



Standard Test Method for Ethyl Methyl Pentanol Content and Purity Value of 2-Ethylhexanol By Gas Chromatography¹

This standard is issued under the fixed designation D 5008; 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 ethyl methyl pentanol content and purity value of 2-ethylhexanol.

1.2 Water and acid cannot be determined by this test method and must be determined in accordance with Test Methods D 1613 and E 203 and those results used to normalize the chromatographic data.

1.3 *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.* For a specific hazard statement, see 6.1.1.

1.4 For hazard information and guidance, see the supplier's Material Safety Data Sheet.

2. Referenced Documents

2.1 ASTM Standards:

D 1613 Test Method for Acidity in Volatile Solvents and Chemical Intermediates Used in Paint, Varnish, Lacquer, and Related Products²

E 203 Test Method for Water Using Karl Fischer Titration³

3. Summary of Test Method

3.1 A representative specimen is introduced onto a capillary column. The 2-ethylhexanol is separated from the ethyl methyl pentanol and other impurities while the components are transported through the column by an inert carrier gas. The separated components are measured in the effluent by a flame ionization detector and the areas for the peaks are determined by a suitable integration technique. The data are interpreted by applying component detector response factors to the peak areas, and the relative concentrations are determined by relating the individual peak responses to the total peak response. Acidity and water are measured by Test Methods D 1613 and E 203, respectively, and the results are used to normalize the values obtained by gas chromatography. An internal standard

procedure is also included as an alternative calculation technique. With this procedure, all impurities are determined relative to the internal standard and the purity value is determined by subtracting the sum of the impurities, water, and acid from 100.

4. Significance and Use

4.1 This test method is used to determine the purity value and ethyl methyl pentanol content of 2-ethylhexanol.

5. Apparatus

5.1 *Chromatograph*—Any gas chromatograph designed or modified for use with capillary or wide-bore capillary columns. The gas chromatograph should be equipped with a flame ionization detector or other detector capable of operating with these columns and capable of detecting impurities at a level of 0.01 weight % with a signal to noise ratio of at least 5:1.

5.2 *Column*—Any column capable of resolving 2-ethylhexanol from ethyl methyl pentanol and other impurities that may be present. The peaks should be resolved quantitatively within a practical elapsed time. Columns that meet the requirement of this test method are listed in Table 1. Other columns may be used, provided the user establishes that a column gives the required separations.

5.3 *Specimen Introduction System*—Any system capable of introducing a representative specimen into the gas chromatograph may be used. A 1-μL syringe has been used successfully.

5.4 *Computing Integrator*—Any computing integrator capable of accurately determining the peak areas generated during this analysis.

5.5 *Analytical Balance*—The internal standard technique requires an analytical balance capable of measuring 0.1 mg.

6. Reagents and Materials

6.1 *Carrier Gas*—Helium, purified nitrogen, or hydrogen are suitable. The carrier gas should have a minimum purity of 99.95 mol %.

6.1.1 **Warning:** If hydrogen is used, take special safety precautions to ensure that the chromatographic system is free from leaks.

6.2 *Detector Gases*—Hydrogen and air are used for the flame ionization detector. If a make-up gas is used, helium or nitrogen are suitable.

6.3 *Standards for Calibration and Identification*—Standard

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.35 on Solvents, Plasticizers, and Chemical Intermediates.

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² *Annual Book of ASTM Standards*, Vol 06.04.

³ *Annual Book of ASTM Standards*, Vol 15.05.