

Committee of Experts on the Transport of Dangerous Goods and on the Globally Harmonized System of Classification and Labelling of Chemicals

29 June 2022

Sub-Committee of Experts on the Transport of Dangerous Goods

Sixtieth session

Geneva, 27 June-6 July 2022

Item 3 of the provisional agenda

Listing, classification and packing

Fire suppression devices that contain a pyrotechnic material

Submitted by the Council on Safe Transportation of Hazardous Articles (COSTHA)

Introduction

1. This informal document aims to support the document ST/SG/AC.10/C.3/2022/25 (WP25) and informal document INF 3 (60th session). The proposed changes in this document are a direct result of conversations had within the Explosives Working Group (EWG) and during the informal presentation given on 27 June 2022.

2. ST/SG/AC.10/C.3/2022/25 proposes to introduce a new entry to the dangerous goods list. The new entry would include the proper shipping name: Fire Suppression Dispersing Devices. As discussed in ST/SG/AC.10/C.3/2022/25, many competent authorities have granted approvals classifying these devices as UN 3268, Safety Devices, Class 9 as well as Div. 4.1, Div. 5.1 and even as unregulated. There have been concerns that this proper shipping name does not provide an appropriate description of the intended function of the device. Additionally, when these devices are classified as an explosive, based upon containing a pyrotechnic substance, they typically are classified as: UN 0432 Articles Pyrotechnic for technical purposes. This proper shipping name also does not adequately describe the intended function associated with these devices. For this reason, COSTHA is requesting that a new entry be included in the Dangerous Goods List to more appropriately address these articles.

3. It is further recommended that the new entry “Fire Suppression Dispersal Device” include two possible classifications, Class 9 and Division 1.4S. To obtain the Class 9 designation, the device would have to meet the conditions prescribed within the proposed special provision (XYZ).

4. There were three main concerns expressed in the EWG that we hope to address in this paper.

- (i) When the device actuates, there is an exothermic reaction which can produce temperatures in excess of those stipulated in the exclusion criteria in 2.1.3.6.4. Although the probability of actuation of these types of devices in conditions normal to transport is negligible, we propose that the following language be included in the special provision to ensure that this effect is mitigated for the Class 9 entry:

“Packaging will be designed such that regardless of the exterior temperature of the device in the event of unintentional initiation, the packaging will be protected from ignition.”

This provision will provide a performance-based solution to the concern regarding the potential temperature of the device during actuation, which could lead to combustion of the packaging if all of the fire suppressant had dissipated.

(ii) The devices when actuating can emit carbon monoxide (CO). CO is a common result of the degradation of pyrotechnic substances. There was concern that CO in high concentrations could lead to a toxic environment. These types of devices are designed, manufactured, installed, and maintained in accordance with a number of different national and international standards (e.g. NFPA 2010, EN 15276-1, UL2775, ISO 15779, etc.). Within these standards, there is a differentiation between devices approved for occupied spaces and those NOT approved for occupied spaces. We believe that the special provision allowing these to be transported as Class 9 should only include devices approved through national or international standard for use in occupied spaces.

(iii) The device, as it is designed to function produces fire suppressant, which would likely fail the obscuration requirement within the exclusion criteria in 2.1.3.6.4. It is our contention that the obscurant requirement is intended to prevent the production of fumes or smoke that would impede firefighting efforts in the immediate area of the package. This dispersant is a fine particulate but is neither smoke nor dust, it is in fact the fire suppression particulate being emitted as intended by design and manufacture. Further, the unit is specifically designed to assist in firefighting activities.

5. It is important to reiterate the effectiveness of these devices in extinguishing lithium battery fires. Following the proliferation of Energy Storage Systems and Electric Vehicles to support green energy initiatives and protection of the environment, there will be an increased demand for green and effective fire suppression systems. These devices, when manufactured in accordance with the well-known industry standards will provide this effective and environmentally friendly solution.

6. We are aware of at least 11 companies around the world producing these types of devices. Currently, their national authorities have authorized transport of these devices as: Div. 1.4S, Div. 4.1, Div. 5.1, Class 9 and un-regulated. There are no known transport incidents involving these devices, regardless of their classification, which further support the inherent safety built into their design and intended function.

Amended proposal

UN No.	Name and description	Class or division	Subsidiary hazard	UN packing group	Special provisions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
								Packing instruction	Special packing provisions	Instructions	Special provisions
35XX	<u>Fire Suppression Dispersing Devices</u>	9			XYZ	0	EO	P003			
0XXX	<u>Fire Suppression Dispersing Devices</u>	1.4S				0	EO	P135			

In 3.3.1 add a new special provision XYZ to read as follows:

“XYZ This entry applies to Fire Suppression Dispersing Devices. These are articles which contain a pyrotechnic substance that do not function as an explosive and are intended to disperse a fire extinguishing agent when actuated. The devices shall be either electrically activated, manually actuated, or thermally activated and shall be designed to prevent inadvertent activation either by shipping the actuation component separately (e.g., thermally activated head, and the main unit are shipped separately) or by ensuring that the electrically initiated devices are not electrically connected and there is a secondary means of protection to prevent activation. These articles, as presented for transport shall be successfully tested in accordance with test series 6(c) of Part 1 of the Manual of Tests and Criteria, with no

explosion of the device, no fragmentation of the device casing and no projection hazard which would significantly hinder firefighting or emergency response efforts in the immediate vicinity. The dispersant shall be deemed safe for occupied areas and not harmful to humans in compliance with international or regional standards (e.g., UN/ISO 15779, UL 2775). Packaging will be designed such that regardless of the exterior temperature of the device in the event of unintentional initiation, the packaging will be protected from ignition.

Additionally, these devices shall meet the exclusion criteria in 2.1.3.6.4 2.1.3.6.4 (b), (c) and (d). Any article not meeting the provisions of this special provision shall be classified as UN 00XX, Fire Suppression Dispersing Device, 1.4S.

This entry does not apply to “SAFETY DEVICES, electrically initiated” described in special provision 280 (UN 3268).”

7. The entry name in the index should be amended as follows:

Name and description	Class	UN Number
<u>Fire Suppression Dispersing devices</u>	9	35XX
<u>Fire Suppression Dispersing devices</u>	1.4S	0XXX

8. In 3.3.1 amend special provision 280 by adding the following language at the end:

“This entry does not apply to life saving appliances described in special provision 296 (UN Nos. 2990 and 3072) and Fire Suppression Dispersing devices (UN Nos. 35XX and 0XXX).”