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**Geosynthetics - Determination of oxidative induction time -
High-pressure differential scanning calorimetry method**

土工合成材料 氧化诱导时间的测定 高压差示扫描量热法

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents". Drafting.

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

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Determination of oxidation induction time of geosynthetics High-pressure differential
scanning calorimetry

1 Scope

This document describes a test method for determining the oxidation induction time of
geosynthetics using high-pressure differential scanning calorimetry, and specifies the
instrumentation requirements.

Materials, sample preparation, test procedures, results and calculations, etc.

This document applies to the determination of oxidation induction time of geosynthetic
materials such as polyolefin geomembranes, geocells, geogrids, and geonets.

2 Normative references

GB/T 9352

GB/T 19466.1

GB/T 19466.6

3 Terms and Definitions

The terms and definitions defined in GB/T 19466.1 and GB/T 19466.6, as well as the
following terms and definitions, apply to this document.

3.1

Differential scanning calorimetry of the sample and reference sample under high pressure
oxygen atmosphere.

Note. A high-pressure oxygen atmosphere is beneficial for accelerating oxidation reactions.

4 Principles

The sample and reference sample were heated from room temperature to a specified temperature at a constant rate in a high-pressure oxygen atmosphere and held at that temperature until...

The thermal analysis curve shows an exothermic oxidation reaction. The oxidation induction time is the time interval from the start of heating to the onset of the oxidation reaction.

The starting point is determined by the sudden increase in heat release from the sample and can be measured using a high-pressure differential scanning calorimeter.

5 Instruments and Materials

Warning. High-pressure gases should be used safely and properly. Oxygen is a very strong oxidizing agent and can accelerate combustion; keep away from greases and oils during use.

5.1 The high-pressure differential scanning calorimeter shall meet the following main performance requirements.

- a) The temperature is increased at a constant rate of $(20 \pm 1)^\circ\text{C}/\text{min}$, and the heat flow difference between the sample and the reference sample can be output in real time;
- b) The temperature signal resolution is within 0.1°C , and the test temperature can be kept constant within $\pm 0.5^\circ\text{C}$;