

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

SN/T 4879-2017

**Test methods for determining flammability characteristics of
polymer and its composite materials. Microscale combustion
calorimetry method**

聚合物及其复合材料燃烧性能试验方法 微型量热法

(English Translation)

Issued on: July 21, 2017

Implemented on: March 1, 2018

**Issued by: The General Administration of Quality Supervision, Inspection
and Quarantine**

Table of Contents

Foreword
1 Scope
2 Terms and definitions

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard uses the translation method to modify the flammability of plastics and other solid materials using the micro-combustion calorimeter using ASTM D7309-13 Standard Test Method for Sexuality.

Compared with ASTM D7309-13, this standard has the following modifications.

- Change the standard name to "Micro-quantitative method for the test method of combustion properties of polymers and composite materials";
- Delete "normative reference documents";
- Briefly describe the contents of 4.1 in the original standard, and simplify the contents of 4.2 and 4.3 in the corresponding terms in 2.4;
- In order to adapt to the provisions of the Chinese standard, adjust the symbolic description in 3.3 of the original standard to the corresponding formula and body, and Simplify the "trial report";
- Adjust Chapters 5 and 6 of the original standard to Appendix C, and Chapter 7 to Appendix B, Appendix A, Appendix B and the original standard Chapter 9 merges and adjusts to Chapter 4, Chapter 8, Chapter 10, and Chapter 11 are combined and adjusted to Chapter 5, and thereafter the chapter number sequence in advance;
- Delete "informative Appendix X1" and "References";
- The unit in the value is converted into the International System of Units.

This standard is proposed and managed by the National Certification and Accreditation Administration.

This standard was drafted. Tianjin Entry-Exit Inspection and Quarantine Bureau of the People's Republic of China, Sichuan Entry-Exit Inspection and Quarantine Bureau Inspection and Quarantine Technology Center, Tianjin University of Science and Technology.

1 Scope

This standard specifies the microcalorimetric test method for the combustion properties of polymers and their composites.

This standard is applicable to the micro-quantitative detection of synthetic polymers and their composites with good homogeneity.

2 Terms and definitions

The following terms and definitions apply to this document.

Combustion residue A non-volatile chemical substance remaining in the sample after controlled thermal oxidative decomposition.

Combustion temperature in the controlled thermal oxidative decomposition process, the sample temperature at which the specific rate of combustion is maximum.

Controlled heating A temperature control program used to influence thermal decomposition or thermal oxidative decomposition. Under this procedure, the sample temperature is uniform and increases at a constant rate over time.

Controlled thermal (thermal oxidation) decomposition controlled thermal (or thermal oxidative) decomposition Thermal (oxidation) decomposition under controlled heating.

For controlled thermal decomposition, it refers to controlled heating of the sample in an anaerobic/anoxic environment during the test. Non-oxidizing/inactive A purifying gas (eg, nitrogen) drives the gas released from the sample out of the sample chamber by controlling thermal decomposition, and then mixes excess oxygen at a high Complete oxidation in a warm burning furnace. Continuous measurement of the volumetric flow rate in the furnace during the test of the heat release rate by the oxygen consumption method Rate and release rate of oxygen gas flow. The heat of combustion of the volatile components of the sample can be determined rather than the heat of combustion of other solid residues.

For controlled thermal oxidative decomposition, it refers to controlled heating of the sample under oxidizing/aerobic conditions during the test. Purify with oxygen the gas (for example, dry air) drives the gas released from the sample out of the sample chamber and then mixes with other oxygen. If necessary, the sample can be sampled first.

Put it into a high temperature furnace and completely oxidize. Continuous measurement of volume flow in a furnace during a test to calculate the rate of heat release by the oxygen consumption method Dynamic rate and oxygen concentration in the gas stream. The calorific value of the sample gas and the solid residue can be determined during the test.

Heat release capacity the maximum specific heat release rate of the heating rate in the test

during the controlled thermal decomposition process.

Heating rate the constant rate of temperature rise of a sample under a temperature control program.

Heat release temperature the temperature of the sample at which the specific heat release rate is maximum during the controlled thermal decomposition process.