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

GB/T 47836.1-2026

**Rubber and rubber products - Determination of biobased
content - Part 1: General principles and calculation methods
using the formulation of the rubber compound**

橡胶和橡胶制品 生物基含量的测定 第1部分：通用原则和采用胶料配方的计算方法

(English Translation)

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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.

This document is Part 1 of GB/T 47836 "Determination of Bio-based Content in Rubber and Rubber Products". GB/T 47836 has been issued.

The following parts were laid out.

---Part 1: General Principles and Calculation Methods for Using Rubber Compound Formulations;

---Part 2: Bio-based carbon content;

---Part 3: Bio-based substance content.

The calculation method for rubber compound formulation is adopted.

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

This document was proposed by the China Petroleum and Chemical Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Standardization of Rubber and Rubber Products (SAC/TC35).

Introduction

The use of biomass materials in rubber helps reduce the rubber industry's dependence on fossil resources and carbon dioxide emissions, thus mitigating global warming.

Promote global environmental sustainability.

In GB/T 47836 "Determination of Bio-based Content in Rubber and Rubber Products" (all

parts), biomass is used to describe the content of bio-based materials derived from living organisms.

The term refers to biomaterials obtained from recently living organisms (such as wood and agricultural waste). Biomass is primarily composed of carbon, hydrogen, and oxygen.

It will contain nitrogen and small amounts of other elements.

Biomass can now be readily obtained on an industrial scale from a wide variety of plants and tree species. Today, biomass also includes materials used for producing fiber or...

Although fossil fuels originated from ancient biomass, they are not considered biomass by the generally accepted definition because they contain...

The carbon in the world has been removed from the modern carbon cycle.

GB/T 47836 specifies the method for determining the bio-based content in rubber and rubber products, which consists of three parts.

---Part 1: General Principles and Calculation Methods for Rubber Compound Formulation. The purpose is to describe how to formulate rubber and rubber products.

The components are categorized, and the bio-based content is calculated using the rubber formulation and the chemical structure of each component.

---Part 2: Bio-based Carbon Content. The purpose is to describe how to determine bio-based carbon content through radiochemical analysis (^{14}C determination).

Carbon content. This can be obtained from the ratio of carbon atoms derived from biomass to the total carbon atoms in rubber or rubber products. This method...

The content of bio-based carbon can be determined even without a rubber formulation.

---Part 3: Bio-based Substance Content. The purpose is to describe how to separate the rubber compound into components and how to obtain the composition ratio of each component.

For example, how to determine the biocarbon content of each component through chemical analysis, and thus obtain the bio-based substance content of each component.

The total bio-based content of the rubber compound was obtained by summing the values of all components.

Determination of bio-based content in rubber and rubber products Part 1: General Principles and Rubber Compound Formulation Calculation method

1 Scope

This document describes the general principles for determining the bio-based content in rubber and rubber products, and the calculation of bio-based content in rubber and rubber

products using rubber compound formulations.

Methods for calculating the bio-based content in (including polyurethane). These calculation methods are based on the mass or weight of each component present in the rubber or rubber product.

The carbon mass was obtained.

2 Normative references

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

This document.

ISO 1382 Rubber Vocabulary Note. GB/T 9881-2026 Rubber Terminology (ISO 1382:2025, MOD) ISO.19984-2 Determination of bio-based content in rubber and rubber products - Part 2: Bio-based carbon content (Rubber and Note. GB/T 47836.2-2026 Determination of bio-based content in rubber and rubber products - Part 2: Bio-based carbon content (ISO.19984-2.2025) MOD) ISO.19984-3 Determination of bio-based content in rubber and rubber products - Part 3: Bio-based content (Rubber and Note. GB/T 47836.3-2026 Determination of bio-based content in rubber and rubber products - Part 3: Bio-based content (ISO.19984-3.2017) IDT)

3 Terms and Definitions

The terms and definitions defined in ISO 1382 and the following terms and definitions apply to this document.

radiocarbon

The radioactive isotope of carbon, ^{14}C , has 8 neutrons, 6 protons, and 6 electrons.

biobased components

The portion of a bio-based component that is wholly or partially derived from biomass.

The percentage of bio-based carbon in the total carbon or the percentage of its mass in the total mass of the product.

The percentage of bio-based carbon in the total carbon content of the product.