

**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**

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Item 5 (b) of the provisional agenda

Transport of gases: miscellaneous

Amendment of P206

Transmitted by the expert from the United Kingdom

Introduction

1. At the forty-eighth session of the Sub-Committee of Experts on the Transport of Dangerous Goods, the Secretariat presented an informal paper INF.52. This reported the request of WP.15 for the experts to check the use of the terms “liquid phase” and “liquid component” in P200 (3) (e) of the Model Regulations (P200 (5) in RID/ADR/ADN).

2. ISO responded to this request by proposing to eliminate the ambiguous phrase “liquid component” from the text, following consultation with the industrial gases industries of Europe and North America (EIGA) and the Compressed Gases Association (CGA). This is based on the logic that the pressure receptacle contains two components – the liquefied gas and the compressed gas; the liquid phase consists of the liquefied gas and the compressed gas dissolved into it, and the gaseous phase consists of the compressed gas and the vapour of the liquefied gas. Based on this logic, the Sub-Committee provisionally adopted the proposal to amend P200 (3) (e), as follows:

[4.1.4.1, packing instruction P200, paragraph (3) (e), amend as follows:

In the first paragraph, replace “liquid phase” by “liquefied gas”.

In subparagraph (i), replace “liquid component” by “liquefied gas”.

In subparagraph (iv), replace “liquid component” by “liquefied gas”.

In subparagraph (v), replace “liquid component” by “liquefied gas”.

In the last paragraph, replace “liquid component” by “liquid phase”.]

3. The Joint Meeting of the RID Committee of Experts and the Working Party on the Transport of Dangerous Goods, at its last session adopted this amendment to P200. And on the expectation that the Sub-Committee of Experts on the Transport of Dangerous Goods would enact similar amendments to P206, this packing instruction was also amended.

Justification

4. The United Kingdom therefore proposes to the Sub-Committee that since the pressure receptacle content is analogous to that in P200, i.e. the liquid phase consists of the liquid with compressed gas dissolved into it and the gaseous phase consists of the compressed gas and the liquid vapour, the same logic should be applied to P206.

Proposal

5. The application of the above logic gives the following proposal for the amendment of P206 with the key words shown in bold, new text underlined and deletions struck through.

P206	PACKING INSTRUCTION	P 206
This instruction applies to UN Nos. 3500, 3501, 3502, 3503, 3504 and 3505		
Unless otherwise indicated in these Regulations, cylinders and pressure drums conforming to the applicable requirements of Chapter 6.2 are authorized.		
<p>(1) The general packing requirements of 4.1.6.1 shall be met.</p> <p>(2) The maximum test period for periodic inspection shall be 5 years.</p> <p>(3) Cylinders and pressure drums shall be so filled that at 50 °C the non-gaseous phase does not exceed 95 % of their water capacity and they are not completely filled at 60 °C. When filled, the internal pressure at 65 °C shall not exceed the test pressure of the cylinders and pressure drums. The vapour pressures and volumetric expansion of all substances in the cylinders and pressure drums shall be taken into account.</p>		
<p>For liquids charged with a compressed gas both components – the liquid phase and the compressed gas – have to be taken into consideration in the calculation of the internal pressure in the pressure receptacle. When experimental data is not available, the following steps shall be carried out:</p>		
<p>(a) Calculation of the vapour pressure of the liquid component and of the partial pressure of the compressed gas at 15 °C (filling temperature);</p> <p>(b) Calculation of the volumetric expansion of the liquid phase resulting from the heating from 15 °C to 65 °C and calculation of the remaining volume for the gaseous phase;</p> <p>(c) Calculation of the partial pressure of the compressed gas at 65 °C considering the volumetric expansion of the liquid phase;</p>		
<p><i>NOTE: The compressibility factor of the compressed gas at 15 °C and 65 °C shall be considered.</i></p>		
<p>(d) Calculation of the vapour pressure of the liquid component at 65 °C;</p> <p>(e) The total pressure is the sum of the vapour pressure of the liquid component and the partial pressure of the compressed gas at 65 °C;</p> <p>(f) Consideration of the solubility of the compressed gas at 65 °C in the liquid phase.</p>		
<p>The test pressure of the cylinders or pressure drums shall not be less than the calculated total pressure minus 100 kPa (1 bar). If the solubility of the compressed gas in the liquid component phase is not known for the calculation, the test pressure can be calculated without taking the gas solubility (sub-paragraph (f)) into account.</p>		

(4) The minimum test pressure shall be in accordance with P200 for the propellant but shall not be less than 20 bar.

Additional requirement:

Cylinders and pressure drums shall not be offered for transport when connected with spray application equipment such as a hose and wand assembly.

Special packing provision:

PP89 For UN Nos. 3501, 3502, 3503, 3504 and 3505, notwithstanding 4.1.6.1.9 (b), non-refillable cylinders used may have a water capacity in litres not exceeding 1 000 litres divided by the test pressure expressed in bars provided capacity and pressure restrictions of the construction standard comply with ISO 11118:1999, which limits the maximum capacity to 50 litres.