



**Designation: D 92 – 02a**



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Highway and Transportation Officials Standard  
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## **Standard Test Method for Flash and Fire Points by Cleveland Open Cup Tester<sup>1</sup>**

This standard is issued under the fixed designation D 92; 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.

*This standard has been approved for use by agencies of the Department of Defense.*

### **INTRODUCTION**

This flash point and fire point test method is a dynamic method and depends on definite rates of temperature increases to control the precision of the test method. Its primary use is for viscous materials having flash point of 79°C (175°F) and above. It is also used to determine fire point, which is a temperature above the flash point, at which the test specimen will support combustion for a minimum of 5 s. Do not confuse this test method with Test Method D 4206, which is a sustained burning test, open cup type, at a specific temperature of 49°C (120°F).

### **1. Scope \***

1.1 This test method describes the determination of the flash point and fire point of petroleum products by a manual Cleveland open cup apparatus or an automated Cleveland open cup apparatus.

NOTE 1—The precisions for fire point were not determined in the current interlaboratory program. Fire point is a parameter that is not commonly specified, although in some cases, knowledge of this flammability temperature may be desired.

1.2 This test method is applicable to all petroleum products with flash points above 79°C (175°F) and below 400°C (752°F) except fuel oils.

NOTE 2—This test method may occasionally be specified for the determination of the fire point of a fuel oil. For the determination of the flash points of fuel oils, use Test Method D 93. Test Method D 93 should also be used when it is desired to determine the possible presence of small, but significant, concentrations of lower flash point substances that may escape detection by Test Method D 92. Test Method D 1310 can be employed if the flash point is known to be below 79°C (175°F).

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

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 establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For specific hazard statements, see 6.4, 7.1, 11.1.3, and 11.2.4.

### **2. Referenced Documents**

#### **2.1 ASTM Standards:**

- D 93 Test Methods for Flash Point by Pensky-Martens Closed Cup Tester<sup>2</sup>
- D 140 Practice for Sampling Bituminous Materials<sup>3</sup>
- D 1310 Test Method for Flash Point and Fire Points of Liquids by Tag Open-Cup Apparatus<sup>4</sup>
- D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products<sup>5</sup>
- D 4177 Practice for Automatic Sampling of Petroleum and Petroleum Products<sup>5</sup>
- D 4206 Test Method for Sustained Burning of Liquid Mixtures by the Setaflash Tester (Open-Cup)<sup>6</sup>
- E 1 Specification for ASTM Thermometers<sup>7</sup>
- E 300 Practice for Sampling Industrial Chemicals<sup>8</sup>

#### **2.2 IP Standard:<sup>9</sup>**

<sup>1</sup> This test method is under the joint jurisdiction of ASTM Committee D02 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.08 on Volatility. In the IP, this test method is under the jurisdiction of the Standardization Committee. This test method was adopted as a joint ASTM-IP standard in 1965. This test method has been adopted for use by government agencies to replace Method 1103.7 of Federal Test Method Standard No. 791b, and Method 4294 of Federal Test Method Standard No. 141A.

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

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.03.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 06.01.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 05.02.

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 06.01.

<sup>7</sup> *Annual Book of ASTM Standards*, Vol 14.03.

<sup>8</sup> Discontinued—See 2000 *Annual Book of ASTM Standards*, Vol 15.05.

<sup>9</sup> Available from the Institute of Petroleum, 61 New Cavendish St., London, W1M 8AR, U.K.

**\*A Summary of Changes section appears at the end of this standard.**