



**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****Sixty-third session**

Geneva, 27 November-6 December 2023

Item 3 of the provisional agenda

Listing, classification and packing**Present and future products in the LPG industry - proposal
for a new UN number****Transmitted by the World LPG Association – WLPGA****Summary*

Executive summary: Conventional liquefied petroleum gas (LPG) (primarily propane-butane), for the purpose of lowering the carbon footprint of the product, can be partly replaced in the future by blends of renewable/recycled LPG and dimethyl ether (DME) at any ratio. These blends, according to the current regulations, would be assigned today to UN 3161 Liquefied Gas, Flammable, N.O.S. However, to ease identification of the product by emergency services, it is proposed that a new UN Number is created for "Hydrocarbon and Dimethyl Ether Gas Mixtures, Liquefied".

This proposal is separate from and not linked to the proposal to introduce a new 'Special Provision' to allow up to XX% by mass of DME in gas mixtures assigned to UN 1075 or UN 1965.

Action to be taken Create a new UN Number for hydrocarbon and DME blends as "Hydrocarbon Gases UN numbers 1075, 1965, 1011, 1012, 1055, 1969, 1978 and Dimethyl Ether UN 1033, Mixtures, Liquefied".

Related document(s): Document ST/SG/AC.10/C.3/2023/30 from the sixty-second session.

* A/77/6 (Sect. 20), table 20.6



I. Background

1. Document ST/SG/AC.10/C.3/2023/30 of the sixty-second session contained the background information on the way that the LPG industry is changing and adapting to meet its renewable and sustainability goals.
2. During the debate held in the sixty-second session on the above document, a number of points were raised, that have been addressed in this revised proposal.
3. A point raised was why the transport in cylinder bundles and multiple-element gas containers (MEGC's) is permitted in the proposal, as these are not used for LPG. The current entries for LPG (UN 1075 and UN 1965) and for DME (UN 1033) all permit carriage in cylinder bundles and MEGC's, however as these are not commonly used for LPG, this permission has now been deleted.
4. Concern was raised as to why special provision 'v' was included in the new entry in 4.1.4.1 packing instruction P200, Table 2. That only permits a 15-year inspection interval subject to competent authority approval. This has now also been deleted from the revised submission.
5. Concern was raised about the suitability of the materials used with LPG, in DME/LPG blend service. Special provision 'z' in 4.1.4.1 packing instruction P200, Table 2 requires that all materials are compatible with the contents. Special provision 'z' also has the requirements for minimum test pressure and the maximum filling ratio of containers. Hence special provision "z" was maintained.
6. Views were expressed that this new UN number was not necessary, as there was no need to specifically identify this mixture in an emergency, thus duplicating unnecessarily the existing UN number (UN 3161). However, there are already similar duplications in UN numbers, and we believe these were introduced for the sake of clarity.
7. An example is with refrigerant gases, there are 25 separate UN numbers for gases that are classified as 2A, with a 20 HIN (1009, 1018, 1020, 1021, 1022, 1028, 1029, 1958, 1973, 1974, 1976, 1982, 1983, 1984, 2422, 2424, 2599, 2602, 3159, 3220, 3296, 3337, 3338, 3339 and 3340) and 7 UN numbers classified as 2F with a 23 HIN (1030, 1063, 2035, 2453, 2454, 2517 and 3252). The 2A gases could have been assigned to UN 1078 Refrigerant gases, N.O.S. or UN 3163 (liquefied gases N.O.S.) and the 2F gases to UN 3161. However, they have all been assigned to separate UN numbers to avoid confusion and aid identification. It will not be many years before the volume of LPG/DME mixtures transported exceeds the total volume of refrigerant gases that are transported.
8. Another example is that hydrocarbon gases are assigned largely in practice to UN 1075 or UN 1965, although it could be claimed that this is a duplication and overlap with UN 3161.
9. All three UN numbers above have the same HIN (hazard identification number 23). However, some flammable liquefied gases that could be mixed and then classified as UN 3161 have different HIN's. For example, UN 1041 has a 239 HIN (Risk of spontaneous violent reaction), but if that is mixed with another flammable gas it is assigned to UN 3161 with a 23 HIN. The same applies with UN numbers 1060, 1081, 1085, 1086, 1087, 1959 and 2452. UN 2191 has a 26 HIN, again that can be mixed with another liquefied gas and then assigned to UN 3161.
10. WLPGA believes that blends of DME and LPG (Hydrocarbons to UN numbers 1075, 1965, 1011, 1012, 1055, 1969, 1978), will become very common in the transport chain as conventional fossil fuels are replaced, and having a dedicated UN number for these blends will enable rapid identification of the actual product transported, which can only help in the case of an emergency and will improve safety.

II. Proposal

11. Add a new entry to the Dangerous Goods List in 3.2.2 as follows:

UN No.	Name and description	Class or Division	Subsidiary Hazard	LC ₅₀ (ml/m ³)	Cylinders	Tubes	Pressure Drums	Bundles of cylinders	MEGCs	Test period (years)	Test pressure (bar)	Filling ratio	Special packing provisions
XXXX	HYDROCARBON GASES, UN NUMBERS 1075 1965, 1011, 1012, 1055, 1969, OR 1978 , AND DIMETHYL ETHER UN 1033, MIXTURES, LIQUEFIED	2.1			X	X	X			10			z

12. In 4.1.4.1 packing instruction P200, Table 2, add new entry as follows:

UN No.	Non-refrigerated liquefied gases	Max.allowable working pressure (bar) Small: Bare; Sunshield; Insulated: respectively ^a	Openings below liquid level	Pressure-relief requirements ^b (see 6.7.3.7)	Maximum filling ratio
XXXX	Hydrocarbon gases, UN numbers 1075 1965, 1011, 1012, 1055, 1969, or 1978 , and dimethyl ether UN 1033, mixtures, liquefied	See MAWP definition in 6.7.3.1	Allowed	Normal	See 4.2.2.7

13. In 4.2.5.2.6 portable tank instruction T50, add a new entry as follows:

(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
XXXX	HYDROCARBON GASES, UN NUMBERS 1075, 1965, 1011, 1012, 1055, 1969, OR 1978 , AND DIMETHYL ETHER UN1033, MIXTURES, LIQUEFIED	2.1			274, 392	0	E0	P200		T50	

III. Safety implications

14. No negative safety implications are foreseen from the proposal. Having a dedicated UN number for this product, will enable easy identification by the emergency services without the need of checking the transport documentation and this can only have a positive impact.