



U.S. Department of Transportation
**Pipeline and Hazardous Materials
Safety Administration**

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

FEB 08 2011

Gregory S. Phillips
Global Dangerous Goods Regulatory Process Manager
Ashland, Inc.
5200 Blazer Parkway, DS-4
Dublin, OH, 43017

Reference No.: 10-0244

Dear Mr. Phillips:

This is in response to your request for clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to segregation of hazardous materials. Specifically, you request guidance regarding the transport of Furfuryl alcohol based resins and acid catalysts on the same transport vehicle. You suggest that there is currently no prohibition in the HMR for transporting these materials together and that the transport of these products together can result in a highly exothermic reaction. Your questions and concerns are addressed below.

The segregation requirements for transportation by highway specify that hazardous materials may not be loaded, transported, or stored together except as provided in § 177.848. According to your incoming letter and subsequent emails with Rob Benedict of my staff, the Furfuryl alcohol based resin products you transport are “UN 2874, Furfuryl alcohol, Division 6.1, Packing Group (PG) III” or “UN 2810, Toxic liquid, organic, n.o.s., Division 6.1, PG III” while the acid catalysts you transport are “UN2924, Flammable liquid, corrosive, n.o.s., Class 3, 8, PG III,” “UN2586, Alkylsulfonic acids, Class 8, PG III” or “UN3264, Corrosive liquid, acidic, inorganic, n.o.s., Class 8, PG III.” Based on the classification of these materials, the segregation table found in § 177.848(d) does not explicitly prohibit these products from being transported together by highway. However, as specified in § 173.21(e), it is forbidden to offer for transportation or transport “[a] material in the same packaging, freight container, or overpack with another material, the mixing of which is likely to cause a dangerous evolution of heat, or flammable or poisonous gases or vapors, or to produce corrosive materials.” Therefore, regardless of the segregation requirements in § 177.848, if the hazardous materials offered or transported will dangerously react when placed together in the same packaging, freight container or overpack they are forbidden to be transported together.


In accordance with § 173.22 of the HMR, it is the shipper's responsibility to properly class a hazardous material and assign it a proper shipping name from the Hazardous Materials Table (HMT; § 172.101). It is also the shipper's responsibility to segregate incompatible hazardous materials before offering them for transportation in commerce and to determine if the quantity and characteristics of those materials offered would cause a dangerous evolution of heat,

flammable or poisonous vapors if mixed. This Office does not perform that function. However, based on the information and photographs you provided, it is the opinion of this Office that the materials you described cause a dangerous evolution of heat and should not be transported in the same packaging, freight container or overpack.

We recognize the concerns that you have regarding the transport of Furfuryl alcohol based resins and acid catalysts on the same vehicle, and we believe that these concerns are sufficiently addressed by the HMR as discussed above. However, if you believe that the existing requirements in the HMR are not sufficient, you may submit a petition to amend the HMR in accordance with the procedures set forth in 49 CFR Part 106.

I hope this satisfies your inquiry. Please contact us if we can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "T. Glenn Foster". The signature is fluid and cursive, with a long horizontal stroke at the end.

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



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Benedict
§172.101
§177.834
Applicability Loading/Unloading
10-0244

November 10, 2010

Dear Sirs:

This letter is a request for guidance regarding potential hazards associated with the transport of furfuryl alcohol based resins on the same vehicle with acid catalysts. Ashland Inc. and others manufacture these resin-catalyst systems commonly used in the foundry industry and are often sold as a resin "system", i.e. paired products. Our concerns lie with the danger of transporting these resins and catalysts together since they react violently when accidentally mixed. Current hazardous materials segregation requirements do not prohibit transportation of these materials (toxic and corrosive) together. We request advice regarding how best to manage this issue.

In the use of this resin system, the resin and the catalyst are mixed together with sand which mediates the reaction resulting in a harmless chemical bonding process to yield a solid final product. When mixed in the absence of sand, however, a violent exothermic reaction results. A small amount of catalyst is needed to initiate this highly exothermic reaction but the heat produced can instantaneously generate steam leading to an explosion. The heat of reaction itself may provide an ignition source for other flammable / combustible materials in the transport vehicle. Reactions typically occur very rapidly potentially leading to a hazardous situation within seconds of mixing. Under certain circumstances, however, the reaction could be delayed for up to twelve hours depending upon the resin, acid catalyst and quantities of each. The pictures at the end of this letter depict the results of such a delayed reaction of these materials in a production tank.

Due to the potential dangers, Ashland Inc. adopted an internal policy prohibiting shipping of the furfuryl alcohol based resin and acid catalyst together on the same transport vehicle. We believe the only way to avoid such accidental mixing is to ensure that the two products are not both present in the same vehicle of transport at the same time. Unfortunately, since the hazards presented by shipping the catalyst and resin in the same vehicle are not directly addressed under current regulations, there is potential for the catalyst and resin to be simultaneously present on a vehicle when carriers pick up material from other companies or when they consolidate freight.

We are concerned that vehicle drivers untrained in these specific hazards will be unaware of the dangers and that if an accident occurs, and the two products are mixed a hazardous

situation could rapidly develop endangering the safety of the driver, emergency responders and the community. It is for this reason that we request an opinion from the DOT on the practice of shipping the furfuryl alcohol based resins and acid catalysts together on the same transport vehicle. Specifically, is it the opinion of PHMSA that these materials should not be transported on the same transport vehicle? Could PHMSA recommend special precautions or practices beyond those already being practiced be taken with regard to transportation specific to these materials? Is there a regulatory process pertaining to situations such as this wherein known hazardous transportation circumstances may exist that are not specifically addressed under the current regulations?

Please feel free to contact me directly if you have questions regarding this request, the nature of the hazards or any other aspect of this issue. I look forward to your response.

Sincerely,

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Attachment: Photos of resin blend tanks before and after uncontrolled reaction.

Blend tank before reaction:



Blend tank after reaction:

