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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 41638.2-2023

Plastics - Carbon and environmental footprint of biobased plastics - Part 2: Material carbon footprint - Amount (mass) of CO2 removed from the air and incorporated into polymer molecule

Issued on: May 23, 2023 **Implemented on: December 1, 2023**

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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 for Standardization Documents" drafting:

This document is Part 2 of GB/T 41638 "Carbon Footprint and Environmental Footprint of Bio-based Plastics": GB/T 41638 has

The following parts were released:

--- Part 1: General principles;

--- Part 2: Carbon footprint of materials The amount (mass) of CO2 incorporated into polymer molecules from the air;

--- Part 3: Process carbon footprint quantification requirements and guidelines:

This document is equivalent to ISO 22526-2:2020 "Carbon and environmental footprints of plastic bio-based plastics - Part 2: Carbon footprint of materials

trace, the amount (mass) of CO2 incorporated into polymer molecules from the air:

The following minimal editorial changes have been made to this document:

--- In order to coordinate with existing standards, the name of the standard is changed to "Carbon and environmental footprints of plastic bio-based plastics Part 2: Materials

Material carbon footprint from the air into the amount of CO2 in the polymer molecules (mass) ":

Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents:

Introduction

GB/T 41638 "Carbon Footprint and Environmental Footprint of Bio-based Plastics" is proposed to be composed of five parts:

--- Part 1: General: The purpose is to provide information and guidance for life cycle assessment and application of bio-based products:

--- Part 2: Material carbon footprint The amount (mass) of CO2 incorporated into polymer molecules from the air: determined according to test results

The biocarbon content, which is used to calculate the CO2 reduction that can be achieved by biochar instead of petroleum carbon (material carbon footprint):

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

--- Part 4: Environmental (total) footprint (life cycle assessment): Using the method of life cycle assessment, calculate the conversion of input materials into final products

The process carbon footprint generated during the production process enables sustainable and environmentally responsible management of carbon (carbon-based materials):

--- Part 5: Reporting and evaluation: Requirements for reporting the results of carbon and environmental footprint assessments of bio-based plastics:

Increasing the use of biomass resources in the production of plastic products can alleviate the trend of 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 are plastics that are wholly or partly derived from biomass:

Carbon and environmental footprints of plastic bio-based plastics

Part 2: Carbon footprint of materials incorporated from the air

Amount (mass) of CO2 to the polymer molecule

1 Scope

This document specifies the carbon footprint of a material as the amount (mass) of CO2

removed from the air and fixed by polymer molecules, describing its quantification

method:

This document applies to plastic products, plastic materials and polymer resins made entirely or partly from bio-based materials:

2 Normative references

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

For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to

this document:

ISO 472 Plastics terms and definitions (Plastics-Vocabulary)

Note: GB/T 2035-2008 Plastic Terms and Definitions (ISO 472:19991), IDT)

1) ISO 472:1999 has been replaced by ISO 472:2013:

ISO 16620-1 Biobased content of plastics Part 1: General principles (Plastics-Biobasedcontent-Part 1: Gen-

Eral principles)

Note: GB/T 39715:1-2021 Bio-based content of plastics Part 1: General principles (ISO 16620-1:2015, IDT)

ISO 16620-2:2019 Biobased content of plastics - Part 2: Determination of biobased carbon content (Plastics-Biobasedcon-

Note: GB/T 39715:2-2021 Biobased Content of Plastics Part 2: Determination of Biobased Carbon Content (ISO 16620-2:2019, IDT)

ISO 16620-3:2015 Biobased content of plastics - Part 3: Determination of biobased synthetic polymer content (Plastics-

Note: GB/T 39715:3-2021 Bio-based content of plastics Part 3: Determination of bio-based 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 content (ISO 16620-4:2016, IDT)

ISO 16620-5 Biobased content of plastics Part 5: Biobased carbon content, biobased synthetic polymer content and biomatrix

3 Terms, Definitions, Symbols and Abbreviations

3:1 Terms and Definitions

Terms and definitions defined in ISO 472, ISO 16620-1, ISO 16620-2, ISO 16620-3, ISO 16620-4 and ISO 16620-5