Designation: D 2472 – 00

Standard Specification for Sulfur Hexafluoride [1]

This standard is issued under the fixed designation D 2472; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification applies to sulfur hexafluoride for use as an electrical insulating gas.

NOTE 1—This specification is intended to apply only to gas as purchased. However, the test methods referred to in this standard may be useful in the evaluation of in-service or used gas. Test Method D 2284 may be particularly helpful since many sulfur hexafluoride decomposition products are acidic. Test Method D 2284 should not be used to evaluate the total amount of sulfur hexafluoride decomposition nor to identify contaminant species. This can only be done by gas chromatography and similar instrumental techniques.

1.2 *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:*

D 2029 Test Methods for Water Vapor Content of Electrical Insulating Gases by Measurement of Dew Point [2]

D 2284 Test Method for Acidity of Sulfur Hexafluoride [2]

D 2685 Test Method for Air and Carbon Tetrafluoride in Sulfur Hexafluoride by Gas Chromatography [2]

3. Detail Requirements

3.1 Sulfur hexafluoride for use as an electrical insulation material shall conform to the requirements prescribed in Table 1.

TABLE 1 Detail Requirements for Sulfur Hexafluoride [A]

Requirements	Property
Water content, max dew point, °C	−62 [B]
Hydrolyzable fluorides, expressed as HF acidity, max, ppm by weight	0.3
Air, expressed as N_2, max, weight %	0.05
Carbon tetrafluoride, max, weight %	0.05
Assay, min, weight %	99.8

[A] By agreement between the purchaser and the manufacturer, analysis may be required and limits established for properties, elements, or compounds not specified in the table of requirements.

[B] Corresponds to a water content of 8.0 ppm by volume at 1.01325×10^5 Pa.

4. Sampling

4.1 Withdraw a sample of sulfur hexafluoride from either the vapor space or liquid phase of the container.

4.2 For samples collected from the liquid phase the user must ascertain whether or not the cylinder valve is attached to a dip tube. Sample cylinders equipped with a dip tube in an upright position. Invert cylinders not equipped with a dip tube for sampling to ensure that the sample is obtained from the liquid phase of the cylinder.

4.3 Analyses may be performed on vapor space samples for routine or preliminary testing. If the vapor phase analysis indicates that impurities are not within specification, a liquid phase sample should be obtained and analysed. The liquid phase comprises most of the material in the container and is more representative of the overall composition of the SF_6 in the container. When a discrepancy exists between vapor and liquid phase analyses, the liquid phase analysis shall govern, unless otherwise agreed to by purchaser-seller agreement.

5. Precautions

5.1 Refer to the section titled Interferences in Test Method D 2029.

6. Test Methods

6.1 *Water Content*—Test Method D 2029.

6.2 *Hydrolyzable Fluorides*—Determine the acidity, expressed as HF, in accordance with Test Method D 2284.

6.3 *Air*—Determine the amount of noncondensable gases, expressed as nitrogen, by gas chromatographic analysis in accordance with Test Method D 2685.

6.4 *Carbon Tetrafluoride*—Determine the amount of carbon tetraflluoride by gas chromatographic analysis in accordance with Test Method D 2685.

6.5 *Assay*—Assay shall be by difference, after impurity content has been determined.

7. Keywords

7.1 electrical insulating gas; sulfur hexafluoride

[1] This specification is under the jurisdiction of ASTM Committee D-27 on Electrical Insulating Liquids and Gasesand is the direct responsibility of Subcommittee D27.02on Gases and Synthetic Liquids.

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[2] *Annual Book of ASTM Standards*, Vol 10.03.