



Standard Guide for the Selection of Cleaning Agents for Oxygen-Enriched Systems¹

This standard is issued under the fixed designation G127; 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 The purpose of this guide is to establish a procedure to select cleaning agents, both solvents and water-based detergents, for oxygen-enriched systems. This includes laboratory-scale tests for cleaning effectiveness, materials compatibility, and oxygen compatibility.

1.2 The effectiveness of a particular cleaning agent depends upon the method by which it is used, the nature and type of the contaminants, and the characteristics of the article being cleaned, such as size, shape, and material. Final evaluation of the cleaning agent should include testing of actual products and production processes.

1.3 Different cleaning agents may be required for different cleaning activities, such as aqueous ultrasonic cleaning, spray cleaning, hand wiping, and flushing of oxygen lines in field applications.

1.4 *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 ASTM Standards:²

- D471 Test Method for Rubber Property—Effect of Liquids
- D543 Practices for Evaluating the Resistance of Plastics to Chemical Reagents
- D1193 Specification for Reagent Water
- D1460 Test Method for Rubber Property—Change in Length During Liquid Immersion
- D2512 Test Method for Compatibility of Materials with Liquid Oxygen (Impact Sensitivity Threshold and Pass-Fail Techniques)

¹ This guide is under the jurisdiction of ASTM Committee G04 on Compatibility and Sensitivity of Materials in Oxygen Enriched Atmospheres and is the direct responsibility of Subcommittee G04.02 on Recommended Practices.

Current edition approved Oct. 1, 2015. Published October 2015. Originally approved in 1995. Last previous edition approved in 2008 as G127 – 95 (2008). DOI: 10.1520/G0127-15.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

- D2863 Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)
- D4809 Test Method for Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter (Precision Method)
- F483 Practice for Total Immersion Corrosion Test for Aircraft Maintenance Chemicals
- G5 Reference Test Method for Making Potentiodynamic Anodic Polarization Measurements
- G31 Guide for Laboratory Immersion Corrosion Testing of Metals
- G59 Test Method for Conducting Potentiodynamic Polarization Resistance Measurements
- G63 Guide for Evaluating Nonmetallic Materials for Oxygen Service
- G72 Test Method for Autogenous Ignition Temperature of Liquids and Solids in a High-Pressure Oxygen-Enriched Environment
- G74 Test Method for Ignition Sensitivity of Nonmetallic Materials and Components by Gaseous Fluid Impact
- G86 Test Method for Determining Ignition Sensitivity of Materials to Mechanical Impact in Ambient Liquid Oxygen and Pressurized Liquid and Gaseous Oxygen Environments
- G93 Practice for Cleaning Methods and Cleanliness Levels for Material and Equipment Used in Oxygen-Enriched Environments
- G94 Guide for Evaluating Metals for Oxygen Service
- G121 Practice for Preparation of Contaminated Test Coupons for the Evaluation of Cleaning Agents
- G122 Test Method for Evaluating the Effectiveness of Cleaning Agents

2.2 CGA Document:

- CGA Pamphlet G-4.1 Cleaning Equipment for Oxygen Service

2.3 Other ASTM Documents:

- MNL36 Safe Use of Oxygen and Oxygen Systems: Handbook for Design, Operation, and Maintenance²

3. Significance and Use

3.1 The purpose of this guide is to provide information that may be considered when selecting and qualifying a cleaning agent for oxygen-enriched systems.