



## Standard Test Method for Depentanization of Gasoline and Naphthas<sup>1</sup>

This standard is issued under the fixed designation D 2001; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the removal of pentanes and lighter hydrocarbons from gasolines, naphthas, and similar petroleum distillates to prepare samples suitable for the determination of hydrocarbon types in accordance with Test Method D 1319 or Test Method D 2789. In addition, this test method determines the volume percent of bottoms remaining after depentanization.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information purposes only.

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.*

### 2. Referenced Documents

#### 2.1 ASTM Standards:

- D 1250 Guide for Petroleum Measurement Tables<sup>2</sup>
- D 1319 Test Method for Hydrocarbon Types in Liquid Petroleum Products by Fluorescent Indicator Adsorption<sup>2</sup>
- D 2789 Test Method for Hydrocarbon Types in Low-Olefinic Gasoline by Mass Spectrometry<sup>3</sup>

### 3. Summary of Test Method

3.1 A 50-mL sample is distilled into an overhead ( $C_5$  and lighter) fraction and a bottoms ( $C_6$  and heavier) fraction. The volume of bottoms is measured and the volume percent, based on the charge, is calculated.

### 4. Significance and Use

4.1 The presence of pentane and lighter hydrocarbons in gasolines, naphthas, and similar petroleum distillates interferes in Test Method D 1319 and Test Method D 2789. Pentane and lighter hydrocarbons are separated by this test method so that the depentanized residue can be analyzed and so the pentane and lighter hydrocarbons can be analyzed by other methods, if desired.

4.2 Under the conditions specified in the test method some  $C_5$  and lighter hydrocarbons remain in the bottoms, and some  $C_6$  and heavier hydrocarbons carry over to the overhead. Expressed as volume percent of charge, the amounts are typically 2 % or less, which is considered adequate for the purpose designated under Scope. It should be recognized, however, that when expressed as volume percent of overhead or of bottoms the percentages can be higher, making this test method unsuitable for any purposes not designated under Scope.

### 5. Apparatus

5.1 *Depentanization Apparatus*, as shown in Fig. 1, consisting of the following parts:

- 5.1.1 *Distillation Column*,
- 5.1.2 *Reflux Condenser Head*,
- 5.1.3 *Light-Ends Trap*,
- 5.1.4 *Receiver*, graduated, 12.5 mL, and
- 5.1.5 *Thermometer*,<sup>4</sup> 10 to 79°C (50 to 175°F).
- 5.2 *Column Packing*—Two types are required:
  - 5.2.1 *Heli-Pak Column Packing*,<sup>5</sup> 1.27 by 2.54 by 2.54 mm (Size B, 0.050 by 0.100 by 0.100 in.).
  - 5.2.2 *Heli-Pak Column Packing*,<sup>5</sup> Size C, 4.4 by 4.4 mm (0.090 by 0.175 by 0.175 in.), or *Cannon Protruded Metal Packing*,<sup>6</sup> 4.0 by 4.0 mm (0.16 by 0.16 in.).
- 5.3 *Distillation Flask*, round-bottom, 100 mL, with <sup>2</sup>/<sub>40</sub> standard-taper joint.
- 5.4 *Distillation Flask Heating Mantle, Glas-Col*, spherical, for 100-mL flask.
- 5.5 *Variable Transformer*, for regulating power to heating mantle.
- 5.6 *Water Cooling Bath*—If a supply of chilled water for the reflux condenser is not available, a satisfactory means for supplying chilled water can be provided by circulating tap water through coiled copper tubing immersed in an ice-water bath.

### 6. Preparation of Apparatus

6.1 Fill the fractionating column with packing as follows: Place about 25 mm (1 in.) of the Heli-Pak column packing, size

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 05.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 05.02.

<sup>4</sup> Thermometer No. ME510-1 available from Metro Scientific Inc., 11 Willow Park Center, East Farmingdale, NY 11735.

<sup>5</sup> Available from Reliance Glass Works Inc., Gateway Rd., PO Box 825, Bensenville, IL 60106.

<sup>6</sup> Cannon protruded metal packing available from Scientific Development Co., Box 795, State College, PA.