CGA C-1—2006

METHODS FOR HYDROSTATIC TESTING OF COMPRESSED GAS CYLINDERS

NINTH EDITION

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Work Item 06-053
Cylinder Specifications Committee

NOTE—Technical changes from the previous edition are underlined.

NOTE—Appendices B and E (Normative) are requirements.

NOTE—Appendices A, C, and D (Informative) are for information only.

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EIGHTH EDITION: 2004
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1 Introduction

Hydrostatic testing of compressed gas cylinders is required for certain newly manufactured cylinders and is an accepted test method for the requalification of cylinders. A current copy of the applicable documents, as specified by the U.S. Department of Transportation (DOT) in Title 49 of the U.S. *Code of Federal Regulations* (49 CFR), and in Canada by Transport Canada (TC) in CSA B339*, Cylinders, Spheres, and Tubes for the Transportation of Dangerous Goods*, as referenced by the *Transportation of Dangerous Goods Regulations*, shall be available at each facility conducting hydrostatic testing/requalification [1, 2, 3].

For the testing/requalification of cylinders manufactured under an exemption/special permit or permit, a current copy of that exemption or permit shall also be available. (See Appendix A for addresses of agencies that produce these documents).

2 Scope

This publication contains operating and equipment requirements necessary to properly perform hydrostatic testing of compressed gas cylinders.

3 Definitions

For the purpose of this publication, the following definitions apply.

3.1 Accuracy
Difference between the true value and the gauge indication expressed as a percentage of the gauge span.

3.2 Bar
Metric measurement used for marking service pressure (1 bar = 14.5 psi).

3.3 Calibration
Process of graduating the pressure scale, or adjusting the mechanism, to cause the gauge to indicate within specified accuracy limits.

NOTE—See Appendix B for information on calibration devices.

3.4 Calibration verification
Checking of a gauge by comparison with a given standard to determine the indication error at specified points of the scale.

3.5 Condemn
Determination that a cylinder is unserviceable for continued transportation of dangerous goods and that the cylinder may not be restored by repair, rebuild, requalification, or other procedures.

3.6 Cylinder
Any type of pressure vessel designed for a minimum internal pressure of 276 kPa, abs (2.8 bar, abs, 40 psia) and used for transportation of compressed gases that is required by the regulatory authority to be hydrostatically tested. [1]

3.7 Defect
Imperfection of sufficient magnitude to require removal from service.

3.8 Elastic expansion
Increase in cylinder volume due to application of pressure that is recovered when pressure is released.

3.9 Error
Difference between the indicated value and the true value of the variable being measured.

[1] kPa shall indicate gauge pressure unless otherwise noted as (kPa, abs) for absolute pressure or (kPa, differential) for differential pressure. All kPa values are rounded off per CGA P-11, *Metric Practice Guide for the Compressed Gas Industry* [4].