

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

Sub-Committee of Experts on the Transport of Dangerous Goods

15 June 2023

Sixty-second session

Geneva, 3-7 July 2023

Item 3 of the provisional agenda

Listing, classification and packing

Classification of UN 2372 1,2-DI-(DIMETHYLAMINO) ETHANE

Transmitted by the expert from Belgium

Introduction

1. UN 2372 1,2-DI-(DIMETHYLAMINO) ETHANE also known as N,N,N',N'-tetramethyl-ethaan-1,2-diamine (TEMED) is a chemical compound that can be used as a ligand in complex-forming reactions.
2. In 1974, UN 2372 was mentioned in the report of the eight session of the committee on the transport of dangerous goods (E/CN.2/CONF.5/57). In annex 2 of that report, UN 2372 was listed as a flammable liquid (class 3), packing group (PG) II. A classification which is still valid today.
3. Depending on the consulted source the given flashpoint for UN 2372 is 17-20 °C and the boiling point ~ 121 °C, while its melting point is -55 °C. Thus, this substance clearly meets the criteria to be classified as a class 3, packing group II flammable liquid according to the criteria given in 2.3.2.6 of the Model Regulations (flash point < 23 °C, boiling point > 35 °C).
4. The REACH-file¹ for this substance contains data from several studies that indicate that TEMED in addition harbors corrosive properties. Most noteworthy is data from a study done in 2000 during which New Zealand White Rabbits were exposed to TEMED for 3', 1 h and 4 h and observations done for corrosive effects 1 h and 24 h after patch removal. For all exposure times, no visible necrosis was observed 1h after patch removal, but was observed 24 h after patch removal. Note also that the 4 h exposure was terminated after 1 h due to the severity of the observed irritative effects.
5. When these data would be applied according to 2.8.3.3 of the Model Regulations, this substance would meet the criteria for classification as a class 8 corrosive substance. Given that no necrosis was observed after ≤ 60 minutes, but was observed after 24 h for exposure times of 3 minutes and 1 h, TEMED would meet the criteria for inclusion in PG II.
6. Under GHS/CLP, TEMED is classified as category 1B (H314) for skin corrosion/irritation. Indicating again it's corrosive properties.
7. Also, in table A1.19 of Annex 1 of the GHS it is indicated that substances that are in category 1B for skin corrosion/irritation (H314) would require a class 8 label during transport. As such, providing yet another indication that UN 2372 harbors corrosive properties that meet the class 8 criteria according to the Model Regulations.

¹ <https://echa.europa.eu/nl/registration-dossier/-/registered-dossier/27608/7/4/2/?documentUUID=65c68a58-38bb-4524-9497-30d2925959a7>.

8. When applying the precedence of hazard criteria given in 2.0.3.3 for a substance that classifies for class 3, PG II and class 8, PG II, it follows that class 3, PG II should remain the primary hazard and that class 8 should be assigned as a subsidiary hazard.

9. When applying the guidelines given in the Guiding Principles, there is one other change that would have to be applied to the Dangerous Goods List. According to Table 4.3 of the Guiding Principles, portable tank code T4 is to be applied to class 3, PG II substances with subsidiary hazard other than 6.1 or 8. To class 3, PG II substances with subsidiary hazards 6.1 or 8, the portable tank code should rather be T7 instead of T4. The main difference between those two tank codes is that the required test pressure rises from 2.65 bar to 4 bar.

Proposal

10. Amend in the Dangerous Goods List the entry for UN 2372, as follows (amendments in bold, new text underlined, deleted text ~~stricken through~~):

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
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
2372	1,2-DI-(DIMETHYLAMINO) ETHANE	3	8	II		1L	E2	P001 IBC02		T4 <u>T7</u>	TP1

11. Since changing the assigned tank code T4 to the more stringent tank code T7 can have an impact on the transporters of UN 2372, while to our knowledge no incidents have occurred, it seems reasonable to foresee a transitional period.

Sustainable development goals

12. This informal document contributes to Sustainable Development Goal 12 "*Ensure sustainable consumption and production patterns*" and more specifically its target 12.4 "*Achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.*"