



Designation: D923 – 15 (Reapproved 2023)

Standard Practices for Sampling Electrical Insulating Liquids¹

This standard is issued under the fixed designation D923; 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 U.S. Department of Defense.

1. Scope

1.1 These practices cover sampling of new electrical insulating liquids including oils, askarels, silicones, synthetic liquids, and natural ester insulating liquids as well as those insulating liquids in service or subsequent to service in cables, transformers, circuit breakers, and other electrical apparatus. These practices apply to liquids having a viscosity of less than $6.476 \times 10^{-4} \text{ m}^2/\text{s}$ (540 cSt) at 40 °C (104 °F).

1.2 Representative samples of electrical insulating liquids are taken for test specimens so that the quality pertinent to their use may be determined. The quality in different portions of a given container, or the average quality of the whole bulk may be ascertained if desired.

1.3 The values stated in SI units are regarded as the standard where applicable. Inch pound units are used where there is no SI equivalent.

1.4 These practices also include special techniques and devices for sampling for dissolved gases-in-oil (DGA) (D3612), water (D1533) and particles (D6786).

1.5 For ease of use, this document has been indexed as follows:

Section Title	Section/ Paragraph
Mandatory Conditions and General Information Description of Sampling Devices and Containers	Section 5 Section 6, Annex A1, Appendix X2
Most Frequently Used Sampling Techniques for Electrical Apparatus	
Collecting Samples from Electrical Equipment Using Bottles and Cans	Section 7, Appendix X1, Appendix X2
Collecting Samples from Electrical Equipment Using Glass Syringes (DGA and Water Analysis)	Section 8
Collecting Samples from Electrical Equipment Using Stainless Steel Cylinders (DGA and Water Analysis)	Section 9

¹ These practices are under the jurisdiction of ASTM Committee D27 on Electrical Insulating Liquids and Gases and are the direct responsibility of Subcommittee D27.07 on Physical Test.
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Section Title	Section/ Paragraph
Sampling of Cans, Drums, Tank Cars, Tank Trucks and Small Electrical Equipment	
Sampling Using the Dip-Type Device (drum thief)	Section 10
Sampling Using the Pressure-Type Device	Section 11, Annex A1.1
Sampling Using the Tank Car-Type Device	Section 12, Annex A1.2
Sampling Cable Feeders	
Mandatory Conditions	Section 13
General Considerations	Section 14
Sampling Using the Manifold-Type Device	Section 15, Annex A1.3
Cleaning, Preparation, Storage, and Handling of Sampling Containers	Section 16
Storage, Packaging and Shipping of Samples	Section 17
Cleaning and Storage of Sampling Devices	Section 18
Sample Information	Section 19
Mandatory Information—Construction of Sampling Devices	Annex A1
Determination of Electrical Apparatus Temperature	Appendix X1
Sample Container Types	Appendix X2

1.6 Handle askarels containing polychlorinated biphenyls (PCBs) according to federal and local regulations existing for that country. For example, the federal regulations concerning PCBs in the United States can be found in 40 CFR Part 761.

1.7 Properly contain, package and dispose of any liquid or material resulting from the use of these practices in a manner that is in accordance with local and state regulations specific to the country in which the samples are taken.

1.8 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* Specific warning statements are given in 1.6, 1.7, Section 5, 10.1, 13.2, 15.2.3, Section 16, and 18.2. These practices involve close contact with the electrical insulating liquids being sampled as well as liquids and other materials used to clean the sampling tools and devices. When required, or as a matter of diligence to personal safety, use personal protective equipment (PPE).

1.9 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the*