



# Economic and Social Council

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## Economic Commission for Europe

### Inland Transport Committee

### Working Party on the Transport of Dangerous Goods

#### Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods

Geneva, 19-29 September 2023

Item 5 (b) of the provisional agenda

#### Proposals for amendments to RID/ADR/ADN: new proposals

### Misleading graph at the end of 4.1.4.1, packing instruction P200

Transmitted by Liquid Gas Europe\* \*\*

#### Summary

<b>Executive summary:</b>	The graph at the end of 4.1.4.1, P200 shows bands indicating the various densities for filling ratios but does not fully align with the values set out in 2.2.2.3 List of collective entries, liquefied gases.
<b>Action to be taken</b>	Replace the existing graph with a new corrected graph.
<b>Related document:</b>	n.a.

## Background

- In 2.2.2.3, List of collective entries sets out the maximum vapour pressure and minimum liquid density for each mixture as follows:

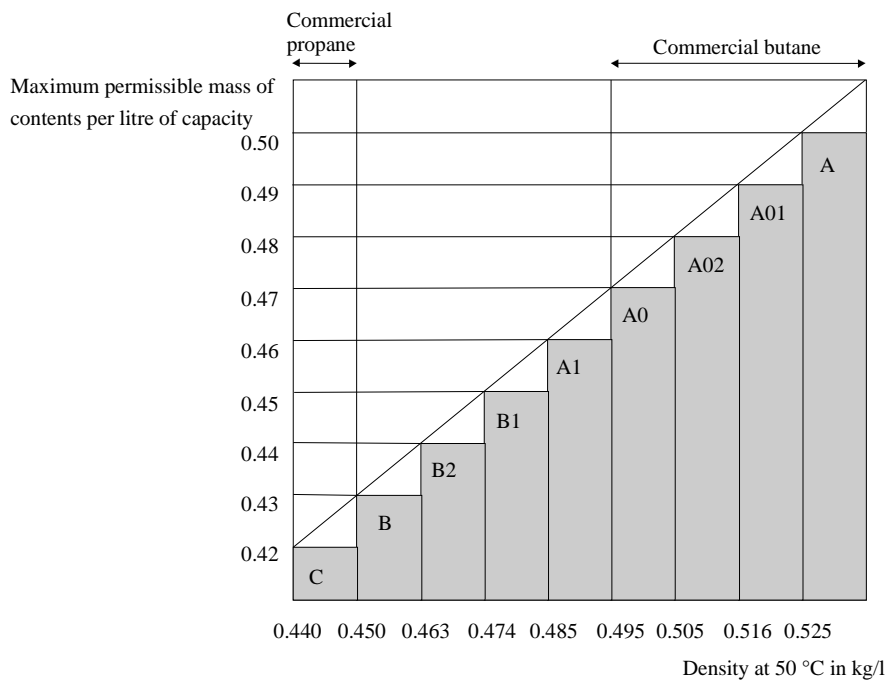
UN No.	Name of the substance or article
1965	HYDROCARBON GAS MIXTURE, LIQUEFIED, N.O.S such as mixtures, which as: Mixture A, have a vapour pressure at 70 °C not exceeding 1.1 MPa (11 bar) and a density at 50 °C not lower than 0.525 kg/l;

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

\*\* Circulated by the Intergovernmental Organisation for International Carriage by Rail (OTIF) under the symbol OTIF/RID/RC/2023/45.

Mixture A01, have a vapour pressure at 70 °C not exceeding 1.6 MPa (16 bar) and a relative density at 50 °C not lower than 0.516 kg/l;  
 Mixture A02, have a vapour pressure at 70 °C not exceeding 1.6 MPa (16 bar) and a relative density at 50 °C not lower than 0.505 kg/l;  
 Mixture A0, have a vapour pressure at 70 °C not exceeding 1.6 MPa (16 bar) and a density at 50 °C not lower than 0.495 kg/l;  
 Mixture A1, have a vapour pressure at 70 °C not exceeding 2.1 MPa (21 bar) and a density at 50 °C not lower than 0.485 kg/l;  
 Mixture B1 have a vapour pressure at 70 °C not exceeding 2.6 MPa (26 bar) and a relative density at 50 °C not lower than 0.474 kg/l;  
 Mixture B2 have a vapour pressure at 70 °C not exceeding 2.6 MPa (26 bar) and a relative density at 50 °C not lower than 0.463 kg/l;  
 Mixture B, have a vapour pressure at 70 °C not exceeding 2.6 MPa (26 bar) and a density at 50 °C not lower than 0.450 kg/l;  
 Mixture C, have a vapour pressure at 70 °C not exceeding 3.1 MPa (31 bar) and a relative density at 50 °C not lower than 0.440 kg/l;  
**NOTE 1:** In the case of the foregoing mixtures, the use of the following names customary in the trade is permitted for describing these substances: for mixtures A, A01, A02 and A0: BUTANE; for mixture C: PROPANE.

2. The collective entries in 2.2.2.3 do not have a limit on the maximum density of each of the mixtures.
3. The graph at the end of 4.1.4.1, packing instruction P200 has columns that have a minimum and maximum value for the density of each of the mixtures, as follows:

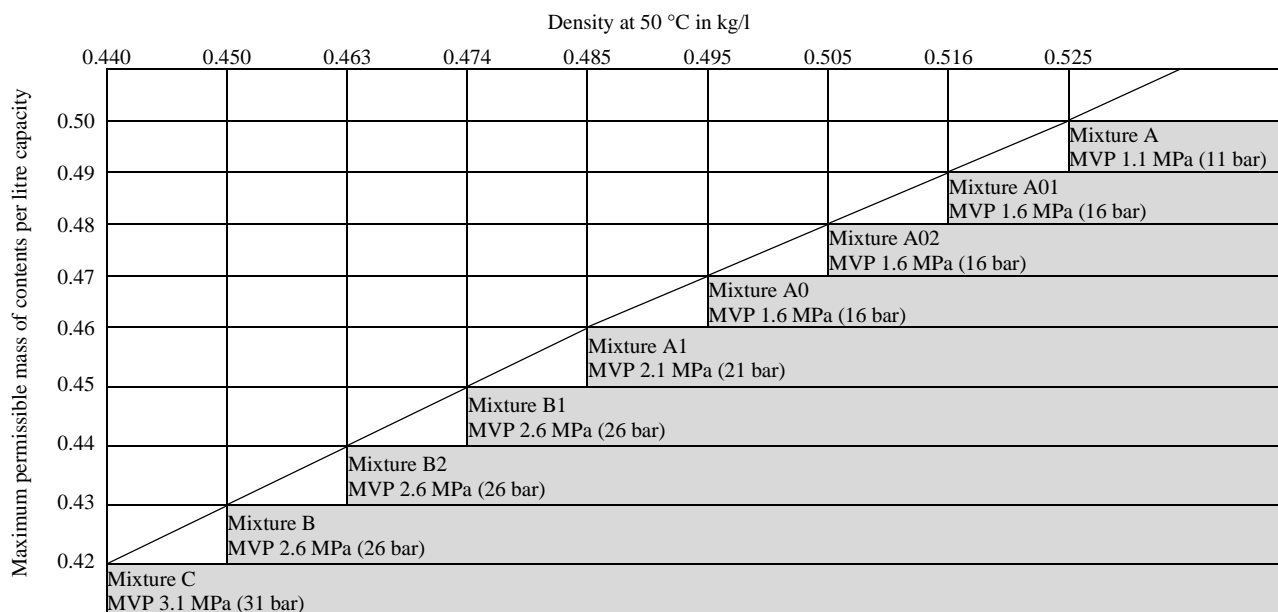


4. The graph above indicates that commercial propane shall have a liquid density at 50 °C between 0.440 and 0.450 kg/l, however a typical commercial propane will comprise of 90 per cent propane and 10 per cent butane, with a liquid density of 0.462 kg/l at 50 °C. Another typical commercial propane will comprise of 95 per cent propane and 5 per cent propene, with a liquid density of 0.449 kg/l at 50 °C, so only just inside the above limit and any increase in the propene content will take it outside of the column limit.
5. If by mistake, an operator classifies a mixture by its density according to the graph in 4.1.4.1, packing instruction P200 it could be put into a cylinder or pressure drum with an unsuitable pressure rating. For example a mixture of 90 per cent propene and 10 per cent

propane has a liquid density of 0.456 kg/l at 50 °C, so classified as mixture B, however when using 2.2.2.3, list of collective entries, it is classified as mixture C.

## Proposal

6. In 4.1.4.1, packing instruction P200, after Table 2, replace the existing graph with a new corrected graph as shown below:



MVP = Maximum vapour pressure at 70 °C

## Justification

7. Safety will be improved, as it will reduce the risk of mixtures being incorrectly classified by their mass.

8. If approval is granted for a blend of dimethyl ether (DME) with liquefied petroleum gas (LPG) to be classified as LPG it will increase the density of the mixture, it will slightly lower the vapour pressure of propane, but slightly raise that of butane (the vapour pressure of DME is very similar to that of a 50/50 butane/propane mixture). The corrected graph will ensure that the mixture is correctly classified.

9. This proposal is linked to United Nations Sustainable Development Goals, in particular targets: 7.1, 7.2, 12.2, 12.5, 15.2, 15.4, 15.5.