CGA
Compressed Gas Association
The Standard For Safety Since 1913

6TH EDITION

CGA G-12 — 2023

HYDROGEN SULFIDE

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Work Item 22-17
Specialty Gases Committee

NOTE—Technical changes from the previous edition are underlined.

NOTE—Appendix A (Informative) is for information only.

SIXTH EDITION: 2023
FIFTH EDITION: 2018
FOURTH EDITION: 2011
THIRD EDITION: 2004
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1 Introduction

This publication is one of a series compiled by the Compressed Gas Association, Inc. (CGA) in response to demand for information relating to the properties, transportation, storage, and handling of compressed gases.

2 Scope

This publication provides information regarding the properties, manufacture, shipping, storage, handling, and use of hydrogen sulfide. It also describes many of the related regulatory requirements and safe practices in the United States and Canada. This information is intended to complement but not supplant national, state, provincial, territorial, municipal, and insurance company codes and requirements.

The information in this publication is intended for use by hydrogen sulfide shippers, carriers, distributors, repackagers, consumers, equipment designers or installers, safety administrators, and others desiring an introductory knowledge to the subject. Anyone requiring more detailed or specialized information should consult his or her hydrogen sulfide supplier. Also, see the references listed in Sections 13 and 14.

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.

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.

4 Manufacture, properties, and uses

4.1 Manufacture

Hydrogen sulfide is widespread in nature, occurring to some extent in most petroleum and gas deposits, geysers and hot springs, and in some mines. Generally, it is associated with the anaerobic decay of dead organisms and is released from sewers, swamps, and lake bottoms in considerable amounts. Hydrogen sulfide does not remain in the atmosphere long because it is a part of the natural sulfur cycle and is quickly oxidized to sulfate and returned to the soil and water.

In the laboratory, hydrogen sulfide is generated by the action of an acid on iron sulfide or by warming a solution of thioacetamide.

Commercially, hydrogen sulfide is usually produced by one of the following methods:

- separation of the native compound from hydrocarbons in petroleum and natural gas processing;
- reaction of a sulfide or bisulfide with an inorganic acid; or
- union of sulfur and hydrogen at high temperature and pressure.