



U.S. Department
of Transportation

**Pipeline and Hazardous
Materials Safety
Administration**

1200 New Jersey Avenue, SE
Washington, DC 20590

MAY 09 2019

P. Shelley BEng (Hons), MISEE, MIEExpE
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Reference No. 18-0141

Dear Mr. Shelley:

This letter is in response to your October 26, 2018, letter requesting clarification of the Hazardous Materials Regulations (HMR; 49 CFR Parts 171-180) applicable to the classification of explosives.

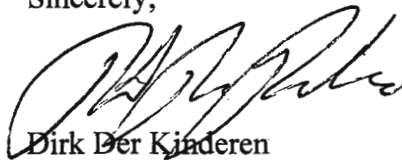
We have paraphrased and answered your questions as follows:

- Q1. You ask who is responsible for classifying explosive and pyrotechnic substances and articles in the United States.
- A1. In accordance with § 173.56 of the HMR, classification of Class 1 (explosive) materials is the responsibility of the person who offers a new explosive and the examining agency and is subject to PHMSA's approval. Section 173.56 of the HMR specifies that an approval request must be submitted to the Associate Administrator of Hazardous Materials Safety with a classification report recommendation from an authorized test lab or a foreign competent authority approval that assigns a Division, compatibility group, and shipping description. If PHMSA finds that the approval request meets the regulatory criteria, the explosive will be approved in writing and assigned an EX number.
- Q2. You ask whether the United States has an equivalent to Notified Bodies (NB; entities that are approved to carry out tests and classify explosives and pyrotechnics in the European Union).
- A2. The answer is yes. Only approved examination agencies are permitted to carry out these tests and make a recommendation for Division, compatibility group, and shipping description. However, PHMSA ultimately approves the recommended classification, as indicated by the assignment of an EX number.

- Q3. You ask whether manufacturers, suppliers and/or distributors are permitted to self-certify products in the United States.
- A3. The answer is no. Self-certification is not permitted for Class 1 materials. Except for explosives made under the supervision of a component of the Department of Defense (DOD) or the Department of Energy (DOE), all new explosives must be approved by PHMSA or—for fireworks—an approved third-party agency (e.g., fireworks certification agency.)
- Q4. In the event organizations are permitted to self-certify (see Q3), you ask for clarification of the rules and quality checks they must abide by (i.e., audits, equipment calibration, test standards, etc.)
- A4. See A3. Self-certification is not permitted for Class 1 materials.
- Q5. You ask whether there have been recent discussions on the classification for transport of Thermite (Iron Oxide and Aluminum).
- A5. There have been extensive discussions surrounding the transport classification of thermites (broadly defined) and thermite derivatives.
- Q6. You ask whether a Thermite composition that contains additional oxidizers, energetic binders and fuels, such as magnesium (i.e., a Thermate), would be classified under the “practical pyrotechnic effect” in the UN test matrix figure 10.2 of the UN Manual of Tests and Criteria. You further ask if there are any records of such classifications.
- A6. Thermites and Thermates would both provide a “practical pyrotechnic effect” as defined by the UN Manual of Tests and Criteria. This Office is not aware of any public reports of such test results available at this time.
- Q7. You ask whether there have been any tests carried out in accordance with the UN series of tests where Thermates were found to be more sensitive to dropping, thermal, electrostatic discharge, friction, impact, pressure and effects of shelf life, similar to Magnesium, Teflon, Viton (MTV) flare compositions.
- A7. There are no widely available public data on the performance of Thermates.

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

Sincerely,



Dirk Der Kinderen
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26th October 2018

Our ref: Technical Note 261018-DOT

Questions for the US side of Dangerous Goods Classification and Testing

Dear Mr. Shane Kelley, Director, Standards and Rulemaking Division

As the former director of the United Kingdom (UK) Explosives Notified Body (ENB) and responsible for process of setting up the pyrotechnics Notified Body (PNB) at the health and safety laboratory (HSL) (part of the health and safety executive (HSE)) I have some queries which I hope you can assist me with. Based on my experience with the European Union (EU) directives concerning dangerous goods which were then implemented in UK law and the testing items to United Nations (UN) series of tests and transport rules to the European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR) etc.

I have the following questions,

1. Who in the United States (US) is responsible for classifying explosive and pyrotechnic substances and articles similar to the ADR rules and in line with the and UN series of tests for dangerous goods?
2. In the EU only Notified Bodies (NBs), which are quality systems approved, are allowed to carry out the tests and classify explosives and pyrotechnics. Is this the same in the US, i.e. is there an equivalent to a Notified Body?
3. Are manufacturers, suppliers and or distributors allowed to self certify products in the US?
4. If organisations are allowed to self certify, what are the rules and quality checks put in place on them i.e. audits, equipment calibration, test standards etc.,
5. As a member of the UK Institute of Explosive Engineers (and US based International Society of Explosives Engineers) there have been recent discussions on the classification for transport of Thermite (Iron Oxide and Aluminium). I wonder if there have been any similar discussions in the US (in my research I did find Thermite with a UN 4.3 Classification from a company in Texas)?
6. Also with the change from a Thermite to a Thermate i.e. a Thermite composition with additional oxidizers, energetic binders and fuels such as magnesium, does the US classify these under the 'practical pyrotechnic effect' in the UN test matrix figure 10.2



and is there a record of any such product (article) or mixture (substance) classifications?

7. If there have been any tests carried out in accordance with the UN series of tests were Thermates found to be more sensitive to dropping, thermal, electrostatic discharge, friction, impact, pressure and effects of shelf life etc, similar to Magnesium, Teflon, Viton (MTV) flare compositions?

Yours sincerely,

A handwritten signature in black ink that reads "P. Shelley".

Mr P Shelley BEng (Hons), MISEE, MIExpE

Managing Director
Onepoint4 Ltd