AS 2106.3—2005
ISO 3680:2004

AS 2106.3—2005

Australian Standard™

Methods for the determination of the flash point of flammable liquids (closed cup)

Part 3: Determination of flash/no flash—Rapid equilibrium closed cup method

STANDARDS AUSTRALIA

This Australian Standard was prepared by Committee CH-009, Safe Handling of Chemicals. It was approved on behalf of the Council of Standards Australia on 5 April 2005. This Standard was published on 26 April 2005.

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Australasian Fire Authorities Council
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Australian Standard™

Methods for the determination of the flash point of flammable liquids (closed cup)

Part 3: Determination of flash/no flash—Rapid equilibrium closed cup method

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PREFACE

This Standard was prepared by Joint Australian/New Zealand Standards Committee CH-009, Safe Handling of Chemicals, to supersede AS/NZS 2106.3:1999, *Methods for the determination of the flash point of flammable liquids (closed cup)*, Part 3: *Flash/no flash test—Rapid equilibrium method*. It is identical with, and has been reproduced from ISO 3680:2004, *Determination of flash/no flash—Rapid equilibrium closed cup method*.

The objective of this Standard is to provide a rapid equilibrium method for determining whether or not a product under test has a flash point at, below, or above a selected temperature, using a smaller test portion (2 to 4 mL) than that required for some other methods.

The main changes between this edition and that published in 1999 include procedures on the calibration (verification) of apparatus and on sample handling.

As this publication has been reproduced from an International Standard, the following modifications apply:

(a) Its number does not appear on each page of text and its identity is shown on the cover and title page.

(b) In the source test ‘this ‘International Standard’ should read ‘this Australian Standard’.

(c) Substitute full point for a comma when referring to a decimal marker.

References to International Standards should be replaced by Australian Standards, as follows:

Reference to International Standard		*Australian Standard*	
ISO		AS/NZS	
1513	Paints and varnishes—Examination and preparation of samples for testing	1580	Paints and related materials—Methods of test
		1580.103.1	Method 103.1: Examination and preparation of samples for testing
		AS	
1516	Determination of flash/no flash—Closed cup equilibrium method	2106	Methods for the determination of the flash point of flammable liquids (closed cup)
		2106.5	Part 5: Determination of flash/no flash—Closed cup equilibrium method
3679	Determination of flash point—Rapid equilibrium closed cup method	2106.4	Part 4: Determination of flash point—Rapid equilibrium closed cup method

Other International Standards referenced in the source document have not been adopted as Australian Standards.

The terms ‘normative’ and ‘informative’ have been used in this Standard to define the application of the annex to which they apply. A ‘normative’ annex is an integral part of a Standard, whereas an ‘informative’ annex is only for information and guidance.

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INTRODUCTION

This International Standard describes one of two closed cup equilibrium methods for carrying out a flash/no flash test for paints, varnishes, paint binders, solvents, adhesives, petroleum and related products. When selecting a method, it should therefore be read in conjunction with the second method, ISO 1516 [4]. When used in conjunction with the flash detector (A.1.6) this International Standard is also suitable for the flash/no flash testing of fatty acid methyl esters (FAME).

In both ISO 3680 and ISO 1516, the test is only carried out when the material under test and the air/vapour mixture above the material in the test cup are approximately in temperature equilibrium.

This test method does not determine the flash point of the product under test, but merely its behaviour at the selected test temperature as may be required to comply with laws or regulations relating to the storage, transport and use of flammable products. For this purpose, it is unnecessary to determine the exact flash point, but it is necessary to determine whether or not flashing occurs at a given temperature.

The apparatus specified in this International Standard enables a similar test result to be determined using a more rapid procedure and a smaller test portion (2 ml or 4 ml) than that required in ISO 1516. In addition, the apparatus can be made portable to the extent of being suitable for on-site testing in addition to its more normal use in laboratories.

Collaborative work (see [6] in the Bibliography) has shown that results obtained by these procedures are comparable. The interpretation of flash point results obtained on solvent mixtures containing halogenated hydrocarbons should be considered with caution, as these mixtures can give anomalous results (see [7] in the Bibliography).

Flash point values are not a constant physical-chemical property of materials tested. They are a function of the apparatus design, the condition of the apparatus used, and the operational procedure carried out. Flash point can therefore only be defined in terms of a standard test method, and no general valid correlation can be guaranteed between results obtained by different test methods or with test apparatus different from that specified.

AUSTRALIAN STANDARD

Methods for the determination of the flash point of flammable liquids (closed cup)

Part 3:

Determination of flash/no flash—Rapid equilibrium closed cup method

WARNING — The use of this International Standard may involve hazardous materials, operations and equipment. This International Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies a method for the determination of the ability of paints (including water-borne paints), varnishes, paint binders, adhesives, solvents and petroleum and related products, when maintained at a selected test temperature within the range of − 30 °C to 300 °C, and under the conditions of test, to yield sufficient flammable vapour at this temperature to cause ignition on the application of a test flame in a standard manner. When used in conjunction with the flash detector (A.1.6), this International Standard is also suitable to carry out a flash/no flash test on fatty acid methyl esters (FAME).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 1513:1992, *Paints and varnishes — Examination and preparation of samples for testing*

ISO 3170:2004, *Petroleum liquids — Manual sampling*

ISO 3171:1988, *Petroleum liquids — Automatic pipeline sampling*

ISO 3679:2004, *Determination of flash point — Rapid equilibrium closed cup method*

ISO 15528:2000, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
flash/no flash test
application of a test flame at the specified temperature of the test portion (as measured in the prescribed manner), adjusted to a barometric pressure of 101,3 kPa, to determine whether the vapours of the test portion ignite momentarily and a flame propagates across the surface of the liquid under the specified conditions of test