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

**GB/T 41638.1-2022**

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**Plastics - Carbon and environmental footprint of biobased  
plastics - Part 1: General principles**

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### foreword

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

drafted.

This document is part 1 of GB/T 41638 "Carbon and Environmental Footprints of Plastic Bio-based Plastics". GB/T 41638 has

The following sections were published.

--- Part 1. General.

This document is equivalent to ISO 22526-1:2020 "Carbon and Environmental Footprints of Plastics Bio-based Plastics Part 1. General Principles".

Please note that some content of this document may be patented. The issuing agency of this document assumes no responsibility for identifying patents.

### Introduction

GB/T 41638 "Carbon Footprint and Environmental Footprint of Plastic Bio-based Plastics" is proposed to consist of five parts.

--- Part 1. General. The purpose is to provide information and guidance for the life cycle assessment and application of biobased products.

--- Part 2. Material carbon footprint The amount (mass) of CO<sub>2</sub> incorporated into polymer molecules from the air. Determined according to the test results

Biocarbon content, which is used to calculate the carbon dioxide emission reduction that can be achieved by replacing petroleum carbon (material carbon footprint) with biocarbon.

--- Part 3. Process carbon footprint quantification requirements and guidelines. Specifies requirements for quantifying and reporting the carbon footprint of bio-based plastics processes.

--- Part 4.Environmental (total) footprint (life cycle assessment). Using the life cycle assessment method, calculating the conversion of feedstocks into final products

The process carbon footprint generated in the process, thus enabling the management of carbon in a sustainable and environmentally responsible way (carbon-based materials).

--- Part 5.Reporting and evaluation. Requirements for reporting carbon footprint and environmental footprint assessment results for bio-based plastics.

Increasing the use of biomass resources in the production of plastic products can reduce global warming and slow down the depletion of fossil resources.

At present, plastic products are mainly composed of bio-based synthetic polymers, fossil-based synthetic polymers, natural polymers and additives containing bio-based materials.

Made with additives.

Bio-based plastics refer to plastics that are wholly or partly biomass-derived materials.

The carbon and environmental footprint of plastic bio-based plastics

Part 1.General Principles

## 1 Scope

This document specifies the general rules and system boundaries for the carbon footprint and environmental footprint of bio-based plastic products, and is the other standard in GB/T 41638 series

Standard introduction and guidance documents.

This document applies to plastic products, plastic materials and polymer resins containing bio-based or petroleum-based components.

## 2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, dated citations

documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document.

ISO 472 Plastics-Vocabulary

Note. GB/T 2035-2008 Plastic Terms and Definitions (ISO 472:1999, IDT)

Note. GB/T 24020-2000 Environmental Management Environmental Labeling and

Declaration General Principles (ISO 14020.1998, IDT)

Note. GB/T 24040-2008 Environmental Management Life Cycle Assessment Principles and Framework (ISO 14040.2006, IDT)

Note. GB/T 24044-2008 Requirements and Guidelines for Life Cycle Assessment of Environmental Management (ISO 14044.2006, IDT)

ISO 14067 Greenhouse gas products carbon footprint quantification requirements and guidelines (Greenhousegases-Carbonfootprintof

ISO 16620-1 Plastics-Biobased content-Part 1.General principles  
(Plastics-Biobasedcontent-Part 1.

Note. GB/T 39715.1-2021 Bio-based content of plastics - Part 1.General principles (ISO 16620-1.2015, IDT)

ISO 16620-2 Plastics Biobased Content Part 2.Determination of Biobased Carbon Content  
(Plastics-Biobasedcontent-

Note. GB/T 39715.2-2021 Bio-based content of plastics-Part 2.Determination of bio-based carbon content (ISO 16620-2.2019, IDT)

ISO 16620-3 Plastics Biobased Content Part 3.Determination of Biobased Synthetic Polymer Content (Plastics-Biobased

Note. GB/T 39715.3-2021 Plastics Biobased Content Part 3.Determination of Biobased Synthetic Polymer Content (ISO 16620-3.2015,

IDT)

ISO 16620-4 Plastics Biobased Content Part 4.Determination of Biobased Substance Content (Plastics-Biobased

Note. GB/T 39715.4-2021 Bio-based content of plastics-Part 4.Determination of bio-based substance content (ISO 16620-4.2016, IDT)