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Test methods for environmental characterization of solid matrices - Guide to flash point testing

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National foreword

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Test methods for environmental characterization of solid matrices - Guide to flash point testing

Caractérisation des déchets - Lignes directrices pour la détermination du point d'éclair

Prüfverfahren für die umweltbezogene Charakterisierung fester Matrices - Anleitung zur Prüfung des Flammpunkts

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European foreword

This document (CEN/TR 17309:2019) has been prepared by Technical Committee CEN/TC 444 “Test methods for environmental characterization of solid matrices”, the secretariat of which is held by NEN.

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Introduction

Flash point values are used in transporting, storage, handling and safety regulations, as a classification property to define “flammable” and “combustible” materials. Precise definition of the classes is given in each particular regulation.

A flash point value can indicate the presence of highly volatile material(s) in a relatively non-volatile or non-flammable material and flash point testing can be a preliminary step to other investigations into the composition of unknown materials. For products material safety data sheets provide further information also for flash point, but e. g. material safety data sheets for waste do not exist.

It is not appropriate for flash point determinations to be carried out on potentially unstable, decomposable, or explosive materials, unless it has been previously established that heating the specified quantity of such material in contact with the metallic components of the flash point apparatus, within the temperature range required for the method, does not induce decomposition, explosion or other adverse effects.

Flash point values are not a constant physical-chemical property of material tested. They are a function of the apparatus design, the condition of apparatus used, and no general valid correlation can be guaranteed between results obtained by different test methods or with test apparatus different from that specified.

1 Scope

The flash point test can be summarised as a procedure where a test portion is introduced into a temperature controlled test cup and an ignition source is applied to the vapours produced by the test portion to determine if the vapour / air mixture is flammable or at what temperature the vapour / air mixture is flammable.

This document is not intended to be a comprehensive manual on flash point tests and the interpretation of test results, however it covers the key aspects on these subjects.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

4 Outline

There are many, slightly different, definitions of flash point, however the following definition is widely used in standard test methods:

The flash point is the lowest temperature of the test portion, corrected to a barometric pressure of 101,3 kPa, at which the application of an ignition source causes the vapour of the test portion to ignite momentarily and the flame to propagate across the surface of the liquid under the specified test conditions.

It is important to realise that the value of the flash point is not a physical constant but it is the result of a flash point test and is dependent on the apparatus and procedure used. This fact is so important that a general statement similar to the following will be incorporated into all the main flash point methods:

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.

Due to the importance of flash point test results for both safety and regulatory purposes, the test method identification should always be included with the test result.

In general specific products specifications indicate which standard test method should be employed.

5 Brief history

The discovery of petroleum and the increased use of flammable distillates in the 19^{th} century, for lighting and heating in place of animal and vegetable oils, led to a large number of explosions and other fire related accidents.

Legislation, such as the UK Petroleum Act in 1862 and the German Petroleum Regulations in 1882, quickly spread around the world and led to the development of many types of test instruments. The