



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

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

AUG 12 2004

Ms. Kelly V. Camp  
Senior Project Manager  
ESS Group, Inc.  
401 Wampanoag Trail  
Suite 400  
East Providence, RI 02915

Ref No.: 04-0134

Dear Ms. Camp:

This is in response to your letter dated May 18, 2004 requesting clarification of the hazard precedence, shipping description, and packaging requirements found in the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Specifically, you provide the scenario where ten to twelve blister packs or small boxes intended for retail sale would be placed into cardboard boxes for shipment containing different hazardous material product combinations. You ask several questions regarding each product combination.

You indicate that you ship products that may be combinations of hydrogen peroxide, methanol, nitromethane, nitrous acid, and/or water in varying concentrations and that you assume corrosive, flammable, and/or oxidizer characteristics for these mixtures based on the properties of the individual constituents. Please be aware that mixing different hazardous and non-hazardous materials may alter the hazard characteristics of the constituents in the mixture; thus, the mixture may or may not exhibit the hazard characteristics of one or all of the constituents. It is essential that the end mixture, rather than the components of the mixture, be analyzed to determine if it meets one or more of the hazard classes defined in the HMR.

Based on the information that you provided in your letter and assuming that the product combinations exhibit the characteristics as described, your questions are paraphrased and answered as follows:

Q1. Your product contains various concentrations of hydrogen peroxide (20% - 39%), methanol (4% - 13%), and water (48% - 76%). You state that the material exhibits three hazards – Class 3 (PG III), Division 5.1 (PG II), and Class 8 (PG II). You indicate that, based on the Precedence of Hazards table in § 173.2a, the order of hazard would be Division 5.1 PG II, Class 8 PG II, and Class 3 PG III. Is this method of determining the precedence of hazards correct? What is the appropriate shipping description for the material? Must the tertiary hazard of the material be included in the shipping



040134

172.101  
172.402

description? Must the package display a Class 3 label for transportation by highway or rail?

A1. Your understanding concerning the precedence order is correct. In descending order, the hazard precedence for the material you describe is Division 5.1 PG II, Class 8 PG II, and Class 3 PG III. It is our opinion that the most appropriate proper shipping description for this material is "Oxidizing liquid, corrosive, n.o.s., (hydrogen peroxide, methanol), 5.1 (8), UN3098, PG II."

Under Docket HM-215E (68 FR 44992; July 31, 2003) § 172.202(a)(2) was revised to require the subsidiary hazard classes or subsidiary division numbers to be entered in parentheses immediately following the primary hazard class or division number. This change became effective on October 1, 2003 and has a delayed compliance date of October 1, 2005 (see § 171.14(d)(7)). After that you will be required to identify all subsidiary hazards on the shipping paper. Additionally, you are correct regarding your labeling obligations. In accordance with § 172.402(a)(2), you are not required to label for a subsidiary hazard of Class 3, PG III.

Q2. You transport products consisting of the following components: (1) 19% hydrogen peroxide, 7% methanol, and 74% water; (2) 19% hydrogen peroxide, 50% nitromethane, and 31% water; and (3) 8% hydrogen peroxide, 12% methanol, 24% nitrous acid, and 65% water. You indicate that all three products meet the classification criteria for Class 3, PG II and Division 5.1, PG II or PG III. How is the precedence of hazard determined for these materials? What is an acceptable shipping description? How are the materials treated for international shipments?

A2. Although the Precedence of Hazard table in § 173.2a of the HMR does not establish hazard precedence for materials classed as both Division 5.1 and Class 3, we have determined that the oxidizer hazard take precedence over the flammable hazard. An appropriate proper shipping name for the materials you describe for both domestic and international transportation is "Oxidizing liquid, n.o.s., UN3139." The requirements for the basic shipping description are in § 172.202.

Q3. Are limited quantities and consumer commodities subject to the requirements of §§ 173.24 and 173.24a?

A3. Materials utilizing the limited quantity or consumer commodity exception must conform to the packaging requirements of subpart B of Part 173. Therefore, limited quantities and consumer commodities are subject to §§ 173.24 and 173.24a.

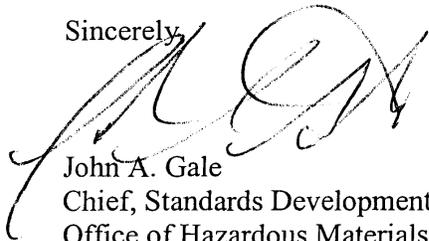
Q4. What marking, labeling, and packaging requirements apply to the package, and where should they be applied? Do the same making, labeling, and packaging requirements apply to a consumer commodity package? How do I determine the quantity of material that is counted toward the aircraft quantity limitations?

A4. Hazardous materials labels and markings are a form of hazard communication; therefore, they are required to be visibly marked on the outer packaging of a combination

package. For detailed information on the marking and labeling requirements please refer to Part 172, Subparts D and E, respectively. Specific information on the ORM-D marking is found in § 172.316. For detailed information on hazardous material packaging requirements, refer to the applicable packaging section provided in Column 8 of the HMT. According to § 172.101(j)(2), the quantity limitation for aircraft is expressed as a net quantity except where otherwise specified, such as for “Consumer commodity” which specifies “30 kg gross” (gross mass is defined in § 171.8). The net quantity is the actual amount of hazardous material contained in the completed package. Additionally, compatible hazardous materials with different quantity limitations, when packaged together in combination packaging, may not exceed the lowest permitted maximum net quantity per package (§ 173.24a(c)(1)(iv)).

I hope this information is helpful. Please contact us if you require additional assistance.

Sincerely,

A handwritten signature in black ink, appearing to read 'JAG', is written over the word 'Sincerely,'.

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



Engineers  
Scientists  
Consultants

May 18, 2004

Mr. Edward T. Mazzullo  
Director, Office of Hazardous Materials Standards  
U.S. DOT/RSPA (DHM-10)  
400 7th Street S.W.  
Washington, D.C. 20590-0001

Supko  
§ 172.101  
§ 172.402  
Shipping Name  
04-0134

601 Main Street  
Suite 400  
East Providence  
Rhode Island  
02912  
P 401-434-0040  
F 401-434-8108

**Re: Questions About Hazard Precedence, Shipping Descriptions, and Packaging**

Dear Mr. Mazzullo:

A company has a product intended to be packaged in containers with a capacity of 12 ounces or less containers for retail sale. The product is in the early stages of development, but could contain any of the combinations of materials described below. The company wishes to place two of these containers into a blister pack or small cardboard box. These would be the packages for retail sale. Ten to twelve of the blister packs or small boxes would be placed in larger cardboard boxes for shipment. Questions on each product combination are listed below.

1. The product could contain various concentrations of hydrogen peroxide (20% - 39%), methanol (4% - 13%), and water (48% - 76%). Based on measured flash point of between 101°F and 141°F (Class 3 PGIII), and assumed corrosive and oxidizer characteristics (both PGII), this material would exhibit three DOT hazards: Class 3, Division 5.1, and Class 8. The material cannot be re-classed as a combustible liquid because the material meets the definition of other DOT hazard classes. The precedence of Hazard Table in 49 CFR 173.2a shows that a Division 5.1 PGII hazard takes precedence over Class 8 PGII liquid and that Class 8 PGII liquid takes precedence over Class 3 PGIII, but there is no information about the precedence for Division 5.1 PGII and Class 3 PGIII materials. Based on this, it would seem that the order of hazards is Division 5.1 PGII, Class 8 PGII, Class 3 PGIII. There does not appear to be a shipping description that addresses all three hazards.
  - a. Is the method of determining the precedence of hazard described above correct?
  - b. Are both "hydrogen peroxide, aqueous solution, 5.1 (8), UN2014, II" and "oxidizing liquid, corrosive, n.o.s., (hydrogen peroxide, methanol) 5.1 (8), UN3098, II" appropriate shipping descriptions?
  - c. Are there other appropriate shipping descriptions?
  - d. For international shipments, methanol is regulated as a Class 3 and Division 6.1 material. How does this affect the shipping descriptions for international shipments?
  - e. It appears that in accordance with 49 CFR 172.402(a)(2), the package would not have to be labeled with a Class 3 label for transportation by rail or highway. Is this correct?
  - f. In accordance with a July 22, 1998 letter from Delmer F. Billings to Mr. Scott Waddell, it appears that the tertiary hazard of the material would not have to be included in the proper shipping description. Is this correct?
2. The product consists of 19% hydrogen peroxide, 7% methanol, and 74% water. Based on a measured flash point of 141°F, and an assumed oxidizer characteristic of PGIII (the material is assumed not to be corrosive based on the fact that hydrogen peroxide at concentrations less than 20% is not identified in the Hazardous Materials Table as being

S:\Corresp and Guidance\DOT\0517.doc



- corrosive), this material would exhibit two DOT hazards: Class 3 and Division 5.1. The material cannot be re-classed as a combustible liquid because the material meets the definition of another DOT hazard class. There does not appear to be a means in 49 CFR 173.2a to determine the precedence of hazard for the Division 5.1 PGIII and Class 3 PGII.
- a. How is the precedence of hazard determined for the above material?
  - b. What would be an acceptable shipping description, including the addition of technical names, if required, for this material?
  - c. For international shipments, methanol is regulated as a Class 3 and Division 6.1 material. How does this affect the shipping descriptions for international shipments?
3. The product consists of 19% hydrogen peroxide, 50% nitromethane, and 31% water. Based on an assumed flash point of 95°F, and an assumed oxidizer characteristic of PGIII (the material is assumed not to be corrosive based on the fact that hydrogen peroxide at concentrations less than 20% is not identified in the Hazardous Materials Table as being corrosive), this material would exhibit two DOT hazards: Class 3 and Division 5.1. The material cannot be re-classed as a combustible liquid because the material meets the definition of another DOT hazard class. There does not appear to be a means in 49 CFR 173.2a to determine the precedence of hazard for the Division 5.1 PGIII and Class 3 PGII.
- a. How is the precedence of hazard determined for the above material?
  - b. What would be an acceptable shipping description, including the addition of technical names, if required, for this material?
4. The product consists of 8% hydrogen peroxide, 12% methanol, 24% nitrous acid, and 56% water. Based on an assumed flash point of 110°F, and an assumed oxidizer characteristic of PGII or PGIII (the material is assumed not to be corrosive based on the fact that hydrogen peroxide at concentrations less than 20% is not identified in the Hazardous Materials Table as being corrosive), this material would exhibit two DOT hazards: Class 3 and Division 5.1. The material cannot be re-classed as a combustible liquid because the material meets the definition of another DOT hazard class. There does not appear to be a means in 49 CFR 173.2a to determine the precedence of hazard for the Division 5.1 PGII or PGIII and Class 3 PGII.
- a. How is the precedence of hazard determined for the above material?
  - b. If the material is a PGII oxidizer, what would be an acceptable shipping description, including the addition of technical names, if required, for this material?
  - c. If the material is a PGIII oxidizer, what would be an acceptable shipping description, including the addition of technical names, if required, for this material?
  - d. For international shipments, methanol is regulated as a Class 3 and Division 6.1 material. How does this affect the shipping descriptions for international shipments?
5. Depending on the responses to the questions above, the material may be able to be managed as a limited quantity and may be able to be renamed "Consumer Commodity" and re-classed as ORM-D material. Are such materials not subject to the regulations in 49 CFR 173.24 and 173.24a?
6. Given the packaging described above:
- a. If the product can be re-classed as ORM-D material, what marking, labeling, and packaging requirements apply to the product package, to the blister pack or small cardboard box (retail package), and to the cardboard box for shipment?





Mr. Edward T. Mazzullo  
May 18, 2004

- b. If the product cannot be re-classed as ORM-D material, what marking, labeling, and packaging requirements apply to the product package, to the blister pack or small cardboard box (retail package), and to the cardboard box for shipment?
- c. For the packaging scenario described above, which quantities are counted toward aircraft quantity limitations (assuming the material can be shipped by aircraft): the quantity in the product container, the quantity in the retail package, or the quantity in the shipping package?

I can be reached at (401) 330-1236 if you have any questions or need further information in order to provide specific responses. I greatly appreciate your expeditious review and response. Thank you for your help.

Sincerely,

**ESS GROUP, INC.**



Kelly W. Camp CHMM  
Senior Project Manager

