



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

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

FEB 23 2016

Mr. John M. Hinson
Manager, Strategic Raw Materials
Renessenz LLC.
601 Crestwood St.
Jacksonville, FL 32208

Ref. No.: 15-0209

Dear Mr. Hinson:

This is in response to your October 14, 2015 email, requesting clarification on the correct basic description for crude sulfate turpentine solution (CST). Specifically, you ask whether the most appropriate proper shipping name for this commodity is "UN1993, Flammable liquids, n.o.s., Class 3" or "UN1299, Turpentine, Class 3." You note that depending on the amount of sulfur compounds present in the solution, the flash point may result in either a packing group II or III assignment. For UN1299, the § 172.101 Hazardous Materials Table (HMT) only contains a packing group III entry.

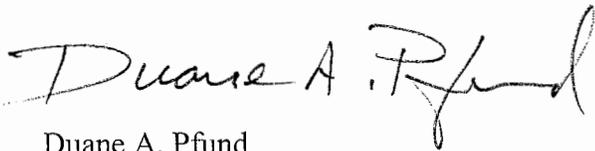
Section 172.101(c)(10) sets forth the criteria for selecting a proper shipping name of a mixture or solution not identified specifically by name in the HMT. Section 172.101(c)(10)(i) requires that a mixture or solution comprised of a single predominant hazardous material identified by technical name in the HMT and one or more hazardous and/or non-hazardous material must be described with the proper shipping name of the predominant hazardous material and the qualifying word "mixture" or "solution," unless the mixture or solution meets one or more of the conditions in subparagraphs (i)(A) through (F).

The CST you describe is in solution that is not identified by name in the HMT, but is comprised of a single predominant hazardous material (Turpentine) identified in the HMT by technical name and one or more hazardous and/or non-hazardous materials. As such, the most appropriate basic description for the CST assigned to PG III is "UN1299, Turpentine solution, Class 3, PG III." However, in accordance with § 172.101(c)(10)(i)(C), CST meeting the criteria for PG II may not be described as "UN1299" because the packing group of the solution is different from that specified in the entry. A solution of turpentine meeting the criteria of a PG II flammable liquid and no other hazard class must be assigned to an appropriate description such as

“UN1993, Flammable liquids, n.o.s.” The requirements for generic or “n.o.s.” proper shipping name selection in § 172.101(c)(10)(iii) are intended for mixtures or solutions not comprised of a single predominant hazardous material identified in the HMT.

I trust this information is helpful. If you have further questions, please do not hesitate to contact this office.

Sincerely,

A handwritten signature in black ink that reads "Duane A. Pfund". The signature is written in a cursive style with a large, looped initial "D".

Duane A. Pfund
International Standards Coordinator
Standards and Rulemaking Division

Wiener
§ 17322
Classification
15-0209

Dodd, Alice (PHMSA)

From: Geller, Shelby CTR (PHMSA)
Sent: Wednesday, October 14, 2015 4:01 PM
To: Hazmat Interps
Subject: FW: Interpretation Request
Attachments: PHMSA letter UN 1993 vs UN 1299 Oct 2015.docx

Dear Shante and Alice,

Attached is a request for a formal letter of interpretation.

Thanks,
Shelby

From: Hinson, John M. [<mailto:John.Hinson@renessenz.com>]
Sent: Wednesday, October 14, 2015 10:14 AM
To: PHMSA HM InfoCenter
Cc: Jerry Smith (jerry.smith@iff.com)
Subject: Interpretation Request

To Whom It May Concern,

Please find attached an interpretation request letter concerning the UN placarding of crude sulfate turpentine.

We look forward to your interpretation and welcome any questions that you may have.

Thank you.

Regards,

John

John M. Hinson
Manager, Strategic Raw Materials

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To Whom It May Concern,

We would like to make an interpretation letter request of the PHMSA. This request is to clarify the selection and use of UN 1299 vs. UN 1993 NOS for shipments of crude sulfate turpentine from paper mills in the USA.

We are employed by two large processor's of crude sulfate turpentine (CST) and are also member's of the Pine Chemicals Association. Our companies receive rail tank cars (and tank trucks) of CST daily from pulp and paper mills throughout the U.S. and Canada. CST is a by-product of the Kraft papermaking process.

In the USA and Canada today, the type of turpentine produced is the by-product from the papermaking process and as described above it is commonly called CST, or crude sulfate turpentine, or just turpentine. Some folks also refer to it a pulp mill liquid.

During the first half of the twentieth century and earlier, it was common for oleoresin (the "dip" or "gum" or "tar") to be collected from pine trees. This oleoresin was sent to Naval Stores processing plants where it was cooked in a large kettle or reactor. Rosin and gum turpentine were the products made from this Naval Stores process. As you probably know, this industry is essentially extinct now in the USA.

However, in parts of the world today such as China, Brazil and Indonesia, the practice of collecting tree oleoresin is widely practiced. The type of turpentine derived from the tree oleoresin is called gum turpentine. The gum turpentine and crude sulfate turpentine are both technically turpentine as they contain common compounds such as alpha-pinene, beta-pinene and myrcene. However, there is an important difference between gum turpentine (GT) and crude sulfate turpentine (CST).

Gum turpentine is pure in the sense that it is the essential oil of the pine tree and has no contaminants. CST on the other hand is turpentine too, but it contains other compounds from the Kraft pulping process that can and do affect its properties – especially its flash point.

Let me give you some specific examples to illustrate the differences in CST and GT:

Gum turpentine, also, known as "spirit of turpentine" or "oil of turpentine" is pure turpentine and is mostly alpha-pinene + beta-pinene **and no contaminants** and will always have a flash point near 100 degrees F. This would place this gum turpentine in Packing Group III for Class 3 flammable liquids.

Crude sulfate turpentine on the other hand, CST, will always have varying amounts of sulfur compounds present in solution with the turpentine. It is the same pure turpentine as described above for gum turpentine, but with one major difference – it is contaminated with other compounds from the paper making process. The pulping conditions and sulfidity of the cooking liquor affect the amount of sulfur compounds present in the turpentine. Generally speaking, there is a strong correlation between sulfur content of CST and the flash point of the CST. It is an inverse relationship. For example, as the total sulfur content increases in CST, the flash point decreases. Our company tests for sulfur content and flash point using the latest analytical techniques and equipment. I will give a few random examples to illustrate the relationship between sulfur content and flash point at Kraft mills in the southeastern USA:

Mill A 2,394 ppm sulfur and 91 degrees F flash point (PG III)

Mill B 8,516 ppm sulfur and 81 degrees F flash point (PG III)
Mill C 11,822 ppm sulfur and 62 degrees F flash point (PG II)
Mill D 15,057 ppm sulfur and 26 degrees F flash point (PG II)

Please note that three main sulfur compounds are typically found in CST: methyl mercaptan, dimethyl sulfide and dimethyl disulfide. The amounts and ratio of these compounds vary depending on pulping conditions etc. **These sulfur compounds have the effect of lowering the flash point of the CST and thus changing its properties related to fire and explosion hazards.**

In the example above we can see that there is a large variation in sulfur contents and the corresponding flash points.

In a survey of our industry (the processors of turpentine), the majority of shippers of CST utilize UN 1993 placarding to comply with DOT regulations. They specify "crude sulfate turpentine" on the Bill of Lading and the MSDS (now SDS) contains UN 1993 in the Transport Information section of the SDS.

The purpose of this letter is to seek clarification from PHMSA on what UN number is most appropriate for use with shipments of crude sulfate turpentine – UN 1993 or UN 1299?

In closing, please allow us to summarize some key points for your consideration:

Gum turpentine is essentially no longer commercially produced in the USA. It is considered the essential oil of the pine tree and is pure. UN 1299 references "oil of turpentine" and "spirit of turpentine" and this agrees and fits with gum turpentine. Again, this type turpentine is mostly produced outside the USA.

Crude sulfate turpentine is the commercial product produced as a by-product of the paper making process and is common in the USA (and Canada). It is contaminated with various sulfur compounds produced in the Kraft papermaking process. These contaminants significantly alter the properties of the CST and it becomes dissimilar from gum turpentine in its fire and explosive hazards and risks.

It is our opinion that CST should be classified as UN 1993 NOS (crude sulfate turpentine) and PG II or PG III as appropriate. The majority of shippers of CST today utilize the UN 1993 placard and this has been the case for many decades. We are aware of only one paper company that prefers to use the UN 1299 placard.

We would appreciate your timely clarification and opinion on whether UN 1993 or UN 1299 is most appropriate for use with CST shipments in the USA today.

Thanks kindly and please feel free to contact Jerry Smith or me with any questions or if you wish clarification on any points in this letter.

Thank you.

Regards,

John

Jerry A. Smith
Sr. Recovery Engineer
International Flavors & Fragrances
Cell Phone 904-891-1547

John M. Hinson
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