CGA

Compressed Gas Association

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CGA G-6.2—2011

COMMODITY SPECIFICATION FOR CARBON DIOXIDE

SIXTH EDITION

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Work Item 08-013
Carbon Dioxide Committee

NOTE—Technical changes from the previous edition are underlined.

SIXTH EDITION: 2011
FIFTH EDITION: 2004
FOURTH EDITION: 2000
THIRD EDITION: 1994

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1 Scope

This publication describes the specification requirements for gaseous, liquid, and solid carbon dioxide.

The term container as used in this publication shall refer to portable compressed gas cylinders and liquid containers made in accordance with the U.S. Department of Transportation (DOT) in Title 49 of the U.S. *Code of Federal Regulations* (49 CFR) Parts 100-180; Transport Canada (TC); or the American Society of Mechanical Engineers (ASME) specifications [1, 2, 3].[1]

NOTE—This publication does not recommend or establish the end usage designation for specific types or grades of products. Users requiring this kind of information should contact individual gas suppliers.

2 Classification

2.1 Types

Carbon dioxide above the triple point temperature of –69.9 °F (–56.6 °C) and below the critical point temperature of 87.9 °F (31.1 °C) can exist in both a gaseous and a liquid state. Carbon dioxide in cylinders at ambient temperature is at relatively high pressure (see Figure 1). Bulk carbon dioxide is commonly maintained as a refrigerated low temperature liquid and vapor from 200 psig to 350 psig (1380 kPa to 2410 kPa).[2] Carbon dioxide can also exist as a white opaque solid with a temperature of –109.3 °F (–78.5 °C) at atmospheric pressure.

2.2 Quality verification levels

Table 1 presents the component maxima in parts per million (ppm [v/v]) unless otherwise shown for the quality verification levels (QVLs) of carbon dioxide. The absence of a value in a listed QVL does not imply that the limiting characteristic is or is not present but merely indicates that the test is not required for compliance with the specification. Typical uses are listed in Table 2.

QVLs E, G, H, and I generally refer to carbon dioxide as a liquid. QVL J refers to carbon dioxide as a solid (dry ice).

2.3 Quality tests

The supplier ensures by standard practice the QVL of carbon dioxide. If otherwise required, alternative control procedures are described in 3.3.1, 3.3.2, and Sections 4 and 5. Other control procedures not listed in this specification are acceptable if agreed upon between the supplier and the customer.

2.4 Typical sources

Carbon dioxide is produced as the by-product of many different natural and chemical processing mechanisms. This capability of multiple source types makes it unique in the industrial gas market. The variation of sources results in a variety of impurities that can be expected in carbon dioxide. Typical sources and their respective anticipated impurities are listed in Table 3.

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

[2] 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].