CGA G-1.7—2012

STANDARD FOR STORAGE AND HANDLING OF CALCIUM CARBIDE IN CONTAINERS

FIFTH EDITION

PLEASE NOTE:

The information contained in this document was obtained from sources believed to be reliable and is based on technical information and experience currently available from members of the Compressed Gas Association, Inc. and others. However, the Association or its members, jointly or severally, make no guarantee of the results and assume no liability or responsibility in connection with the information or suggestions herein contained. Moreover, it should not be assumed that every acceptable commodity grade, test or safety procedure or method, precaution, equipment or device is contained within, or that abnormal or unusual circumstances may not warrant or suggest further requirements or additional procedure.

This document is subject to periodic review, and users are cautioned to obtain the latest edition. The Association invites comments and suggestions for consideration. In connection with such review, any such comments or suggestions will be fully reviewed by the Association after giving the party, upon request, a reasonable opportunity to be heard. Proposed changes may be submitted via the Internet at our website, www.cganet.com.

This document should not be confused with federal, state, provincial, or municipal specifications or regulations; insurance requirements; or national safety codes. While the Association recommends reference to or use of this document by government agencies and others, this document is purely voluntary and not binding unless adopted by reference in regulations.

A listing of all publications, audiovisual programs, safety and technical bulletins, and safety posters is available via the Internet at our web site at www.cganet.com. For more information contact CGA at Phone: 703-788-2700, ext. 799. E-mail: customerservice@cganet.com.

Work Item 10-019
Acetylene Committee

NOTE—Technical changes from the previous edition are underlined.

FIFTH EDITION: 2012
FOURTH EDITION: 2005
THIRD EDITION: 2003
SECOND EDITION: 1995

Contents **Page**

Table

Figures

This page is intentionally blank.

1 Introduction

This publication is one of a series compiled by the Compressed Gas Association, Inc. to provide information on the production, transportation, handling, and storage of compressed gases, cryogenic liquids, and related products.

2 Scope and purpose

2.1 Scope

This standard covers the storage and handling of calcium carbide in containers from the calcium carbide manufacture to the point of use.

2.2 Purpose

The purpose of this standard is to provide information on the safe storage and handling of calcium carbide and to provide background for training employees in the handling of calcium carbide.

3 General Information

3.1 Nomenclature

Chemical names: Calcium carbide
Calcium dicarbide

Common names: Calcium carbide
Carbide

Chemical formulas:

CaC_2	=	Calcium carbide
CaO	=	Calcium oxide, lime
$Ca(OH)_2$	=	Calcium hydroxide, slaked lime, lime hydrate, carbide lime
C_2H_2	=	Acetylene

3.2 Physical properties

Calcium carbide is a grey, brown, or black granular solid that reacts with water to form acetylene and carbide lime. When crushed, calcium carbide is a rock-like solid with sharp, angular surfaces representing irregular fracture planes. The older the calcium carbide, the smoother these surfaces become due to reaction with moisture in the air. Calcium carbide has a unique odor that has been described as garlic-like, due primarily to trace impurities given off when the calcium carbide reacts with atmospheric moisture. These impurities include phosphine, ammonia, hydrogen sulfide, and organic sulfides [1].[1]

Calcium carbide has a specific gravity of 2.2. The bulk density of calcium carbide is approximately 67 lb/ft^3 (1100 kg/m^3); however it varies with particle size.

Calcium carbide itself will not burn or explode. It is made in an electric furnace and is tapped from the furnace white hot at 3600 °F (1980 °C) into molds open to the air.

3.3 Chemical properties

Calcium carbide reacts readily with water, water-moistened materials, or moisture in any form (fog, mist, spray or vapor) to form acetylene and calcium oxide.

$$CaC_2 + H_2O \rightarrow C_2H_2 + CaO$$

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