CGA C-14—2020

PROCEDURES FOR FIRE TESTING OF DOT CYLINDER PRESSURE RELIEF DEVICE SYSTEMS

FIFTH EDITION

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Work Item 16-005
Cylinder Specifications Committee

NOTE—Technical changes from the previous edition are underlined.

NOTE—Appendices A and B (Normative) are a requirement.

FIFTH EDITION: 2020
FOURTH EDITION: 2005
THIRD EDITION: 1999
SECOND EDITION: 1992

Contents **Page**

Appendix

Appendices Figures

WARNING: *When performing testing in accordance with this publication, the user shall be fully knowledgeable of the specifics of cylinder design, cylinder failure modes, and operator safety precautions. Conducting tests as described in this publication without the full understanding of the cylinder design, cylinder failure modes, and operator safety precautions can result in property damage, personal injury, and/or death.*

1 Introduction

1.1 United States

This publication provides procedures for fire testing of U.S. Department of Transportation (DOT) cylinder pressure relief device (PRD) systems. The requirements of DOT regulations are addressed in Title 49 of the U.S. *Code of Federal Regulations* (49 CFR) Parts 173.301 and 173.301b [1].[1]

1.2 Canada

In Canada, CSA B340, *Selection and use of cylinders, spheres, tubes, and other containers for the transportation of dangerous goods, Class 2* and CSA B342, *Selection and use of UN pressure receptacles, multiple-element gas containers, and other pressure receptacles for the transport of dangerous goods, Class 2* require compliance with the requirements of CGA S-1.1, *Pressure Relief Device Standards—Part 1—Cylinders for Compressed Gases* and this standard except for certain specified exemptions [2, 3, 4].

1.3 Testing conditions

Although 49 CFR covers cylinders in transportation, the cylinder system (cylinder and PRD system) should be fire tested, if required, in conditions representative of actual transportation and use. These conditions include:

- normally charged;
- cylinder orientation;
- fully exposed to the fire; and
- equipped as it would be for transportation and use.

2 Scope

This publication defines test equipment and procedures that are applicable for fire testing cylinder systems having water capacities of 1000 lb (454 kg) or less and provides sufficient test data to verify the capability of the cylinder system to prevent rupture of a normally charged cylinder. For most cylinders, selection of the type and size of PRD required to safely discharge the contents of a cylinder can be achieved by the use of the information contained in CGA S-1.1 [4].

Fire testing is neither required nor recommended except as stipulated in Section 4.

3 Definitions

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

3.1 Publication terminology

3.1.1 Shall

Indicates that the procedure is mandatory. It is used wherever the criterion for conformance to specific recommendations allows no deviation.

3.1.2 Should

Indicates that a procedure is recommended.

[1] References are shown by bracketed numbers and are listed in order of appearance in the reference section.