

CGA P-19—2019

**CGA RECOMMENDED
HAZARD RATINGS FOR
COMPRESSED GASES**

FOURTH EDITION

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Work Item 14-028
Hazard Communication Committee

NOTE—Technical changes from the previous edition are underlined.

CGA acknowledges and thanks the National Fire Protection Association (NFPA) for permission to reprint copyrighted material regarding the NFPA hazard identification systems.

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1 Scope

This publication recommends hazard ratings for most of the compressed gases found in CGA C-7, *Guide to Classification and Labeling of Compressed Gases*, in accordance with the National Fire Protection Association (NFPA) hazard identification system [1, 2].¹

This publication aids in standardizing compressed and liquefied gas classifications as designated under the NFPA hazard identification system. For a comparison between NFPA 704, *Standard System for the Identification of the Hazards of Materials for Emergency Response*, and labels under U.S. Occupational Safety and Health Association's (OSHA) *Hazard Communication Standard*, see OSHA's Quick Card 3678-08 2013 [2, 3, 4].

NOTE—The NFPA hazard rating symbols are not part of the CGA basic marking system for cylinders. The CGA basic marking system (CGA C-7, Appendix A) already incorporates the DOT hazard warning label [1].

Prior editions of CGA P-19 included ratings from American Coatings Association's Hazardous Materials Identification System® (HMIS®). This edition no longer includes these ratings due to their limited use within the compressed gas industry.

2 Definitions

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

2.1 Publication terminology

2.1.1 Shall

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

2.1.2 Should

Indicates that a procedure is recommended.

2.1.3 May

Indicates that the procedure is optional.

2.1.4 Will

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

2.1.5 Can

Indicates a possibility or ability.

3 NFPA hazard identification system

3.1 General

Severity of hazard ratings for compressed gases under emergency conditions are provided by NFPA 704, and severity of hazard categories under workplace conditions are provided by OSHA's *Hazard Communication Standard*. The NFPA numerical system for identifying the severity of the hazard designates 4 to represent the most severe hazard, whereas OSHA's *Hazard Communication Standard* designates 1 to represent the most severe. See the OSHA Quick Card Comparison of NFPA 704 and HazCom 2012 for further guidance on the differences between these hazard identification systems [3].

The OSHA hazard category numbers do not appear on labels but are used to identify the hazard class to determine what label information is required. This category number does appear on an SDS. CGA C-7 includes the OSHA numerical classification for gases [1].

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

3.2 NFPA 704 [2]

The NFPA hazard identification system is intended only to identify the emergency hazards of materials. It provides planning guidance to emergency responders for safe tactical procedures in emergency operations. The system includes on-the-spot information to safeguard the lives of emergency responders and others who can be exposed to the material.

The NFPA hazard identification system diagram, as shown in Figure 1, identifies the health, flammability, and instability of a material and indicates the order of severity of each hazard by the use of one of five numerical ratings. The numerical ratings range from 4, indicating severe hazard or extreme danger, to 0, indicating minimal hazard. In the following diagram the health hazard is identified at the left quadrant, flammability at the top, and instability on the right [2].

The bottom quadrant of the diamond is primarily used to identify unusual reactivity with water. A “W” with a line through its center (~~W~~) alerts emergency personnel to the possible hazard in the use of water. This bottom quadrant also may be used to identify other unusual hazards, but only if the space is not needed to indicate reactivity with water. Materials that possess oxidizing properties shall be identified by the letters “OX.” CGA recommends the letters “SA” (simple asphyxiant) be used to denote the asphyxiation hazard of certain gases.

To supplement the spatial arrangement, NFPA 704 recommends the use of colored backgrounds or colored numbers to identify the hazard categories: blue for health, red for flammability, yellow for instability, and white for special hazard [2].

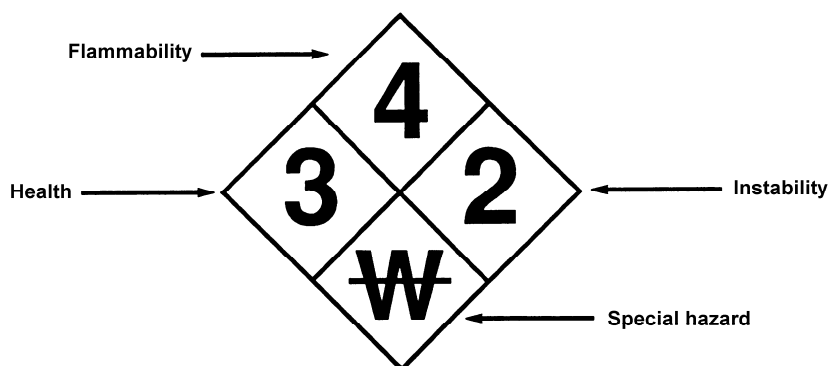


Figure 1—NFPA hazard identification system

4 Rating criteria and definitions

This section identifies rating criteria and definitions used by NFPA 704 for establishing hazard ratings for compressed and liquefied gases [2].

4.1 NFPA²

This subsection contains the hazard definitions and severity criteria for the hazards as they relate to health, flammability, and instability. The degree of severity of each of these hazards is ranked by the use of one of five numerical ratings ranging from 4, indicating a severe hazard, to 0, indicating minimal hazard.

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