washington, D.C.

(See Appendix A to this document for a list of additional grantees)

2. **PURPOSE AND LIMITATION:** This exemption authorizes the transportation of a water reactive material in special packaging without being labeled or marked with the proper shipping name, and when in the quantities as specified herein, in transport vehicles or freight containers that are not placarded with Division 4.3 placards. This exemption provides no relief from any regulation other than as specifically stated herein.

3. **REGULATORY SYSTEM AFFECTED:** 49 CFR Parts 106, 107 and 171-180.

4. **REGULATIONS FROM WHICH EXEMPTED:** 49 CFR 172.301, 172.400, 172.504(a) in that certain marking, labeling & placarding provisions are waived; and 173.211 insofar as non-DOT specification packaging is not authorized.

5. **BASIS:** This exemption is based on the application of U.S. Department of Defense dated March 20, 2000, submitted in accordance with 49 CFR 107.109.

6. **HAZARDOUS MATERIALS (49 CFR 172.101):**

Hazardous materials description -- proper shipping name	Hazard Class/ Division	Identi- fication Number	Packing Group
Water-reactive solid, n.o.s. (Magnesium-iron alloy)	4.3	UN2813	I

7. PACKAGING AND SAFETY CONTROL MEASURES:

a. Packaging prescribed is a non-DOT specification packaging as described below -

(1) Each Flameless Ration Heater is hermetically sealed in a 2.5 mil high density polyethylene bag.

(2) Twelve of these units are shrink wrapped in a polyethylene sleeve.

(3) Twenty-four shrink-wrapped packs are assembled in three rows of eight into a fire-retardant fiberboard box. This packaging is shown in detail in Attachment 3 to the application.

(4) The gross weight of the bulk pack unit may not exceed 30 pounds.

(5) Palletized unit loads of bulk pack units are strapped tightly to the pallet base, capped with weather resistant fiberboard and wrapped in polymeric stretch or shrink wrap material.

b. OPERATIONAL CONTROLS - The placarding requirements of 49 CFR Section 172.504 pertaining to Division 4.3 materials are applicable to shipments made under the terms of this exemption, except that Division 4.3 placarding is not required when the aggregate gross weight of packages covered by this exemption in any transport vehicle or freight container does not exceed 100 kg (220 pounds), and the transport vehicle or freight container contains no other material requiring Division 4.3 placards.

8. SPECIAL PROVISIONS:

a. Persons who receive the packages covered by this exemption may reoffer them for transportation provided no modifications or changes are made to the packages, all terms of this exemption are complied with and a current copy of this exemption is maintained at each facility from which such reoffering occurs.

b. Shippers using the packaging covered by this exemption must comply with all provisions of this exemption, and all other applicable requirements contained in 49 CFR Parts 171-180.

MAY 11 1998

Continuation of DOT-E 10897 (3rd Rev.)

Page 3

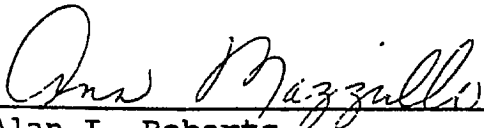
9. MODES OF TRANSPORTATION AUTHORIZED: Motor vehicle, rail freight, cargo vessel, cargo aircraft only.
10. MODAL REQUIREMENTS: A copy of this exemption must be carried aboard each cargo vessel and aircraft used to transport packages covered by this exemption. The shipper shall furnish a copy of this exemption to the air carrier before or at the time the shipment is tendered.
11. COMPLIANCE: Failure by a person to comply with any of the following may result in suspension or revocation of this exemption and penalties prescribed by the Federal hazardous materials transportation law, 49 U.S.C. Section 5101 et seq.
- o All terms and conditions prescribed in this exemption and the Hazardous Materials Regulations, 49 CFR Parts 171-180.
  - o Registration required by 49 CFR 107.601 et seq., when applicable.

Each "Hazmat employee", as defined in 49 CFR 171.8 who performs a function subject to this exemption must receive training on the requirements and conditions of this exemption in addition to the training required by 49 CFR 172.700 through 172.704.

No person may use or apply this exemption, including display of its number, when the exemption has expired or is otherwise no longer in effect.

12. REPORTING REQUIREMENTS: The carrier is required to report any incident involving loss of packaging contents or packaging failure to the Associate Administrator for Hazardous Materials Safety (AAHMS) as soon as practicable. (49 CFR 171.15 and 171.16 apply to any activity undertaken under the authority of this exemption.) In addition, the holder(s) of this exemption must inform the AAHMS, in writing, of any incidents involving the package and shipments made under the terms of this exemption.

Issued at Washington, D.C.:

  
\_\_\_\_\_  
Alan I. Roberts  
Associate Administrator  
or Hazardous Materials Safety

  
\_\_\_\_\_  
(DATE)

MAY 11 1998

Address all inquiries to: Associate Administrator for Hazardous Materials Safety, Research and Special Programs Administration, Department of Transportation, Washington, D.C. 20590.  
Attention: DHM-31.

The original of this exemption is on file at the above office. Photo reproductions and legible reductions of this exemption are permitted. Any alteration of this exemption is prohibited.

Dist: FHWA, FRA, USCG, FAA  
PO: sln



MAY 11 1998

Continuation of DOT-E 10897 (3rd Rev.)

Page 5

## APPENDIX A

The following are hereby granted party status to this exemption based on their application(s) submitted in accordance with 49 CFR 107.107 and the public proceeding thereon or 107.109, as appropriate:

Company Name City/State	Applica- tion Date	PTE	Expiration Date	Issue Date
Zeston Therm, Inc. Cincinnati, OH	3/20/98	1	4/30/2000	MAY 11 1998

*for Ann Mazzullo*  
Alan I. Roberts  
Associate Administrator for  
Hazardous Materials Safety

MODE = MEMORY TRANSMISSION

START=AUG-28 17:36

END=AUG-28 17:37

FILE NO. = 179

STN NO.	COM	ABBR NO.	STATION NAME/TEL.NO.	PAGES	DURATION
001	OK		919037690618	002/002	00:00'41"

-HMIC

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Research and  
Special Programs  
Administration

RETURN FAX NUMBER (202) 366-3012

NUMBER OF PAGES (INCLUDING COVER) 2

DATE 8/28/2002 TIME 5:30  
2:50 PM

ADDRESSEE Robert Stephens

FAX NUMBER 903-769-0618

INITIATOR Eileen Edmonson

PHONE 903-769-0700

PHONE 1-800-467-4922

MESSAGE Bob - your letter has been signed.

YOU ARE RECEIVING A TELEFAX  
FROM

THE HAZARDOUS MATERIALS INFORMATION CENTER  
OFFICE OF HAZARDOUS MATERIALS STANDARDS

FOR INFORMATION ON HAZARDOUS MATERIALS TRANSPORTATION  
PLEASE VISIT OUR WEBSITE  
AT

<http://hazmat.dot.gov>

**ExoTech****Robert W. Stephens**

190 Private Road 7857

Hawkins, Texas 75765

Telephone: (903) 769-0700

Fax: (903) 769-0618

**To:** Eileen Edmonson**Date:** 8/28/02**Company:** DOT**Location:** Washington, D.C.**From:** Bob Stephens**Fax No.:** (202) 366-3012**# of pages following this sheet:** 0**FAX FAX FAX FAX FAX**

Good Morning, Eileen!

Trust I'm not imposing on you but plan to give you a quick call this afternoon to say hello and check progress since our project is now at the ultra-critical stage. Thanks so much for your update last week.

As usual, I appreciate your help and your consideration.

Regards...BOB

---

*Operator*

MODE = MEMORY TRANSMISSION

START=AUG-21 13:39

END=AUG-21 13:40

FILE NO.= 105

STN NO.	COM	ABBR NO.	STATION NAME/TEL.NO.	PAGES	DURATION
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-HMIC

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AUG-21-2002 08:51 AM

## ExoTech

Robert W. Stephens  
190 Private Road 7857  
Hawkins, Texas 75765

Telephone: (903) 769-0700  
Fax: (903) 769-0618

To: Eileen Edmonson

Date: 8/21/02

Company: DOT

Location: Washington, D.C.

From: Bob Stephens

Fax No.: (202) 366-3012

# of pages following this sheet:

0

**FAX FAX FAX FAX FAX**

Eileen, another week since our last conversation, so I plan on giving you a call this afternoon to check progress.

As usual, I appreciate your help and your consideration and trust that we are "about there".

Regards...BOB

8/21/02

Bob- I will be in a meeting this afternoon & may miss your call so I'm responding by fax. Your letter is in "final" form and is being circulated for concurrence. It must be signed by our Director, who will be returning to the office on September 3rd.

Sincerely, E. Edmonson *[Signature]*  
Operator

**ExoTech**

Robert W. Stephens  
190 Private Road 7857  
Hawkins, Texas 75765

Telephone: (903) 769-0700  
Fax: (903) 769-0618

To: Eileen Edmonson

Date: 8/21/02

Company: DOT

Location: Washington, D.C.

From: Bob Stephens

Fax No.: (202) 366-3012

# of pages following this sheet: 0

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Sincerely, E. Edmonson 

Operator

**ExoTech****Robert W. Stephens**

190 Private Road 7857

Hawkins, Texas 75765

Telephone: (903) 769-0700

Fax: (903) 769-0618

To: Eileen Edmonson

Date: 8/14/02

Company: DOT

Location: Washington, D.C.

From: Bob Stephens

Fax No.: (202) 366-3012


# of pages following this sheet: 0

**FAX FAX FAX FAX FAX**

Eileen, since it has been a week since our last conversation, I plan on giving you a call this afternoon to check on the progress of my request.

As usual, I appreciate your help and your consideration.

Regards...BOB

  
Operator

# Interpretation Letters

Requester Robert W. Stephens

Date Received: 7/5/2002

Company Exotherm Technology, Inc. (ExoTech)

Tracking Number: 02-0183

Phone 903) 769-700

Revision Date: 7/5/2002

Date Assigned 7/5/2002

Date of Letter 6/24/2002

Staff Edmonson

First Draft Due: 7/26/2002

Section 172.101

First Draft Date:

Subject Applicability

Concurrence

Status

Status Date

Sign Date

Signor

HBP ☐

Copy to Docket ☐

Copy to DHM-60 ☐

Comment

7/10/02 1:55 PM B. Stephens says he'll send me MSDS identical to his product but made by another Co. This Co. is working on their own MSDS but it's not ready yet

7/22/02 9:40 AM B. Stephens calls to confirm he faxed + mailed me better MSDS image

**ExoTech**

**Robert W. Stephens**  
190 Private Road 7857  
Hawkins, Texas 75765

Telephone: (903) 769-0700  
Fax: (903) 769-0618

**To: Eileen Edmonson**

**Date: 8/5/02**

**Company: DOT**

**Location: Washington, D.C.**

**From: Bob Stephens**

**Fax No.: (202) 366-3012**

**# of pages following this sheet: 5**

**FAX FAX FAX FAX FAX**

Eileen, here is a copy of our draft MSDS that you requested. The MSDS is in DRAFT status and not intended as yet for distribution outside of your needs to address our request.

Again, your help is most appreciated.

Regards...BOB

  
Operator



## **Material Safety Data Sheet**

### **Fish Attractant Pellet (FiZ)**

#### **Section I**

Trade Name:	FiZ
Manufacturer's Name:	Exotherm Technology, Inc. (ExoTech)
Address:	5544 Riverton Court, Plano, Texas 75093
Telephone Number:	972-612-5464
Emergency Contact:	CHEMTREC (800) 424-9300
Date Prepared:	July 23, 2002

#### **Section II – Hazardous Ingredients**

<b>Ingredients (all are non-toxic material)</b>	<b>Weight</b>
Magnesium (Mg)	0.26 grams per pellet
Iron (Fe)	0.03 grams per pellet
Polyethylene	0.29 grams per pellet
Sodium chloride (NaCl)	0.09 grams per pellet
Wetting agent (polyethylene glycol)	Trace

#### **Section III – Physical Data**

Boiling Point (F):	N/A
Vapor Pressure:	N/A
Vapor Density:	N/A
Solubility in Water:	N/A
Specific Gravity:	approx. 1.2
Melting Point (F)	1202 (Mg)
Evaporation Rate:	N/A
Percent Volatile by Weight:	N/A

The FiZ pellet is a cylindrical, grayish metal-imbedded item consisting of the above ingredients. The pellets are packaged in moisture proof packaging.

## Section IV – Fire and Explosion Hazard Data

Flash Point:	N/A
Flammability:	N/A
Limits:	N/A
Lower explosive limit:	N/A
Upper explosive limit:	N/A

**Extinguishing media:** Use extinguishing agents intended for Type A, B, or C fires.

If Mg is burning (extremely intense fire with white sparks):

1. Flood fire with large amounts of water with a fog nozzle (not a solid stream) or foam.
2. Move burning material outdoors if possible, allow to burn completely or spread material out to extinguish. Individual pellets are self extinguishing.

**Special fire fighting procedures:** Fire fighters should use self contained breathing apparatus due to hazards of off-gassing from burning fiberboard and polyethylene.

**Unusual fire or explosion hazards:** Individual pellets are self extinguishing. If cases of pellets are ignited, plastic will burn initially in a Class A fire. Bulk packs of pellets may sustain initial fire due to fiberboard and plastic packaging. Bulk packaging may transition from initial Class A fire to flammable solid fire (Class D) if fire is not brought under control in the initial stages.

## Section V – Health Hazard Data

**Acute effects:** Direct eye contact with pellets causes irritation. May cause skin irritation with prolonged contact.

**Emergency first aid procedures:** In case of contact: Eyes – Flush with water for 15 minutes. Broken skin – Wash skin with soap and water.

**Carcinogenicity:** Unknown.

**Signs and symptoms of exposure:** Irritation of eyes, nose, or throat. Dermatitis of the skin.

**Medical conditions generally aggravated by exposure:** Small cuts or abrasions.

**Other:** All pellet ingredients are non-toxic and byproducts of reacted pads are non-toxic. See Section VII for list of byproducts. Pellets are packaged with labels warning that "pellets and its byproducts are not intended for human consumption".

## Section VI – Reactivity Data

**Stability:**

Water activated.

**Incompatibilities:** (Specifically magnesium contained in the FiZ pellet).

Acids, acid chlorides, strong oxidizing agents.

**Reacts violently with:**

Halogens, chlorinated solvents, ammonium nitrate, carbonates, arsenic, cupric oxide, cupric sulfate, mercuric oxide, inorganic phosphates.

**Hazardous decomposition products:**

If packaging is penetrated, saturation of one pellet with water slowly produces trace amounts of hydrogen gas (a maximum of 0.2 liters).

**Hazardous polymerization:**

Will not occur.

## Section VII – Spill or Leak Procedures

**Steps to be taken in case material is released or spilled:**

Collect spilled FiZ pellets and inspect packaging;

If packaging is cracked, punctured, torn, or interior material is wetted, discard as waste below.

If packaging is undamaged, dry surfaces, and repack.

**Waste disposal Method:**

Used FiZ pellets (i.e. pellets reacted with water) may be disposed of as ordinary waste.

Unused and undamaged FiZ pellets may:

- (1). Be reacted with water in accordance with instructions and then disposed of as ordinary waste, or
- (2). Be incinerated in a waste facility, ensuring that all material is burned thoroughly.

Unused but damaged FiZ pellets should be disposed of in accordance with (1) or (2) directly above. In all circumstances, FiZ pellets must be disposed of in accordance with all applicable municipal, state, and federal waste disposal regulations.

**Pellet byproducts (reacted with water):**

Magnesium hydroxide	Milk of magnesia; common antacid; FDA listed food additive.
Elemental iron	Food enrichment grade; FDA listed food additive.
Polyethylene	Inert hydrocarbon polymer.
Sodium chloride	FDA listed food additive.
Polyethylene glycol	Trace amounts only; alcohol derivative, has been shown to cause diarrhea and hypoactivity.

**Section VIII – Special Precautions**

Fire fighters should use self contained breathing apparatus due to hazardous off-gassing of burning fiberboard and polyethylene.

**Section X – Special Precautions****Precautions to be taken in handling and storage:**

Protection against physical damage, especially the puncturing of cases during operation of fork lifts.

Protection against water including leaks, snow, rain, or flooding.

Wrapping of pallets of FiZ pellets to prevent water damage.

Coverings for small quantities of FiZ pellets (i.e. tarps, polyethylene, etc.).

Storage in general purpose warehouse or dry goods storage area.

End bays reserved for storage of FiZ pellets wherever possible. Stacks of FiZ pellets should be arranged for access to the stack's interior and/or for removal to outdoors for fire fighting.

Equipment for fighting Class-D and Class-A fires where FiZ pellets are present.

Quick response fire detection and fire fighting capabilities.

Segregation from strong oxidizers, flammable materials, or munitions.

**Other precautions:**

This MSDS shall be made readily available to the local Fire Department or Emergency Response Crew in case of an emergency.

### **Disclaimer**

The information, data, and recommendations contained herein are believed to be correct at the time of writing. All materials and mixtures may present unknown hazards and should be used with caution. When necessary and appropriate, independent opinions regarding the risk of handling or exposure should be obtained from trained professionals.

Tech

W. Stephens

ate Road 7857

s, Texas 75765

Telephone: (903) 769-0700

Fax: (903) 769-0618

Eileen Edmonson

Date: 7/10/02

ny: DOT

ou: Washington, D.C.

From: Bob Stephens

(202) 366-3012

# of pages following this sheet: 1

**FAX FAX FAX FAX FAX**

en, as we discussed, here is the MSDS for the  
STOTHERM flameless ration heater (FRH). We use the  
exact same material in our FISH ATTRACTANT PELLET.

anks for your help...BOB

1-8 Flameless heaters  
grams magnesium <sup>these</sup>  
(10 grams)

Pellets:

8 pellets hold 2 grams magnesium

Chemical <sup>is</sup> bred down is the same  
of the two

Contract pending - waiting for letters  
(In 30-40 days they want to enter market)



Operator

# Material Safety Data Sheet

Ration Supplement, Flameless Heater (FRH),  
for MREs, Ready-To-Eat (MRE)  
N/N 0070-01-321-9153

## SECTION I

Manufacturer's Name: ZESTOTHEM, INC. CAGE# 09N 04  
Address: 311 Northland Blvd., Cincinnati, OH 45248  
Telephone Number: (513) 778-3068 (Weekdays 8:00am - 5:00pm)  
Emergency Contact: CHEMTREC (800) 424-9300  
Date Prepared: August 22, 1994

## Section II - HAZARDOUS INGREDIENTS

Ingredients (all are non-toxic materials)	Weight
Magnesium (Mg) - Iron alloy	8 grams per FRH
Sodium Chloride, Salts, Working agent	
Plastic Pad (MRE)	
Polyethylene Matrix (Ingredients dispersed throughout pad)	12 grams per FRH

## SECTION III - PHYSICAL DATA

Boiling Point (F)	N/A	Specific gravity	1A
Vapor Pressure	N/A	Melting Point (F)	202(Mg)
Vapor Density	N/A	Evaporation Rate	1A
Solubility in Water	N/A	Percent Volatile by Weight	1A

Appearance and Odor: The heater is a flat grayish metal imbedded plastic pad or coating of the above described ingredients. The FRH system consists of the heater element packaged in a paperboard cover and sealed within a high density polyethylene (HDPE) bag.

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A Flammability Limits: N/A LEL: N/A UEL: N/A

### Extinguishing Media:

Use class-D agents at any stage of the fire (e.g., Met-L-Guard, LITH-X, sodium chloride, sodium carbonate (soda ash), or other extinguishing agents specifically intended for Magnesium fires).

If class D agents are insufficient to cover fire the proper action to follow is depend on the stage and size of the fire:

If detected before Mg starts to burn:

Use extinguishing agents intended for Type A, B, or C fires.

If Mg is burning (extremely intense fire with white sparks):

- (1) Flood the fire with large amounts of water with a fog nozzle (not a solid stream) or foam. The fire may intensify before coming under control.
- (2) Move burning material outdoors if possible, allow to burn completely or spread material out to extinguish. Individual FRHs are self-extinguishing.
- (3) Abandon the attack and use water to protect other structures/materials from exposure to the fire.

### Special Fire Fighting Procedures:

Fire Fighters should use self-contained breathing apparatus due to hazardous off-gassing from burning fiberboard and polyethylene.

### Unusual Fire and Explosion Hazards:

Individual FRHs are self-extinguishing. If cases of FRH are ignited, fiberboard and plastic will burn initially as a class A fire. Bulk packs (200 FRH per case) will sustain fire due to the fiberboard and plastic packing. Bulk packs will transition from initial class A fire to flammable solid fire (class D) if fire is not brought under control in initial stages.

## SECTION V - HEALTH HAZARD DATA

Acute Effects: (Requires exposure to FRH pad to damaged or no packaging causes eye irritation.

Causes skin irritation with prolonged contact.

### Emergency First Aid Procedures:

In case of contact:

Eyes: Flush eyes with water for 15 minutes.

Broken skin: Wash skin with soap and water.

Carcinogenicity: Unknown

Signs and Symptoms of Exposure: Irritation of the eyes, nose or throat. Dermatitis of the skin.

Medical Conditions Commonly Aggravated by Exposure: Small cuts, abrasions

Other:

Manufacturer certifies that all FRH ingredients are non-toxic, and by-products of reacted FRHs are non-toxic and harmless. See Section VII for list of by-products.

Individual FRHs are packaged with labels warning that "heater and its by-products are not intended for human consumption."

## SECTION VI - REACTIVITY DATA

Stability: Water Activated

Incompatibilities: (Specifically Magnesium contained within FRH)  
ACIDS, ACID Chlorides, Strong Oxidizing agents

Reacts Violently With:

Hydrogen, Chlorinated Solvents, Ammonium Nitrate, Carbonates, Arsenic, Cupric oxide, Cupric Sulfate, Manganese Oxide, Inorganic Phosphates

Hazardous Decomposition or By-products: If packing is penetrated, saturation of one FRH by water slowly produces trace amounts of hydrogen gas (Max 8 liters).

Hazardous Polymerization: Will not occur

## SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled:

Collect spilled FRHs and inspect polyethylene bags.

- If bag is cracked, punctured, torn, or interior material is wetted, discard as waste as described below.
- If bag is undamaged, dry surfaces and repackage.

### Waste Disposal Method:

Used FRHs (i.e. heaters reacted with water) may be disposed of as ordinary waste.

Unused and undamaged FRHs may:

- (1) Be reacted with water in accordance with instructions, then disposed of as ordinary waste, or
- (2) Be incinerated in a waste facility, ensuring that all material is burned thoroughly.

Unused but damaged FRHs should be disposed of in accordance with (1) or (2) directly above. In all circumstances, FRHs must be disposed of in accordance with all applicable municipal, state and federal waste disposal regulations.

FRH byproducts (reacted with water):

Magnesium Hydroxide (Milk of Magnesia - common Antacid, FDA listed food additive)

Elemental Iron (food enrichment grade - FDA-listed food additive)

Polyethylene

Silicon Dioxide (FDA listed food additive)

Wetting agent (Trace amounts only - alcohol derivative, has been shown to cause dermatitis and hypoxia)

## SECTION VIII - SPECIAL PROTECTION EQUIPMENT

Fire Fighters should use Self-Contained Breathing Apparatus due to hazardous off-gassing from burning fiberboard and polyethylene.

## SECTION IX - SPECIAL PRECAUTIONS

### Precautions to be Taken in Handling and Storage

Warehouses where large quantities of FRHs are stored should provide:

- Protection against physical damage, especially the puncturing of cases during operation of fork lifts.
- Protection against water including leaks, snow, rain or flooding.
- Wrapping of FRH pallets to prevent water damage.
- Coverings for small quantities of FRHs (e.g. bags, polyethylene, etc.)
- Storage in a general purpose warehouse or dry goods storage area.
- End bays reserved for the storage of FRHs where possible. Stacks of FRHs should be arranged for access to the stacks interior and/or for removal to the outdoors for fire fighting.
- Equipment for fighting Class-D and Class-A fires where FRHs are present.
- Quick response fire department and fire fighting capabilities.
- Segregation from strong oxidizers flammable materials or munitions.

### Other Precautions:

This MSDS shall be made readily available to the local Fire Department or Emergency Response Crew in case of an emergency.

## DISCLAIMER

The information, data, and recommendations contained herein are believed to be correct at the time of writing. All materials and mixtures may present unknown hazards and should be used with caution. When necessary or appropriate, independent opinions regarding the risk of handling or exposure should be obtained from trained professionals.

## ExoTech

Robert W. Stephens

190 Private Road 7857

Hawkins, Texas 75765

Telephone: (903) 769-0700

Fax: (903) 769-0618

To: Eileen Edmonson

Date: 7/18/02

Company: DOT

Location: Washington, D.C.

From: Bob Stephens

Fax No.: (202) 366-3012

# of pages following this sheet: 1

**FAX FAX FAX FAX FAX**

Eileen, as we discussed, here is a more legible copy of the MSDS for the ZESTOTHERM flameless ration heater (FRH). We use this same material in our FISH ATTRACTANT PELLET. Ingredients used in one pellet are as follows:

Magnesium	0.26 grams / 38.8%
Iron	0.03 grams / 4.5%
Salt	0.09 grams / 13.4%
Polyethylene Matrix	<u>0.29</u> grams / <u>43.3%</u>
TOTAL	0.67 grams / 100.0%

Also, per our discussion, I am mailing you a clear copy of the MSDS for your records. Your help is most appreciated.

Regards...BOB



Operator



# Material Safety Data Sheet

Ration Supplement, Flameless Heater (FRH),  
for Meal, Ready-To-Eat (MRE)  
NSN 8970-01-321-9153

## SECTION I

Manufacturer's Name: ZESTOTHERM, INC. CAGE: OPN 64  
Address: 311 Northland Blvd., Cincinnati, OH 45246  
Telephone Number: (513) 772-3066 (Weekdays 8:00am - 5:00pm)  
Emergency Contact: CHEMTREC (800) 424-9300  
Date Prepared: August 22, 1994

## Section II - HAZARDOUS INGREDIENTS

Ingredients (all are non-toxic material)	Weight
Magnesium (Mg) - Iron alloy	8 grams per FRH
Sodium Chloride, Silica, Wetting agent	
Plastic Pad (Matrix)	
Polyethylene Matrix (ingredients dispersed throughout pad)	12 grams per FRH

## SECTION III - PHYSICAL DATA

Boiling Point (F)	N/A	Specific gravity	N/A
Vapor Pressure	N/A	Melting Point (F)	1202(Mg)
Vapor Density	N/A	Evaporation Rate	N/A
Solubility in Water	N/A	Percent Volatile by Weight	N/A

Appearance and Odor: the heater is a flat, grayish metal imbedded plastic pad consisting of the above described ingredients. The FRH system consists of the heater element packaged in a paperboard cover and sealed within a high density polyethylene (HDPE) bag.

## SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point: N/A Flammability Limits: N/A LEL: N/A UEL: N/A

### Extinguishing Media:

Use class-D agents at any stage of the fire (sand, MetalGuard, LITH-X, sodium chloride, sodium carbonate (soda ash), or other extinguishing agents specifically intended for Magnesium fires).

If class D agents are insufficient to cover fire the proper action to follow is dependent on the stage and size of the fire:

If detected before Mg starts to burn:

Use extinguishing agents intended for Type A, B, or G fires.

If Mg is burning (extremely intense fire with white sparks):

- (1) Flood the fire with large amounts of water with a fog nozzle (not a solid stream) or foam. The fire may intensify before coming under control.
- (2) Move burning material outdoors if possible, allow to burn completely or spread material out to extinguish. Individual FRH's are self extinguishing.
- (3) Abandon the attack and use water to protect other structures/materials from exposure to the fire.

### Special Fire Fighting Procedures:

Fire Fighters should use self Contained Breathing Apparatus due to hazardous off-gassing from burning fiberboard and polyethylene.

### Unusual Fire and Explosion Hazards:

Individual FRH's are self extinguishing. If cases of FRH are ignited, fiberboard and plastic will burn initially as a class A fire. Bulk packs (288 FRH per case) will sustain initial fire due to the fiberboard and plastic packing. Bulk packs will transition from initial class A fire to flammable solid fire (class D) if fire is not brought under control in initial stages.

## SECTION V - HEALTH HAZARD DATA

Acute Effects: (Requires exposure to FRH pad to damaged or no packaging)

Causes eye irritation.

Causes skin irritation with prolonged contact.

### Emergency First Aid Procedures:

In case of contact:

Eyes - Flush eyes with water for 15 minutes.

Broken skin - Wash skin with soap and water.

Carcinogenicity: Unknown

Signs and Symptoms of Exposure: Irritation of the eyes, nose or throat. Dermatitis of the skin.

Medical Conditions Generally Aggravated by Exposure: Small cuts, abrasions

Other:

Manufacturer certifies that all FRH ingredients are non-toxic, and by-products of reacted FRHs are non-toxic and harmless. See Section VII for list of byproducts.

Individual FRHs are packaged with labels warning that "Heater and its By-products are not intended for human consumption."

## SECTION VI - REACTIVITY DATA

Stability: Water Activated

Incompatibilities: (Specifically Magnesium contained within FRH)  
Acids, Acid Chlorides, Strong Oxidizing agents

Reacts Violently With:

Halogens, Chlorinated Solvents, Ammonium nitrate, Carbonates,  
Arsenic, Cupric oxide, Cupric Sulfate, Mercuric Oxide, inorganic Phosphates

Hazardous Decomposition or By-products: If packing is penetrated, saturation of one FRH by water slowly produces trace amounts of hydrogen gas (Max 9 liters).

Hazardous Polymerization: Will not occur

## SECTION VII - SPILL OR LEAK PROCEDURES

Steps to be taken in Case Material is Released or Spilled:

Collect spilled FRHs and inspect polyethylene bags:

- If bag is cracked, punctured, torn, or interior material is wetted, discard as waste as described below.
- If bag is undamaged, dry surfaces and repackage.

Waste Disposal Method:

Used FRHs (i.e. heaters reacted with water) may be disposed of as ordinary waste.

Unused and undamaged FRHs may:

- (1) Be reacted with water in accordance with instructions, then disposed of as ordinary waste, or
- (2) Be incinerated in a waste facility, ensuring that all material is burned thoroughly.

Unused but damaged FRHs should be disposed of in accordance with (1) or (2) directly above. In all circumstances, FRHs must be disposed of in accordance with all applicable municipal, state and federal waste disposal regulations.

FRH byproducts (reacted with water):

Magnesium Hydroxide (Milk of Magnesia - common Antacid, FDA listed food additive)  
Elemental Iron (food enrichment grade - FDA listed food additive)

Polyethylene

Silicon Dioxide (FDA listed food additive)

Wetting agent (Trace amounts only - alcohol derivative, has been shown to cause diarrhea and hypoactivity)

## SECTION VIII - SPECIAL PROTECTION EQUIPMENT

Fire Fighters should use Self Contained Breathing Apparatus due to hazardous off-gassing from burning fiberboard and polyethylene.

## SECTION IX - SPECIAL PRECAUTIONS

Precautions to be Taken in Handling and Storage

Warehouses where large quantities of FRHs are stored should provide:

- Protection against physical damage, especially the puncturing of cases during operation of fork lifts.
- Protection against water including leaks, snow, rain or flooding.
- Wrapping of FRH pallets to prevent water damage.
- Coverings for small quantities of FRHs (i.e. tarps, polyethylene, etc.)
- Storage in a general purpose warehouse or dry goods storage area.
- End bays reserved for the storage of FRHs where possible. Stacks of FRHs should be arranged for access to the stack's interior and/or for removal to the outdoors for fire fighting.
- Equipment for fighting Class-D and Class-A fires where FRH's are present
- Quick response fire detection and fire fighting capabilities.
- Segregation from strong oxidizers; flammable materials or munitions.

### Other Precautions:

This MSDS shall be made readily available to the local Fire Department of Emergency Response Crew in case of an emergency.

## DISCLAIMER

The information, data, and recommendations contained herein are believed to be correct at the time of writing. All materials and mixtures may present unknown hazards and should be used with caution. When necessary or appropriate, independent opinions regarding the risk of handling or exposure should be obtained from trained professionals.

ZESTOTHERM INC

-- RATION, SUPPLEMENT, FLAMELESS HEATER (FRH)

## MSDS Safety Information

FSC: 8970  
NIIN: 01-321-9153  
MSDS Date: 02/10/1992  
MSDS Num: BMSZY  
Product ID: RATION, SUPPLEMENT, FLAMELESS HEATER (FRH)  
MFN: 01  
Responsible Party  
Cage: OPN64  
Name: ZESTOTHERM INC  
Address: 311 NORTHLAND BLVD  
City: CINCINNATI OH 45246  
Info Phone Number: 513-489-1022  
Emergency Phone Number: 513-772-3066  
Review Ind: Y  
Published: Y

*Zesto them MSDS (Internet)  
for same product  
does not match  
MSDS submitted  
by Mr. Stephens.  
EE.*

## Contractor Summary

Cage: OPN64  
Name: ZESTOTHERM INC  
Address: 311 NORTHLAND BLVD  
City: CINCINNATI OH 45246  
Phone: 513-772-3066

## Item Description Information

Item Manager: S9S  
Item Name: RATION SUPPLEMENT, FLAMELESS HEATER, FOR MEAL, READY-TO-EAT  
Specification Number: MIL-H-44398  
Unit of Issue: BX  
Quantitative Expression: 00000000288EA  
UI Container Qty: 1  
Type of Container: FIBERBOARD BX

## Ingredients

Cas: 7439-95-4  
RTECS #: OM2100000  
Name: MAGNESIUM  
% Wt: UNKNOWN  
Other REC Limits: NONE SPECIFIED  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED

Cas: 7647-14-5  
RTECS #: VZ4725000  
Name: SODIUM CHLORIDE  
% Wt: 3%  
Other REC Limits: NONE SPECIFIED  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED

Cas: 60676-50-0  
Name: SILICA  
% Wt: 3%  
Other REC Limits: NONE SPECIFIED  
OSHA PEL: NOT ESTABLISHED  
ACGIH TLV: NOT ESTABLISHED

Name: WETTING AGENT (TYPE NOT SPECIFIED-PROPRIETARY)

% Wt: <1%  
 Other REC Limits: NONE SPECIFIED  
 OSHA PEL: UNKNOWN  
 ACGIH TLV: UNKNOWN

Name: HIGH DENSITY POLYETHYLENE  
 % Wt: 3%  
 Other REC Limits: NONE SPECIFIED  
 OSHA PEL: NOT ESTABLISHED  
 ACGIH TLV: NOT ESTABLISHED

Name: ULTRAHIGH MOLECULAR WEIGHT POLYETHYLENE  
 % Wt: 47%  
 Other REC Limits: NONE SPECIFIED  
 OSHA PEL: NOT ESTABLISHED  
 ACGIH TLV: NOT ESTABLISHED

#### Health Hazards Data

LD50 LC50 Mixture: LD50 (ORAL RAT) IS UNKNOWN  
 Route Of Entry Inds - Inhalation: NO  
 Skin: YES  
 Ingestion: YES  
 Carcinogenicity Inds - NTP: NO  
 IARC: NO  
 OSHA: NO  
 Effects of Exposure: ACUTE EFFECTS: [REQUIRES EXPOSURE TO FRH PAD DUE TO DAMAGED OR NO PACKAGING] CAUSES EYE IRRITATION. CAUSES SKIN IRRITATING WITH PROLONGED CONTACT.  
 Explanation Of Carcinogenicity: THIS COMPOUND CONTAINS NO INGREDIENTS AT CONCENTRATIONS OF 0.1% OR GREATER THAT ARE CARCINOGENS OR SUSPECT CARCINOGENS.  
 Signs And Symptions Of Overexposure: IRRITATION OF THE EYES, NOSE OR THROAT. DERMATITIS OF THE SKIN.  
 Medical Cond Aggravated By Exposure: SMALL CUTS, ABRASIONS.  
 First Aid: IN CASE OF CONTACT: EYES-FLUSH EYES WITH WATER FOR AT LEAST 15 MINUTES. BROKEN SKIN-WASH WITH SOAP AND WATER.

#### Handling and Disposal

Spill Release Procedures: COLLECT SPILLED FRH AND INSPECT POLYETHYLENE BAG: IF BAG IS CRACKED, PUNCTURED, TORN OR INTERIOR MATERIAL IS WETTED, DISCARD AS WASTE. IF BAG IS UNDAMAGED, DRY SURFACES AND REPACKAGE.  
 Waste Disposal Methods: USED FRH MAY BE DISPOSED OF AS ORDINARY WASTE. UNUSED & UNDAMAGED FRH MAY BE REACTED WITH WATER, THEN DISPOSED OF AS ORDINARY WASTE OR BE INCINERATED IN A WASTE FACILITY, ENSURING THAT ALL MATERIAL IS BURNED THOROUGHLY.  
 Handling And Storage Precautions: PROTECT AGAINST PHYSICAL DAMAGE. PROTECT AGAINST WATER INCLUDING LEAKS, SNOW, RAIN OR FLOODING. SEGREGATE FROM STRONG OXIDIZERS, FLAMMABLES, MUNITIONS  
 Other Precautions: STORAGE CONTINUED---WRAP FRH PALLETS TO PREVENT WATER DAMAGE-COVER SMALL QUANTITIES OF FRHS-STORE IN A GENERAL PURPOSE WAREHOUSE OR DRY GOODS AREA-END BAYS RESERVED FOR THE STORAGE OF FRHS WHERE POSSI BLE.

#### Fire and Explosion Hazard Information

Extinguishing Media: USE CLASS-D AGENTS AT ANY STAGE OF THE FIRE OR OTHER EXTINGUISHING AGENTS SPECIFICALLY INTENDED FOR MAGNESIUM FIRES.  
 Fire Fighting Procedures: FIRE FIGHTERS SHOULD USE SELF CONTAINED BREATHING APPARATUS DUE TO HAZARDOUS OFF-GASSING FROM BURNING FIBERBOARDS AND POLYETHYLENE.  
 Unusual Fire/Explosion Hazard: INDIVIDUAL FRH'S ARE SELF EXTINGUISHING. SEE SUPPLEMENTARY DATA.

## Control Measures

Respiratory Protection: FIREFIGHTERS SHOULD USE SELF-CONTAINED BREATHING APPARATUS DUE TO HAZARDOUS OFF-GASSING FROM BURNING FIBERBOARD AND POLYETHYLENE.

Ventilation: NONE SPECIFIED BY MANUFACTURER.

Protective Gloves: WEAR APPROPRIATE PROTECTIVE GLOVES.

Eye Protection: NONE SPECIFIED BY MANUFACTURER.

Other Protective Equipment: NONE SPECIFIED BY MANUFACTURER.

Work Hygienic Practices: NONE SPECIFIED BY MANUFACTURER.

Supplemental Safety and Health: FRH SYSTEM CONSISTS OF A HEATER ELEMENT PACKAGED IN A PAPERBOARD COVER & SEALED WITHIN A HIGH DENSITY POLYETHYLENE BAG. FIRE-BULK PACKAGES WILL SUSTAIN INITIAL FIRE DUE TO THE FIBERBOARD & PLASTIC PACK AGING. BULK PACKS WILL TRANSITION FROM CLASS A FIRE TO FLAMMABLE SOLID FIRE, CLASS D.

## Physical/Chemical Properties

HCC: R2

M.P/F.P Text: 1202F, 650C

Appearance and Odor: HEATER ELEMENT IS FLAT, GRAYISH METAL IMBEDDED IN PLSTIC. SEE SUPPLEMENTARY DAT

## Reactivity Data

Stability Indicator: YES

Stability Condition To Avoid: WATER ACTIVATED.

Materials To Avoid: ACIDS, ACID CHLORIDES, STRONG OXIDIZING AGENTS.

Hazardous Decomposition Products: IF PACKAGE IS PENETRATED, SATURATION OF ONE FRH BY WATER SLOWLY PRODUCES TRACE AMOUNTS OF HYDROGEN GAS.

Hazardous Polymerization Indicator: NO

Conditions To Avoid Polymerization: NOT RELEVANT

## Toxicological Information

## Ecological Information

## MSDS Transport Information

## Regulatory Information

## Other Information

## Transportation Information

Responsible Party Cage: OPN64

Trans ID NO: 125304

Product ID: RATION, SUPPLEMENT, FLAMELESS HEATER (FRH)

MSDS Prepared Date: 02/10/1992

Review Date: 06/16/1997

MFN: 1

Tech Entry NOS Shipping Nm: (MAGNESIUM METAL-IRON-POLYETHYLENE MIXTURE)

AF MMAC Code: NR

DOD Exemption NUM: DOT-E-10897

Multiple KIT Number: 0

Review IND: Y

Unit Of Issue: BX

Container QTY: 1

Type Of Container: FIBERBOARD BX

Additional Data: DOT-E-10897 FOR DOMESTIC TRANSPORT ONLY; PKGS EXEMPTED FROM MARKING/LABELING/PSN. ALL OTHER RESTRICT IONS APPLY. DOT- E-10897 EXPIRES 30JUN98 PER DOT REV.#2 DTD. 17JUL96. DOT DENIED CAA. PER MTMC, OVERSEAS SHPMNT MAY BE AIRLIFTED BY MIL AIR. (HISTORY 95263 NEWMAN

## =====

## Detail DOT Information

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DOT PSN Code: XXX

## =====

## Detail IMO Information

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IMO PSN Code: PLW

IMO Proper Shipping Name: WATER-REACTIVE SOLID, N.O.S. o

IMDG Page Number: 4368

UN Number: 2813

UN Hazard Class: 4.3

IMO Packaging Group: I/II/III

Subsidiary Risk Label: -

EMS Number: 4.2-08

MED First Aid Guide NUM: T

## =====

## Detail IATA Information

=====

IATA PSN Code: ZND

IATA UN ID Num: 2813

IATA Proper Shipping Name: WATER-REACTIVE SOLID, N.O.S. \*

IATA UN Class: 4.3

IATA Label: DANGEROUS WHEN WET

UN Packing Group: I

Packing Note Passenger: FORB

Max Quant Pass: FORB

Max Quant Cargo: 15 KG

Packaging Note Cargo: 411

Exceptions: A3

## =====

## Detail AFI Information

=====

AFI PSN Code: ZND

AFI Symbols: \*

AFI Proper Shipping Name: WATER-REACTIVE SOLID, N.O.S.

AFI Hazard Class: 4.3

AFI UN ID NUM: UN2813

AFI Packing Group: I

Special Provisions: P3, N40

Back Pack Reference: A8.4

## =====

## HAZCOM Label

=====

Product ID: RATION, SUPPLEMENT, FLAMELESS HEATER (FRH)

Cage: 0PN64

Company Name: ZESTOTHERM INC

Street: 311 NORTHLAND BLVD

City: CINCINNATI OH

Zipcode: 45246

Health Emergency Phone: 513-772-3066

Label Required IND: Y

Date Of Label Review: 09/18/1995

Status Code: C

MFG Label NO: UNKNOWN

Label Date: 09/18/1995

Origination Code: F

Skin Protection IND: YES

Signal Word: CAUTION

Respiratory Protection IND: YES

Health Hazard: Slight  
Contact Hazard: Slight  
Fire Hazard: None  
Reactivity Hazard: None

Hazard And Precautions: ACUTE EFFECTS: [REQUIRES EXPOSURE TO FRH PAD DUE TO DAMAGED OR NO PACKAGING] EYE IRRITATION, SKIN IRRITATING. INDIVIDUAL FRH'S ARE SELF EXTINGUISHING. IN CASE OF SPILL: COLLECT SPILLED FRHS AND INSPECT POLYETHYLENE BAGS: IF BAG CRACKED, PUNCTURED, TORN OR INTERIOR MATERIAL IS WETTED, DISCARD AS WASTE. IF BAG IS UNDAMAGED, DRY SURFACES AND REPACKAGE. PROTECT AGAINST PHYSICAL DAMAGE. PROTECT AGAINST WATER INCLUDING LEAKS, SNOW, RAIN OR FLOODING. SEGREGATE FROM STRONG OXIDIZERS, FLAMMABLES, MUNITIONS FIRST AID: IN CASE OF CONTACT: EYES-FLUSH EYES WITH WATER FOR AT LEAST 15 MINUTES. BROKEN SKIN-WASH WITH SOAP AND WATER. TARGET ORGANS: EYES, SKIN.

=====

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**Vice President of Operations**  
**Exotherm Technology, Inc. (ExoTech)**  
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**Plano, Texas 75093**

7000 1670 0010 7826 4119

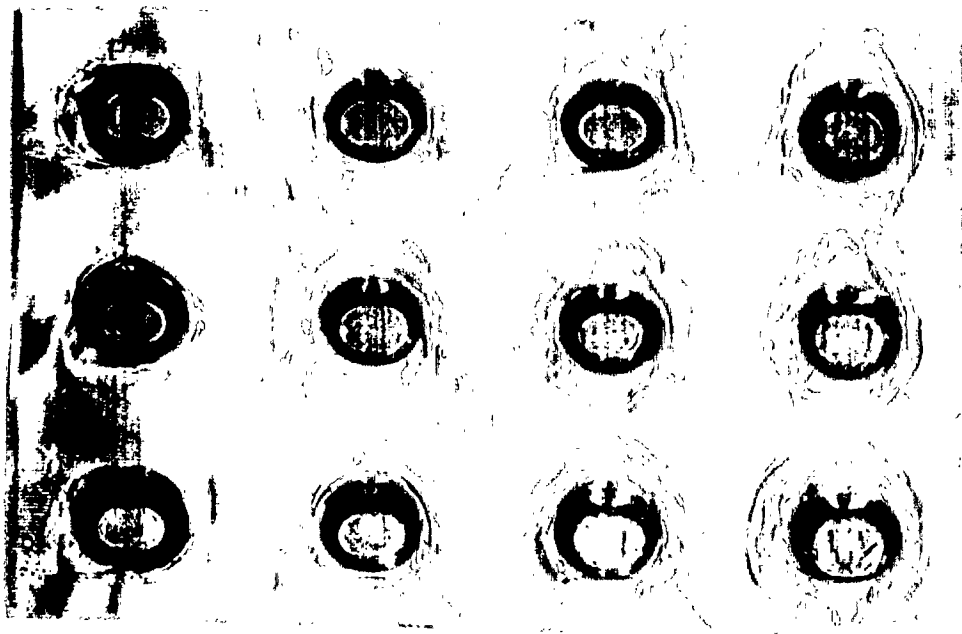
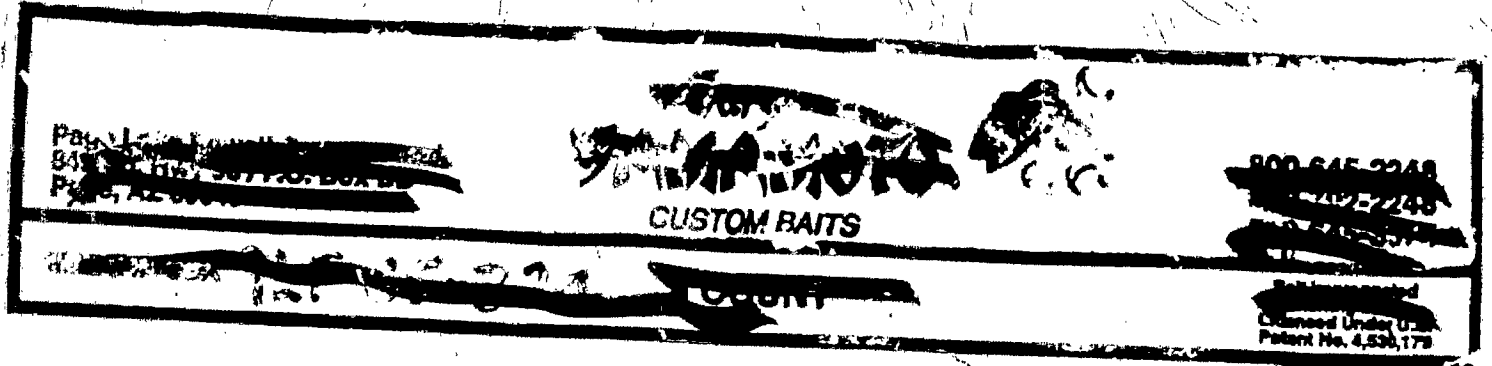


**CERTIFIED MAIL**

**Mr. Edward T. Mazzullo**  
**Director, Office of Hazardous Materials Standards**  
**U.S. Department of Transportation**  
**400 Seventh Street, S.W.**  
**Washington, D.C. 20590**

8321

# SIMILAR PACKAGE





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8321

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