

A.9. FLASH-POINT

1. METHOD

1.1. INTRODUCTION

It is useful to have preliminary information on the flammability of the substance before performing this test. The test procedure is applicable to liquid substances whose vapours can be ignited by ignition sources. The test methods listed in this text are only reliable for flash-point ranges which are specified in the individual methods.

The possibility of chemical reactions between the substance and the sample holder should be considered when selecting the method to be used.

1.2. DEFINITIONS AND UNITS

The flash-point is the lowest temperature, corrected to a pressure of 101,325 kPa, at which a liquid evolves vapours, under the conditions defined in the test method, in such an amount that a flammable vapour / air mixture is produced in the test vessel.

Units: °C

$$t = T - 273,15$$

(t in °C and T in K)

1.3. REFERENCE SUBSTANCES

Reference substances do not need to be employed in all cases when investigating a new substance. They should primarily serve to check the performance of the method from time to time and to allow comparison with results from other methods.

1.4. PRINCIPLE OF THE METHOD

The substance is placed in a test vessel and heated or cooled to the test temperature according to the procedure described in the individual test method. Ignition trials are carried out in order to ascertain whether or not the sample flashed at the test temperature.

1.5. QUALITY CRITERIA

1.5.1. Repeatability

The repeatability varies according to flash-point range and the test method used; maximum 2 °C.

1.5.2. Sensitivity

The sensitivity depends on the test method used.

1.5.3. Specificity

The specificity of some test methods is limited to certain flash-point ranges and subject to substance-related data (e.g. high viscosity).

1.6. DESCRIPTION OF THE METHOD

1.6.1. Preparations

A sample of the test substance is placed in a test apparatus according to 1.6.3.1 and/or 1.6.3.2.

For safety, it is recommended that a method utilizing a small sample size, circa 2 cm³, be used for energetic or toxic substances.

1.6.2. Test conditions

The apparatus should, as far as is consistent with safety, be placed in a draught-free position.

1.6.3. Performance of the test

1.6.3.1. Equilibrium method

See ISO 1516, ISO 3680, ISO 1523, ISO 3679.

1.6.3.2. Non-equilibrium method

Abel apparatus:

See BS 2000 part 170, NF M07-011, NF T66-009.

Abel-Pensky apparatus:

See EN 57, DIN 51755 part 1 (for temperatures from 5 to 65 °C), DIN 51755 part 2 (for temperatures below 5 °C), NF M07-036.

Tag apparatus:

See ASTM D 56.

Pensky-Martens apparatus:

See ISO 2719, EN 11, DIN 51758, ASTM D 93, BS 2000-34, NF M07-019.

Remarks:

When the flash-point, determined by a non-equilibrium method in 1.6.3.2., is found to be 0 ± 2 °C, 21 ± 2 °C or 55 ± 2 °C, it should be confirmed by an equilibrium method using the same apparatus.

Only the methods which can give the temperature of the flash-point may be used for a notification.

To determine the flash-point of viscous liquids (paints, gums and similar) containing solvents, only apparatus and test methods suitable for determining the flash-point of viscous liquids may be used.

See ISO 3679, ISO 3680, ISO 1523, DIN 53213 part 1.

2. DATA

3. REPORTING

The test report shall, if possible, include the following information:

- the precise specification of the substance (identification and impurities),
- the method used should be stated as well as any possible deviations,
- the results and any additional remarks relevant for the interpretation of results.

4. REFERENCES

None.