

# CGA

Compressed Gas Association

The Standard For Safety Since 1913

## **CGA P-77 —2018**

(Formerly TB-26)

REAFFIRMED 2023

### **STANDARD FOR FILLING NONLIQUEFIED GASES IN DOT/TC SPECIFICATION CYLINDERS TO A SPECIFIED SETTLED PRESSURE**

FIRST EDITION

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Work Item 22-039  
Safety and Health Committee

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NOTE—No technical information has been changed from the 2018 edition. This reaffirmed edition may include minor editorial changes.

NOTE—Technical changes from CGA TB-26—2010 are underlined.

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## 1 Introduction

The compressed gas industry recognizes that the filling process for U.S. Department of Transportation (DOT)/Transport Canada (TC) cylinders used to contain nonliquefied gases is subject to variations and regulatory requirements that affect the settled pressure. The industry follows DOT and TC regulations that specify filling requirements for compressed gases. Industry practice is to fill compressed gas cylinders to achieve a specified settled pressure that does not exceed the authorized service pressure at reference temperature in accordance with DOT regulations found in 49 CFR 173.301a(c) or Canadian regulations found in *Transportation of Dangerous Goods Regulations* and CSA B340, Section 5, "Selection and filling of containers for transportation" [1, 2, 3].<sup>1</sup>

## 2 Scope and purpose

This publication describes the variations that can occur during the filling of cylinders with nonliquefied gases. This publication contains methods to minimize the effect of these variations on the settled pressure. In addition, it identifies the variability in the specified settled pressure that fillers can reasonably expect.

## 3 Definitions

For the purposes 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.

#### 3.1.3 **May**

Indicates that the procedure is optional.

#### 3.1.4 **Will**

Is used only to indicate the future, not a degree of requirement.

#### 3.1.5 **Can**

Indicates a possibility or ability.

### 3.2 Technical terminology

#### 3.2.1 **Mass**

Measure of the amount of compressed or liquefied gas in a cylinder.

NOTE—Mass is expressed as a measurement of weight.

## 4 Factors that cause variations in achieving a specified settled pressure

Variations in settled pressure can be attributed primarily to the following factors:

- Personnel—training, experience, and diligence of cylinder filling personnel;
- Physics—rate of filling and thermodynamic data;
- Methods—temperature measurement and fill by weight techniques;
- Materials—gas supply, cylinder, and cylinder valve;

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<sup>1</sup> References are shown by bracketed numbers and are listed in order of appearance in the reference section.