



Designation: D4206 – 96 (Reapproved 2007)

Standard Test Method for Sustained Burning of Liquid Mixtures Using the Small Scale Open-Cup Apparatus¹

This standard is issued under the fixed designation D4206; 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.

INTRODUCTION

This test method may be used in conjunction with a flash point determination. If the flash point of a mixture of flammable and nonflammable liquids or liquids of widely different flash points is below the upper limit of a flammability classification (for example, 100°F specified by the U.S. Department of Transportation), this test may be conducted to determine the sustained burning characteristics of the mixture.

This test method is a modification of the test for combustibility now incorporated as Schedule 2 of the “Highly Flammable Liquids and Liquified Petroleum Gases Regulation, 1972” of the United Kingdom under The Factories Act, 1961, which is also issued as British Standard BS-3900, Part A-11, Small Scale Test for Combustibility. This sustained burning test was studied and proposed by the ASTM Coordinating Committee for Flash Point and Related Properties. The major purpose of this test is similar to that of the British test—to provide a method for determining the sustained burning characteristics by directly observing this property rather than by deducing them from the flash point.

1. Scope

1.1 This test method² describes a procedure for determining the sustained burning characteristics of mixtures of flammable and nonflammable liquids and to mixtures containing liquids with widely different flash points.

1.2 *This standard should be used to measure and describe the response of materials, products, or assemblies to heat and flame under controlled conditions and should not be used to describe or appraise the fire-hazard or fire-risk of materials, products, or assemblies under actual fire conditions. However, results of the test may be used as elements of a fire-hazard assessment or a fire-risk assessment which takes into account all of the factors which are pertinent to an assessment of the fire hazard or fire risk of a particular end use.*

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.*

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 D01.21 on Chemical Analysis of Paints and Paint Materials.

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² McKelvie, A. N., “A Test for Ability to Support Combustion for Liquids Including Paints and Allied Products,” *Journal of Oil Co. Chemical Assoc.*, 1972, Vol 55, pp. 1086–1095.

2. Referenced Documents

2.1 *British Standards:*³
[BS-3900 Part A-11, Small Scale Test for Combustibility](#)

3. Summary of Test Method

3.1 A block of aluminum alloy, or other nonrusting metal of suitable heat conductivity, with a concave depression (called the well) is heated to the required temperature of 120°F (49°C). A standard source of flame, capable of being swung over the center of the well and at a given distance from it, is attached to the metal block.

3.2 Two millilitres of the product under test are transferred to the well. After the product has reached the stated temperature, the flame is passed over the well, held there for a specified time, and then removed. The time of sustained burning is then noted.

4. Significance and Use

4.1 Mixtures of flammable liquids and nonflammable liquids, such as an alcohol and water mixture, are classified by the U. S. Government by the definition of flammable liquid based on a closed-cup flash point method. Thus, mixtures may

³ Available from British Standards Institute (BSI), 389 Chiswick High Rd., London W4 4AL, U.K., <http://www.bsi-global.com> or American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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