



Standard Method for INVESTIGATING THE COMPATIBILITY OF TRANSFORMER INSULATION AND CONSTRUCTION MATERIALS IN ASKARELS¹

This Standard is issued under the fixed designation D 3255; 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.

1. Scope

1.1 This method uses the change of electrical or chemical characteristics, or both, of transformer askarel resulting from controlled exposure to insulation and construction materials, to evaluate their immediate major contamination effect on the askarel fluid. Delayed or long-time contamination effects may not be detected. Refer to Specification D 2283 for the definition of askarel.

1.2 This method also utilizes various physical tests on the electrical insulation and construction materials after controlled exposure to the askarel to help in determining the compatibility of these materials with transformer askarel.

1.3 This method is not suitable for the complete evaluation of the askarel-structural-insulating material system combination for any given application. Other methods much more complex, which are beyond the scope of this method, should be used for such an evaluation.

1.4 Suggested limits for judging compatibility of materials are outlined in 8.4.

2. Applicable Documents

2.1 *ASTM Standards:*

- D 150 Tests for A-C Loss Characteristics and Dielectric Constant (Permittivity) of Solid Electrical Insulating Materials²
- D 664 Test for Neutralization Number by Potentiometric Titration²
- D 877 Test for Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes²
- D 924 Test for Power Factor and Dielectric

Constant of Electrical Insulating Liquids²

D 1533 Test for Water in Insulating Liquids (Karl Fischer Method)²

D 2129 Test for Color of Chlorinated Aromatic Hydrocarbons (Askarels)²

D 2283 Specification for Chlorinated Aromatic Hydrocarbons (Askarels) for Transformers²

3. Summary of Method

3.1 Properly proportioned specimens of the insulation or structural materials are immersed in refined askarel for 168 h at $100 \pm 1^\circ \text{C}$ in a forced-draft oven. Changes in electrical and chemical properties of the transformer askarel are compared against a control sample of the askarel treated in the same manner, in absence of the test specimens.

3.2 Color change or intensification beyond that of the control indicates that the askarel has extracted colored materials from the insulation or structural components or, the combination may have degraded the askarel.

3.3 Physical properties of the materials of insulation and construction are determined before and after exposure to the askarel fluid.

4. Significance

4.1 The interaction of transformer askarel with materials used for dielectric or structural

¹ This method is under the jurisdiction of ASTM Committee D-27 on Electrical Insulating Liquids and Gases.

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² *Annual Book of ASTM Standards*, Part 40.