



Designation: D7325 – 07

Standard Practice for Handling, Transportation, and Storage of IG-541 N₂, Ar , CO₂¹

This standard is issued under the fixed designation D7325; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers guidance and direction to suppliers, purchasers, and users in the handling, transportation, and storage of IG-541.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 CGA Standards²

C-1 Methods for Hydrostatic Testing of Compressed Gas Cylinders

C-4 American National Standard Method of Marking Portable Compressed Gas Containers to Identify the Material Contained

C-6 Standards for Visual Inspection of Steel Compressed Gas Cylinders

C-7 Guide to Preparation of Precautionary Labeling and Marking of Compressed Gas Containers

P-1 Safe Handling of Compressed Gases in Containers

2.2 U.S. Government Standards:²

Code of Federal Regulations (CFR) Title 40 , Part 82.106
CFR Title 49, Part 172 , U.S. Department of Transportation (DOT), Hazardous Materials Table, Special Provisions, Hazardous Materials Communications, Emergency Response Information, and Training Requirements

CFR Title 49, Part 172.101 , U.S. DOT, Tables of Hazardous Materials and Special Provisions

¹ This practice is under the jurisdiction of ASTM Committee D26 on Halogenated Organic Solvents and Fire Extinguishing Agents and is the direct responsibility of Subcommittee D26.09 on Fire Extinguishing Agents.

Current edition approved July 1, 2007. Published August 2007. DOI: 10.1520/D7325-07.

² Available from Compressed Gas Association (CGA), 4221 Walney Rd., 5th Floor, Chantilly, VA 20151-2923, <http://www.egonet.com>.

CFR Title 49, Part 173 , U.S. Department of Transportation (DOT) Specifications, Shippers-General Requirements for Shipping and Packagings

CFR Title 49, Part 178 , U.S. DOT Specifications, Specifications for Packagings

CFR Title 49, Part 180 , U.S. DOT, Continuing Qualification and Maintenance of Packagings

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 Containers, *n*—storage vessels for IG-541.

3.1.2 Cylinders, *v*—containers of IG-541.

3.1.3 IG-541, *n*—N₂, Ar, CO₂; a compound used to inert or suppress a fire or explosion hazard.

3.1.4 Insulated, *adj*—placed in an isolated situation to protect and prevent the transfer of damage.

4. Significance and Use

4.1 This practice provides requirements for the handling, transportation, and storage of IG-541 encountered in distribution through both commercial and military channels. It is intended to ensure that IG-541 is handled, transported, and stored in such a way that its physical property virtues are not degraded. Transport may be by various means, such as, but not limited to, highway, rail, and water.

5. Practice

5.1 To ensure safe handling, loading, unloading, storing, and transporting of material, personnel shall be trained in the CGA Standards C-1, C-4, C-6, C-7 and P-1 and CFR Title 40, Part 82.106, CFR Title 49, Part 172, CFR Title 49, Part 172.101 and CFR Title 49, Part 173, CFR Title 49, Part 178 and CFR Title 49, Part 180.

5.2 Handling:

5.2.1 Handling shall be in accordance with CGA P-1.

5.2.1.1 Personnel who handle or store, or both, cylinders of IG-541 shall be trained properly to recognize and identify the characteristics of the product and the proper methods of safely handling full, partially full, and empty cylinders.

5.2.2 Facility personnel must be trained in applicable CFR Title 49, Parts 173 and 178, and the CGA documents referenced in 2.1.

5.2.3 IG-541 handling shall be in nonsmoking, heater-free, ventilated areas to preclude product accumulation. Provisions shall be made to ensure that service areas limit IG-541 concentrations to not exceed 52 % (10% Sea Level Oxygen equivalency) for 30 s and 7 % (19.5% Sea Level Oxygen Equivalency) for 8 h.

5.2.4 Cylinders shall not be overfilled. The maximum permitted filling density for pure IG-541 shall be .088 lb/ft³ (1.409 kg/m³). Filling density requirements are specified in CFR Title 49, 173.304 and CFR Title 49, 173.305.

5.2.5 Cylinders shall be free of dirt and contamination that would contribute to or would cause deterioration of product during shipment or storage. Precautions should be taken to prevent the entry of oil, water, or any other foreign matter into

containers. Unique coatings or preservatives applied prior to shipment to protect the containers are not considered contamination.

5.3 Transportation:

5.3.1 Transportation shall be as specified in accordance with DOT regulations of CFR Title 49.

5.3.1.1 The minimum design pressure requirements shall be as indicated in CFR Title 49, Part 173.301. The pressure inside the container at 70°F (21°C) shall not exceed the service pressure for which the container is marked. The pressure inside the container at 130°F (54°C) shall not exceed 5/4 times the service pressure for which the container is marked. Figs. 1 and 2 illustrate the effect of temperature on cylinders filled with

150 Bar Cylinders

PRESSURE TEMPERATURE CHART

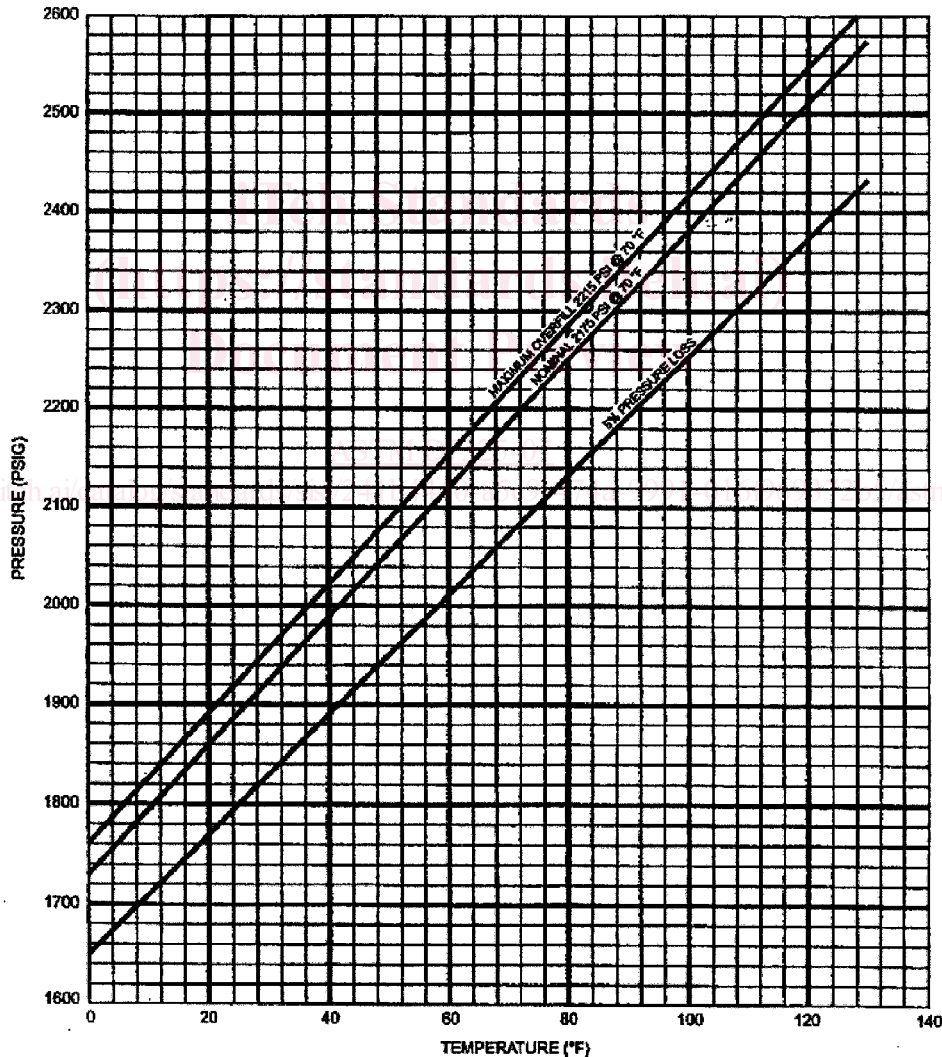


FIG. 1 IG-541 (150 Bar) Isometric Diagram