



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

October 16, 2023

Kevin Skerrett
Senior Regulatory Specialist
UL Solutions
77 Clearbrook Drive
Rochester, NY 14609

Reference No. 23-0068

Dear Mr. Skerrett:

This letter is in response to your July 21, 2023, email requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to shipping a gaseous hazardous material in a cartridge that also contains a small amount of liquid content and whether to classify and describe it as “UN2037, Receptacles, small, containing gas *or* gas cartridges (*non-flammable*) *without release device, not refillable and not exceeding 1 L capacity, 2.2*” or as “UN3500, Chemical under pressure, n.o.s., 2.2.” Specifically, you describe a cartridge of 1 fluid oz. capacity with 1% of content being a non-regulated irritant liquid while the remainder of the cartridge is filled with a Division 2.2 gas you term a propellant. You state that the cartridge is intended to be installed in a separate device which—when activated—emits the gas along with the small amount of the non-regulated irritant liquid. Your concerns are twofold—i.e., whether this material is appropriately classified and described when using “UN2037” and whether downstream users can reship by any mode of transportation and internationally as “UN2037.”

We have paraphrased and answered your questions as follows:

- Q1. You ask whether it is acceptable to classify and describe this hazardous material in a cartridge as “UN2037” or is it more appropriately classified and described as “UN3500.” Further, if it is more appropriate to use “UN3500,” is classifying and describing the material as “UN2037” considered a violation of the HMR.
- A1. In accordance with § 173.22 of the HMR, it is the shipper’s responsibility to properly classify and describe a hazardous material as this Office does not perform that function. However, it is the opinion of this Office that based on the information you have provided, we agree that the appropriate classification and description would be “UN2037” if the cartridge does not contain a release device and the material in the cartridge is not an aerosol as defined in § 171.8.

Q2. You ask whether your understanding is correct that there are no provisions that allow for “UN3500” material to be contained in a non-specification packaging and that there is no small quantity relief provision for “UN3500” material from the HMR.

A2. Your understanding is correct. There are no exceptions assigned to “UN3500” in the Hazardous Materials Table (HMT) in § 172.101 that are comparable to the exceptions provided in § 173.306 and assigned to other gas entries in the HMT. Additionally, there are no provisions for “UN3500” that would allow the use of a non-specification packaging.

Q3. You ask if the cartridge cannot be classified and described as “UN2037” and if classifying it as “UN3500” does not allow for the use of a non-specification packaging, would a person need to apply for a special permit to ship the cartridge and its contents.

A3. See answer A1.

Please note that a downstream user who receives a package containing “UN2037” may reship this material domestically and internationally provided a person reships the material in accordance with the conditions found in the HMT.

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

Sincerely,



Dirk Der Kinderen
Chief, Standards Development Branch
Standards and Rulemaking Division

From: [Dodd, Alice \(PHMSA\)](#)
To: [Jones, Jessie Jane CTR \(PHMSA\)](#)
Subject: FW: Question about UN2037 containing liquid vs UN3500 - Request for letter of interpretation
Date: Monday, July 24, 2023 11:00:13 AM

Morning Jessie,

One more for you.

From: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>
Sent: Friday, July 21, 2023 5:01 PM
To: Dodd, Alice (PHMSA) <Alice.Dodd@dot.gov>
Cc: Hazmat Interps <hazmatinterps@dot.gov>
Subject: FW: Question about UN2037 containing liquid vs UN3500 - Request for letter of interpretation

Hi Alice,

Please see the below interpretation request.

Let us know if you need anything.

Regards,

-Breanna

From: Skerrett, Kevin <Kevin.Skerrett@ul.com>
Sent: Friday, July 21, 2023 4:19 PM
To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>
Subject: FW: Question about UN2037 containing liquid vs UN3500 - Request for letter of interpretation

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Hello –

After discussion with Brianna today, I would like to request a formal letter of interpretation addressing the questions below.

I will separately pass along to the supplier the information about obtaining a Special Permit in case they would like to pursue that route in the meantime.

Thank you so much for your time and assistance in this matter!

Kevin Skerrett, DGSA
Senior Regulatory Specialist

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From: Skerrett, Kevin

Sent: Thursday, July 13, 2023 13:00

To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>

Subject: FW: Question about UN2037 containing liquid vs UN3500 - continued

Hello –

This is a continuation of the issue raised in the note attached below, based on responses from the supplier of the product, and additional consideration of the transport provisions for UN3500.

On 11/14/2023 about 11:00 EST I received a phone response from Brianna indicating that this issue had been debated by several experts at PHMSA.

Their consensus was that UN2037 is intended for gases only, and that this product, intended to eject the small amount of liquid present, was most appropriately described as UN3500.

I passed that information back to the supplier of the product, and recently received from them strong disagreement.

They indicated that a third-party consultant had confirmed the classification as UN2037 for them in writing.

They ship via the US Postal Service (USPS) and have an exception in writing from some USPS requirements, based on UN2037.

They also contacted the HMIC themselves and were told that UN2037 was acceptable, but I do not know what information or description they provided.

They are asking for written proof that they should be using UN3500 and not UN2037 – but I did not request a letter of interpretation last October.

My concern is not as much whether they can ship as UN2037 via USPS, but rather whether this is defensible for a downstream user to reship by any mode and internationally as UN2037.

This is a cartridge that is about 1 fluid oz capacity, with about 1% non-regulated irritant liquid with a 2.2 gas propellant, in a non-aerosol container that I believe is not a DOT-specification container.

With each actuation, the device (once the cartridge is installed) is intended to emit a puff of gas (the propellant) as well as a small quantity of the irritant (the liquid).

QUESTION 1: Is it acceptable to classify this as UN2037 but preferred to use UN3500, or could use of UN2037 for this purpose be a violation?

UN3163 (which would apply to the propellant alone), UN2037, and UN1950 (if this WAS an aerosol) are all eligible for the exceptions available at 173.306 – but UN3500 is not. This would include the Limited Quantity exceptions at 173.306(i) (via 173.306(a)(1), being < 1 fl. oz.), which include the use of a non-specification container. This could also include the exception for a 2.2 gas in a container of < 50ml capacity at 173.306(j). UN3500 is not eligible for the 173.306 exceptions. UN3500 specifies 173.335 as the source of packaging requirements, which includes reference to 173.301 – I do not find in either and allowance for Limited Quantity exceptions, or more importantly, any provision for non-specification containers.

QUESTION 2: Am I correct in reading that UN3500 has no provision for allowing non-specification containers, and no small-container threshold for relief from requirements?

QUESTION 3: If UN2037 is not allowed, and UN3500 does not allow a non-specification container, I assume a Special Permit (or Competent Authority approval for international shipment) would be needed.

Would the preferred approach for PHMSA be:

A) A Special Permit as UN2037 allowing the liquid contents, which would then allow 173.306 exceptions?

B) A Special Permit as UN3500 allowing the exceptions at 173.306 (including the use of a non-specification container).

If UN2037 is allowed, then this is a moot question.

Is there precedence for such a Special Permit? I did not find one in a search.

Since this is an issue of strong concern for the supplier, I would appreciate an informal reply, but I also request a formal letter of interpretation, since I expect to have similar issues arise in the future. As always, thank you very much for your assistance!

Kevin Skerrett, DGSA
Senior Regulatory Specialist

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From: Skerrett, Kevin

Sent: Friday, October 28, 2022 16:49

To: INFOCNTR (PHMSA) <INFOCNTR.INFOCNTR@dot.gov>

Subject: Question about UN2037 containing liquid vs UN3500

Hello –

I have a question about whether a product should be UN2037 or UN3500.

The product is in a small container (about 1 fl oz) that has no release device – so it is not an aerosol. It contains a non-flammable gas classified as 2.2.

It also contains a small amount (about 1%) of an oil that is an irritant but is not classified as hazardous under the HMR.

The container is designed to be connected to a separate device that IS intended to spray a puff of the gas, which is intended to contain a small amount of the liquid.

It is currently classified as UN2037 Receptacles, small, containing gas, 2.2 which, because of the volume, would be eligible for the 50 ml exception at {173.306(j)}.

My question is, does the small amount of liquid (that is intended to be ultimately ejected by the separate spray device) preclude the use of UN2037?

Or would this be allowed due to the liquid being in such small quantity?

Or is it allowed due to the small size of the receptacle?

I believe this used to be allowed for UN2037 before UN3500 was instituted.

I don't see any threshold limits, or an indication that UN3500 is intended for larger containers.

The fact that UN3500 does not allow the 50ml exception at {173.306(j)} is a concern.

I noticed that in GHS Ver.9, the NOTE at 2.3.2.1 indicates “Chemicals under pressure typically contain 50 % or more by mass of liquids or solids whereas mixtures containing more than 50 % gases are typically considered as gases under pressure.”

But I do not find any such reference in 173.335 or in SP-362, or in the equivalent references in the UNMR 22nd.

In the transport wording, it appears that no such limit is specified, although the references in {173.335} to “cylinders” appears to indicate UN3500 is intended for larger containers than the 1 oz involved here.

Thank you for any clarification you can provide!

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