



Standard Test Method for Quantitative Test for Turbidity in Clear Liquids¹

This standard is issued under the fixed designation D 5180; 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 measurement of turbidity of clear liquids. It is applicable to resin solutions, solvents, clear coatings, monomers, and any other liquids where clarity is specified. This test method should be used only for comparison of clarity of similar materials, and not to obtain absolute values for turbidity.

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 1889 Test Methods for Turbidity of Water²

D 2090 Test Method for Clarity and Cleanliness of Paint and Ink Liquids³

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁴

3. Summary of Test Method

3.1 A specimen is placed in a vial and measured on a ratio recording turbidimeter. The instrument is calibrated in nephelometric turbidity units (NTU), with standards provided by the manufacturer. Turbidity of the specimen is read directly in NTU's. The instrumental values are insensitive to color and require no color correction.

4. Significance and Use

4.1 This test method is applicable to resin solutions, solvents, clear coatings, monomers, and any other liquid where clarity is specified. It is designed to provide an objective, instrumental method that is repeatable and reproducible.

NOTE 1—The only other ASTM test method for determining clarity of resin solutions is Test Method D 2090. Test Method D 2090 determines

clarity by visual inspection versus the instrumental determination in this test method.

5. Apparatus

5.1 *Ratio Recording Turbidimeter*—Supplier and consumer should agree on a common instrument, since optics vary between instrument companies and that will effect results.

5.2 *Cylindrical Glass Vials with Screw Caps*, 30 mL, 25 mm outside diameter by 95 mm high. For very low values, follow instrument manufacturer's recommendation.

NOTE 2—Inexpensive vials, available from most scientific supply companies, are adequate for most paint materials. However, minor variations in clarity and thickness of the glass may be significant when measuring specimens with very low turbidity. For values of less than 5 NTU, use only manufacturer's specified vials.

5.3 *Secondary Standards*—See Test Methods D 1889 for procedure to calibrate secondary standards.

6. Procedure

6.1 Allow instrument to warm for at least 10 min before using.

6.2 Using the standards supplied with instrument, calibrate at least once a month, as directed in the instrument manual.

6.3 Before each use, check the instrument with the secondary standard supplied by the instrument supplier. If instrument is outside the manufacturer's specified range, recalibrate.

6.4 Carefully fill a clean, dry vial to within a centimetre of the top and cap tightly. Pour down the side of the vial, to minimize bubble formation. If bubbles are observed, allow them to dissipate before making the measurement. In most cases, bubbles may be removed rapidly by use of a sonic bath, centrifuging, or pulling a slight vacuum. Wipe off any lint or smudge from the outside surface before making the measurement.

NOTE 3—Bubbles will produce erroneously high results.

6.5 Place the vial in the instrument and record the reading. Use the lowest range setting possible. Measure at least two specimens in separate vials.

NOTE 4—Specimens that settle rapidly may decrease during measurement. If that happens, record the highest value observed.

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² Annual Book of ASTM Standards, Vol 11.01.

³ Annual Book of ASTM Standards, Vol 06.03.

⁴ Annual Book of ASTM Standards, Vol 14.02.