



Secretariat

Distr.  
GENERAL

ST/SG/AC.10/C.3/2006/41  
11 April 2006

Original: ENGLISH

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**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

Twenty-ninth session  
Geneva, 3-12 (a.m.) July 2006  
Item 3 of the provisional agenda

**TRANSPORT OF GASES**

P200 Filling Ratio Amendments

Transmitted by the expert from the United States of America

**Background**

1. Based on a proposal by the United States of America (ST/SG/AC.10/C.3/2005/55), the Sub-Committee at its 28th session agreed to amend the filling ratio values for certain gases in P200. The result of this amendment was to lower the filling ratio value for 10 UN gas entries, and to reconsider the value for Germane based on a new proposal. The technical justification for this amendment was developed from an independent study commissioned with the US National Institute of Standards and Technology (NIST). This study was designed to verify that the listed P200 filling ratio values provided an adequate level of safety. The results of the study have been reviewed by members of the gases working group at previous Sub-Committee sessions. Most recently, during the 25<sup>th</sup> session of the Sub-Committee the report of the gases working group (UN/SCETDG/25/INF.98) identified that experts from Germany and the United States of America agreed to collaborate on proposed changes to the filling ratios listed in P200 based on the NIST calculations. As a follow-on action to that commitment, experts from Germany (BAM and PRB), the United States Department of Transportation (US DOT), industry and NIST met in July 2005 for the purpose of refining the filling ratio data that is currently included in P200.

2. The original NIST calculations verified the acceptance of most of the current P200 filling ratios values, but indicated eleven gases that should be lower due to safety concerns and other values that could be replaced with higher values. The Sub-Committee adopted the proposal to lower values for certain gases during the 28th session. To confirm the data for increasing certain filling ratio values, NIST and the expert from the United States have verified each gas value in accordance with the filling conditions specified in P200 and the experimental data discussed during the experts meeting in July 2005. Based on this review and the data provided to the Sub-Committee at previous sessions, the expert from the United States proposes to increase values for six UN gas entries.

### Proposal

3. Amend the P200 filling ratio values as identified in the following table:

UN Number	Name	Ptest (bar) UN, abs.	Current Filling ratio UN	* Amend Filling Ratio to read	% Difference
1982	Tetrafluoromethane (R14)	201	0.62	0.71	13
2599	R503	32	0.11	0.12	8
1035	Ethane	121	0.29	0.30	3
1035	Ethane	301	0.39	0.40	3
3220	Pentafluoroethane (R125)	37	0.72	0.87	17
1011	Butane	11	0.51	0.52	2

*Note: % Diff = 100(NIST-UN)/NIST, the filling ratio computed by NIST is higher than that in P200. These values were discussed and agreed by experts from the United States of America and Germany (BAM).*

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