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

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**Plastics -- Determination of the ultimate aerobic
biodegradability in soil by measuring the oxygen demand in a
respirometer or the amount of carbon dioxide evolved**

土壤中塑料材料最终需氧生物分解能力的测定

(English Translation)

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1 Scope

This Standard specifies a method for determining the ultimate aerobic biodegradability of plastic materials in soil by measuring the oxygen demand in a closed respirometer or the amount of carbon dioxide evolved. This Standard is designed to yield an optimum degree of biodegradation by adjusting the humidity of the test soil.

If a non-adapted soil is used as an inoculum, the test simulates the biodegradation processes which take place in a natural soil environment; if a pre-exposed soil is used, this Standard can be used to investigate the potential biodegradability of a test material.

This Standard applies to the following materials:

- Natural and (or) synthetic polymers, copolymers or mixtures of these.
- Plastic materials which contain additives such as plasticizers or colorants.
- Water-soluble polymers.

- Materials which, under the test conditions, do not inhibit the activity of the microorganisms present in the soil. Inhibitory effects can be measured using an inhibition control or by another suitable method (see ISO

8192:1986). If the test material inhibits the microorganisms in the soil, a lower test material concentration, another type of soil or a pre-exposed soil can be used.

2 Normative references

The following documents contain the provisions which, through reference in this

Standard, become the provisions of this Standard. For dated references, their subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard. However, the parties who enter into agreement based on this

Standard are encouraged to investigate whether the latest versions of these documents are applicable. For undated reference documents, the latest versions apply to this Standard.

ISO 8192:1986 Water quality - Test for inhibition of oxygen consumption by activated sludge

ISO 10381-6:1993 Soil quality - Sampling - Part 6: Guidance on the collection, handling and storage of soil for the assessment of aerobic microbial processes in the laboratory

ISO 10390:1994 Soil quality - Determination of pH

ISO 10634:1995 Water quality - Guidance for the preparation and treatment of poorly water-soluble organic compounds for the subsequent evaluation of their biodegradability in an aqueous medium

ISO 10694:1995 Soil quality - Determination of organic and total carbon after dry combustion (elementary analysis)

ISO 11266:1994 Soil quality - Guidance on laboratory testing for biodegradation of organic chemicals in soil under aerobic conditions

ISO 11274:1998 Soil quality - Determination of the water-retention characteristic - Laboratory methods

ASTM D 5988-1966 Standard test method for determining aerobic biodegradation of plastic materials in soil

3 Terms and definitions

For the purposes of this Standard, the following terms and definitions apply.

3.1

ultimate aerobic biodegradation

Breakdown of an organic compound by microorganisms in the presence of oxygen into

carbon dioxide (CO₂), water (H₂O) and mineral salts of any other