



**Economic and Social
Council**

Distr.
GENERAL

ECE/TRANS/WP.15/AC.1/2010/15
5 January 2010

Original: ENGLISH

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

Bern, 22 - 26 March 2010

Item 5 (b) of the provisional agenda

PROPOSALS OF AMENDMENTS TO RID/ADR/ADN

New proposals

Proposal for changing the provisions for the hydraulic pressure test for non-UN pressure receptacles in 6.2.3.4.1

Transmitted by the European Industrial Gases Association (EIGA), the European Cylinder Makers Association (ECMA) and the European Committee for Standardisation (CEN)^{1,2}

Summary

Executive summary: The initial inspection and test for UN pressure receptacles specified in 6.2.1.5.1 (g) effectively permits either the classical European proof pressure test with no visible permanent expansion or the water jacket test which measures volumetric expansion and detects any permanent expansion. Limits are set on such expansion in the construction standards. Paragraph 6.2.3.4.1 does not allow a permanent deformation and thus implicitly excludes the use of this latter test for RID/ADR/ADN pressure receptacles. This proposal seeks to allow the use the water jacket test where its use and failure criteria are specified in the design and construction standards.

Action to be taken: Delete the text of (g) in 6.2.3.4.1 so that, the provisions in 6.2.1.5.1 applies fully to all pressure receptacles.

Related documents: none

¹ In accordance with the programme of work of the Inland Transport Committee for 2006-2010 (ECE/TRANS/166/Add.1, programme activity 02.7 (c)).

² Circulated by the Intergovernmental Organisation for International Carriage by Rail (OTIF) under the symbol OTIF/RID/RC/2010/15.

Introduction

1. Pressure testing for transportable pressure receptacles and in particular for gas cylinders in Europe is normally carried out by the so called “proof pressure test”, whereby the receptacle is pressurized up to the test pressure, holding that pressure at a constant level for some time in order to determine that the pressure is not dropping and thus the pressure receptacle it is not leaking. During the test a visual inspection also takes place to detect whether any visible deformation has taken place. Normally no measurement of permanent expansion is performed. Very small deformations cannot be detected visually.

2. For pressure testing gas cylinders a second test method is known, the so called volumetric expansion test which typically is known as “the water jacket test”. This test is predominantly used in the United States of America, Canada, Japan and other major countries in the world. This test is able to measure the volumetric expansion which a cylinder undergoes at test pressure and any possible permanent expansion after the pressure has been released. Even very small deformations such as the correction of some ovality of a cylinder can be measured. There are also possible small measuring errors caused by other parameters which may lead to measurable volumetric expansion values in this very sensitive test

3. In theory an adequately designed pressure receptacle will never exhibit a permanent expansion, but the above mentioned circumstances do show that some small but measurable deformations are possible, which are not considered a safety issue.

4. In order to acknowledge this particular pressure test world wide the ISO standards for gas cylinders (e.g. ISO 9809 or ISO 7866) have incorporated the two tests as alternative options. For the volumetric expansion test some small expansion values, which would never be detected by the “proof pressure test”, are tolerated and acceptable.

5. RID/ADR/ADN has adopted these standards for UN pressure receptacles and allows a permanent expansion up to the values allowed in the design specifications. This means that water jacket testing is recognized for UN pressure receptacles but not for non-UN pressure receptacles.

6. In order to acknowledge both pressure tests as described above, for RID/ADR/ADN pressure receptacles the provisions for pressure testing shall be as stipulated in 6.2.1.5.1 and the special requirement in 6.2.3.4.1 for non-UN pressure receptacles should be deleted.

Proposal

7. Delete text in 6.2.3.4.1 as shown.

6.2.3.4.1 New pressure receptacles shall be subjected to testing and inspection during and after manufacture in accordance with the requirements of 6.2.1.5. ~~except that 6.2.1.5.1 (g) shall be replaced by the following:~~

~~(g) A hydraulic pressure test. Pressure receptacles shall withstand the test pressure without undergoing permanent deformation or exhibiting cracks.~~

Justification

8. This simple change will bring uniformity of practice and ensure that both types of pressure testing as foreseen in the ISO standards for gas cylinders are permissible.
 9. **Safety:** There are no safety concerns with allowing the volumetric expansion test which has proven satisfactory in many countries in the world.
 10. **Feasibility:** The change will allow cylinders to be tested in accordance with a method which is recognized and proven worldwide.
 11. **Transitional period:** not necessary.
 12. **Enforceability:** no problems are expected.
-