



Designation: D3448 – 10 (Reapproved 2020)

Standard Test Method for Specific Aqueous Conductance of Trichlorotrifluoroethane¹

This standard is issued under the fixed designation D3448; 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 test method covers the determination of aqueous conductivity due to ionizable contaminants extracted from trichlorotrifluoroethane. The value of 1.9 $\mu\text{S}/\text{cm}$ as maximum specific aqueous conductance corresponds to 0.1 ppm of chloride ion (100 ppb). It was calculated by putting the solvent specification of 0.1 ppm chloride into the equation of the subject method to find $C_2 - C_1$ equals 19.08. The specific conductance due to contaminants from the solvent was then calculated as follows:

$$(C_2 - C_1)C_3 = (19)(0.1) = 1.9 \mu\text{S}/\text{cm} \quad (1)$$

1.2 The above is exclusive of the background specific conductance of the water used in the analysis.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3.1 *Exception*—Values are stated in inch-pound units in Fig. 1.

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 consult and establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* Specific precautionary statements are given in Section 6.

1.5 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Summary of Test Method

2.1 Ionizable impurities in the solvent are extracted with water of known low conductivity. The increase in water conductivity measures the amount of these impurities present.

¹ This test method is under the jurisdiction of ASTM Committee D26 on Halogenated Organic Solvents and Fire Extinguishing Agents and is the direct responsibility of Subcommittee D26.04 on Test Methods.

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3. Significance and Use

3.1 This test method allows for the determination of ionizable contaminants (expressed in terms of ppb of HCl) in trichlorotrifluoroethane via measurement of specific aqueous conductance.

3.2 This test method can be used for establishing manufacturing and purchasing specifications.

4. Apparatus

4.1 *Conductivity Bridge*.²

4.2 *Conductivity Cell*,³ dip-type. Cell constant of 0.1 reciprocal centimetre. Electrodes must be bright platinum.

4.3 *Polyethylene Beaker*, 250 mL.

4.4 *Polyethylene Bottles*, wide mouth, 300 mL and 500 mL size.

4.4.1 Calibrate and mark the outside of the 300 mL polyethylene bottles to indicate 20 mL, 120 mL, and 220 mL (graduate) of water volume, using deionized water to determine the liquid levels.

4.5 *Polyethylene Tubing*, long enough to reach the bottom of the 300 mL polyethylene bottle.

5. Reagents

5.1 *Purity of Reagents*—Reagent grade chemicals shall be used in all tests. Unless otherwise indicated, it is intended that all reagents shall conform to the specifications of the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available.⁴ Other grades may be

² The sole source of supply of the apparatus (Serfass Model RCM-15B1) known to the committee at this time is Industrial Instrument Inc., Cedar Grove, NJ. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.

³ The sole source of supply of the apparatus (Model Cel-A01) known to the committee at this time is Industrial Instrument Inc., Cedar Grove, NJ. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee,¹ which you may attend.

⁴ *Reagent Chemicals, American Chemical Society Specifications*, American Chemical Society, Washington, DC. For suggestions on the testing of reagents not listed by the American Chemical Society, see *Analar Standards for Laboratory Chemicals*, BDH Ltd., Poole, Dorset, U.K., and the *United States Pharmacopeia and National Formulary*, U.S. Pharmacopeial Convention, Inc. (USPC), Rockville, MD.