



U.S. Department  
of Transportation

**Pipeline and Hazardous  
Materials Safety  
Administration**

1200 New Jersey Avenue, SE  
Washington, D.C. 20590

AUG 02 2016

Mr. William Weddle  
NA Logistics/Warehousing Manager  
Technology Solutions  
1 Heilman Avenue  
Willow Island, WV 26134

Reference No. 16-0080

Dear Mr. Weddle:

This letter is in response to your May 5, 2016 email and May 27, 2016 emails, attachments, and telephone conversation requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the transport of a two-part prepolymer-urethane system that becomes reactive when mixed. Specifically, you state this system consists of two cartridges—one that contains a curative and the other that contains a prepolymer—placed side by side in a manual or pneumatic dispenser with one point opening at the end that is designed to permit the combination of these materials before application.

In addition, you provide the following information:

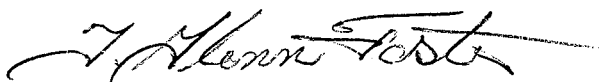
- Your company sells two types of curatives it describes as “DM-5183, Part A Curative,” and “DPDM-28502, Part B Urethane Curative.” It has assigned both curatives the proper shipping description “UN 3082, Environmentally hazardous substance, liquid, n.o.s., 9 (miscellaneous), Packing Group (PG) III (Phenylmercuric acetate), Marine Pollutant.”
- Your company sells two types of prepolymers it describes as “DPDM-28502, Part A Urethane Prepolymer” and “DM-5183, Part B Urethane Prepolymer.” It has assigned Part A prepolymer the proper shipping description “UN 2810, Toxic liquid, organic, n.o.s, 6.1, PG II (4,4’-methylenedicyclohexyl diisocyanate),” and Part B prepolymer the proper shipping description “UN 2290, Isophorone diisocyanate mixture, 6.1 (poisonous), PG III.”
- Combined, the two cartridges contain either 200 mL or 400 mL of liquefied material. Part A and B materials create a mild exothermal reaction of 50 °C (122 °F) to 60 °C (140 °F) for a few minutes when mixed until the resin has cured.

We have paraphrased and answered your questions as follows:

- Q1. You ask for the definition of “dangerous evolution of heat” under the HMR.
- A1. While the HMR do not specifically define “dangerous evolution of heat” it is described as “an amount of heat sufficient to be dangerous to packaging or personal safety to include charring of packaging, melting of packaging, scorching of packaging, or other evidence” in examples provided in the following sections: §§ 171.15(b)(6); 171.16(b)(5); 172.102(c), Special Provision 130, paragraph (a); and 173.159a(b). Further, § 173.21(e) states that a material may not be placed in the same packaging, freight container, or overpack with another material if, when mixed, these materials may possibly cause a dangerous evolution or heat; flammable or poisonous gas or vapor; the formation of a corrosive material. In addition, § 173.24(e)(4) requires that the materials may not form an asphyxiant gas or unstable material.
- Q2. You ask if the Part A and B prepolymer-urethane materials you described can be shipped as a two-part, joint plunger-type system in an inner packaging that is placed in a United Nations (UN) 4G fiberboard box.
- A2. The answer is yes. Section 173.24a(c)(1)(ii) requires packages of mixed contents to meet the performance test criteria in Part 178 of the HMR and to conform to the relevant packaging sections of Part 173 that apply to each material within the packaging. You discussed with my staff the possibility that that material may be described as “UN 3269, Polyester resin kit, 3 (flammable liquid)”; however, please note this description applies to kits consisting of Class 3 and Division 5.2 (organic peroxide) only.
- Q3. You ask if the HMR require completed packages that contain samples of the joint-plunger cartridge system you described to have a UN marking and certification.
- A3. If shipped as a limited quantity and a determination is made that the mixing of the materials in the same packaging is not likely to cause a dangerous evolution of heat, flammable or poisonous gases or vapors, or corrosive materials, a UN standard packaging is not required. Limited quantity packagings are excepted from the specification packaging requirements of the HMR.

I hope this information is helpful. Please contact us if we be of further assistance.

Sincerely,



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

Edmonson

173.21

Forbidden materials and packages

16-0080

**Goodall, Shante CTR (PHMSA)**

**From:** INFOCNTR (PHMSA)  
**Sent:** Friday, May 06, 2016 12:03 PM  
**To:** Hazmat Interps  
**Subject:** FW: HMR 49CFR Parts 171-180 173.21 173.24  
**Attachments:** DOT Cartridge.docx

Hi Shante/Alice,

Please submit this as a letter of interpretation. I spoke with Mr. Weddle.

Please let me know if you have any questions.

Thanks,  
Jordan

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**From:** Weddle, William [<mailto:william.weddle@solvay.com>]  
**Sent:** Thursday, May 05, 2016 10:50 AM  
**To:** INFOCNTR (PHMSA)  
**Subject:** HMR 49CFR Parts 171-180 173.21 173.24

Please review and advise.  
Thank You,

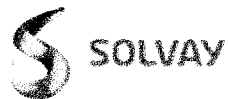
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**William Weddle**

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U.S. Department of Transportation

May 5, 2016

**Pipeline and Hazardous Materials Safety Administration**

1200 New Jersey Avenue, SE  
East Building, 2nd Floor  
Washington, DC 20590

We are requesting Clarification regarding the application of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180). Packaging of cartridges and Regulatory reference regarding mixing of reactive materials; 173.21, 173.24

We have several products that we would like to ship in a joined syringe type cartridge so the customer could get a constant mixture flow from the tip to allow for optimal performance of the product.

The products Part A & Part B are currently packed in a single cartridge and the two parts are shipped in separate 4G boxes.

We have a mixture of Hazardous and NON Hazardous Parts A and B.

**DM-5183 Part A Curative**

Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s.

Hazard Class: 9  
Packing Group: III  
UN/ID Number: UN3082  
Transport Label Required: Miscellaneous  
Marine Pollutant  
Marine Pollutant  
Technical Name (N.O.S.): Phenylmercuric acetate

Hazardous Substances/Reportable Quantities - DOT requirements specific to Hazardous Substances only apply if the quantity in one package equals or exceeds the product reportable quantity.

Marine Pollutants - DOT requirements specific to Marine Pollutants do not apply to non-bulk packagings transported by motor vehicles, rail cars or aircraft

**DM-5183 Part B Urethane Prepolymer**

Proper Shipping Name: Isophorone diisocyanate mixture  
Hazard Class: 6.1  
Packing Group: III  
UN/ID Number: UN2290  
Transport Label Required: Toxic

**DPDM-28502 Part A Urethane Prepolymer**

Proper Shipping Name: Toxic liquid, organic, n.o.s.  
Hazard Class: 6.1  
Packing Group: II  
UN/ID Number: UN2810  
Transport Label Required: Toxic  
Technical Name (N.O.S.): 4,4'-methylenedicyclohexyl diisocyanate

## DPDM-28502 Part B Urethane Curative

Proper Shipping Name: Environmentally hazardous substance, liquid, n.o.s.

Hazard Class: 9

Packing Group: III

UN/ID Number: UN3082

Transport Label Required: Miscellaneous

Marine Pollutant

Marine Pollutant

Technical Name (N.O.S.): Phenylmercuric acetate

Marine Pollutants - DOT requirements specific to Marine Pollutants do not apply to non-bulk packaging's transported by motor vehicles, rail cars or aircraft.

**The cartridges are sample shipments; I have attached the type of cartridges we would prefer to use.**

The size relates to the total volume capacity of both sides of the cartridges

1 to 1	2 to 1	4 to 1
50ml	50 ml	50 ml
200ml	200 ml	200 ml
400ml	400 ml	400 ml



200mL cartridge  
Systems (1).pdf



400 mL cartridge  
Systems (1).pdf

For Clarification

Q1: What is the definition of "dangerous evolution of heat"? Parts A & B create a Mild exothermal of 50C to 60C when mixed.

Q2: Can Parts A&B be shipped in a two part joined plunger type cartridge as an inner package in a 4G Fiberboard box?

Q3: For the Hazardous sample shipments is it a requirement that the cartridge have a UN marking and certification?

Sincerely,

*William C. Weddle*

**William Weddle**

Technology Solutions

NA Logistics/Warehousing Manager

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