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Dangerous goods - Sustained combustibility test for flammable liquids

危险品 易燃液体持续燃烧试验方法

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Dangerous goods - Sustained combustibility test for flammable liquids

1 Scope

This Standard specifies the equipment, operating procedure and evaluation of results of the sustained combustibility test for dangerous flammable liquids.

This Standard applies to dangerous liquids whose flash point is not higher than 60.5 °C in the closed cup test or not higher than 65.5 °C in the open cup test. This Standard also applies to liquids submitted for transport in the condition where the temperature is equal to or higher than their flash point AND substances – transported or submitted for transport in a liquid state – which emit flammable vapors at a temperature equal to or lower than the maximum transport temperature.

2 Method principle

2.1 Heat the sample tank to the specified temperature; put a specified amount of test substance into the sample tank; apply a standard flame under the specified conditions; then, remove it; observe whether there is sustained combustibility for the test substance.

2.2 Sustained combustibility: If any of the following conditions occurs in any one of the two heating times or at one of the two heating temperatures, it shall be considered as sustained combustibility:

a) When the test flame is in the “off” position, the sample is ignited and continues to burn;

b) When the test flame stays in the test position for 15 s, the sample is ignited and continues to burn for more than 15 s after the test flame returns to the “off” position. Intermittent sparking shall not be interpreted as sustained combustibility. Usually by the time 15 s is up, combustion has either visibly ceased or sustains. If in doubt, the substance shall be regarded as sustained combustibility.

3 Equipment

a) Sustained combustibility test device (see Appendix A).

b) Syringe, 5 mL, minimum scale 0.1 mL.

c) Stopwatch, accuracy 0.5 s.

4 Operating procedure

4.1 Turn on the heating device of the sustained combustibility tester, heat the sample tank to the test temperature (60.5 °C ± 1 °C or 75 °C ± 1 °C); keep the test temperature constant for 5 minutes. If the atmospheric pressure during the test is different from the standard atmospheric pressure, the test temperature shall be adjusted as follows: every time the pressure is 4 KPa higher or lower, the test temperature shall be raised or lowered by 1.0 °C.

4.2 When the gas nozzle leaves the test position (that is, it is in the "off" position), ignite the butane. Adjust the size of the flame so that its length is 8 mm ~ 9 mm and its width is about 5 mm.

4.3 Stir the sample to make it evenly mixed. Use a syringe to draw 2 mL ± 0.1 mL of sample; quickly move the sample into the sample tank; immediately start the timing device.

4.4 After the heating time reaches 60 s, if the sample does not ignite, turn the butane flame to the test position, and keep the flame at this position for 15 s; remove it (that is, turn to the "off" position); observe the sample state. The test flame shall remain lit throughout the process.

4.5 The test shall be carried out three times, each of which shall be observed and recorded:

4.5.1 Before the butane flame is moved to the test position, whether the sample ignites and sustains burning, or sparks, or neither;

4.5.2 Whether the sample ignites while the butane flame is in the test position, and if so, how long does the burning last after the test flame is removed.

4.6 If sustained combustibility is not observed, use a new sample to repeat the procedure, but change the heating time to 30 s.

4.7 If sustained combustibility is not observed at the test temperature of 60.5 °C, repeat the entire procedure with a new sample at the test temperature of 75 °C.

5 Evaluation of results

Depending on the observed phenomena and the associated definitions, classify the substance as either non-sustained combustibility or sustained combustibility.

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