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

GB/T 4498-1997

Replacing GB/T 4498.1-2013

**Rubber - Determination of ash - Part 1: Muffle furnace method
(English Translation)**

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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 is required.

This document is Part 1 of GB/T 4498 "Determination of ash content in rubber". GB/T 4498 has been published in the following parts.

--Part 1: Muffle furnace method;

--Part 2: Thermogravimetric analysis.

This document replaces GB/T 4498.1-2013 "Determination of ash content in rubber - Part 1: Muffle furnace method" and is compatible with GB/T 4498.1-Compared with 2013, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

a) The "Scope" chapter was changed and Method C was added (see Chapter 1, Chapter 1 of the 2013 edition);

b) Deleted "Bunsen burner" in the "instruments and equipment" (see 3.1, 3.2, 5.4, 7.1 and 7.2 of the 2013 edition);

c) Added the principle (see 4.3), test steps (see 8.3) and precision (see 10.2 and Appendix A) of "Method C";

d) Added reagent or material "ash-free filter paper" (see 5.2);

e) Added the temperature control condition of the muffle furnace in the instrument to 300°C±25°C (see 6.5);

f) The direct ashing method of "Method A" in the test procedure was deleted (see 7.1 of the

2013 edition);

g) The allowable tolerance has been changed (see 10.1, Chapter 9 of the 2013 edition).

This document is modified to adopt ISO 247-1:2018 "Rubber - Determination of ash content - Part 1: Combustion method".

Compared with ISO 247-1:2018, this document has the following structural adjustments.

--The description of the results of the three methods in Chapter 1 corresponds to 4.4 of ISO 247-1:2018;

--5.2 corresponds to 6.5 in ISO 247-1:2018.

The technical differences between this document and ISO 247-1:2018 and their reasons are as follows.

-- Changed the applicable limits of Method C in the "Scope" (see Chapter 1, Chapter 1 of ISO 247-1:2018) to increase the validity of the method.

Rational; the choice of crucible has been deleted (see Chapter 1 of ISO 247-1:2018) as it has been explained in 6.2;

-- Changed "Bunsen burner" to "temperature-controlled electric furnace" (see 4.1, 4.2, 6.4, 8.1 and 8.2, 4.1, 4.2, 6.3, 8.1 of ISO 247-1:2018) and 8.2) to adapt to my country's technical conditions;

-- The heating time at 550 °C in method C (see 4.3 and 8.3 of ISO 247-1:2018) has been deleted to increase the compatibility of the method.

reason;

-- Added "analytical balance" (see 6.1) for ease of use;

--The dimensions of "heat-resistant insulation board" (see 6.3, 6.2 of ISO 247-1:2018) have been changed to facilitate use;

-- "Asbestos board" (see 6.3) was added to adapt to my country's technical conditions;

-- The normative references GB/T 15340 replace ISO 1795, GB/T 24131.1 replace ISO 248-1 (see 7.1), and Adapt to the regulations of rubber sample preparation in my country;

--Added the provisions for sample size (see 8.1 and 8.2) to facilitate operation;

-- Changed the heating and weighing steps for the empty crucible (see 8.3, 8.3 of ISO 247-1:2018) to keep consistent with Method A and Method B.

Consistency;

-- The formulas (see Chapter 9, Chapter 9 of ISO 247-1:2018) have been changed to ensure the completeness of the formulas;

--Increased the allowable difference (see 10.1) to improve operability.

The following editorial changes were made to this document.

--To coordinate with the existing standard, the name of the standard is changed to "Determination of Rubber Ash Content Part 1: Muffle Furnace Method";

--Changed the unit of crucible volume;

--Changed the unit of concentrated sulfuric acid volume;

--In Appendix A, repeatability and reproducibility of synthetic raw rubber were added;

--Added references.

Introduction

Ash content is one of the important parameters for analyzing rubber composition and one of the important technical indicators of rubber.

Impurities have a great impact on the quality and life of rubber. Ash determination can be used to characterize the content of these inorganic salts and impurities, thereby determining the quality of rubber, therefore, the analytical efficiency and method accuracy of ash determination have always been the focus of production and scientific research and development.

"Determination of ash content in rubber" aims to establish different methods to facilitate users to determine the ash content in rubber and consists of two parts.

--Part 1: Muffle furnace method. The purpose is to meet the determination needs of the muffle furnace method.

--Part 2: Thermogravimetric analysis. The purpose is to meet the determination needs of thermogravimetric analysis.

Determination of rubber ash content Part 1: Muffle furnace method Warning - Personnel using this document should have practical experience in formal laboratory work. This document does not indicate all possible safety the user is responsible for taking appropriate safety and health measures and ensuring that the conditions stipulated by relevant national laws and regulations are met.

Note: Some procedures in this document may involve the use or generation of substances that are harmful to the local environment, or may generate waste After use, it is advisable to refer to the relevant documents for safe handling and disposal.

1 Scope

This document describes three methods for the determination of the ash content of raw rubber, compounds or vulcanized rubber.

This document is applicable to raw rubber, compound rubber or vulcanized rubber of types M, N, O, R and U described in GB/T 5576, except for the following restrictions.

Outside the system.

--Method A is not applicable to the determination of rubber compounds or vulcanized rubber containing chlorine, bromine or iodine;

--Method B is applicable to the determination of mixed rubber or vulcanized rubber containing chlorine, bromine or iodine, but not to unmixed rubber;

--Method C is applicable to the determination of raw rubber, natural rubber compound or vulcanized rubber that does not contain chlorine, bromine or iodine.

Paper package.

The three methods do not necessarily yield the same results in all cases.

This document does not cover the interpretation of ash due to inorganic ingredients in rubber compounds or vulcanizates. This is the responsibility of the analyst, who We need to understand the characteristics of various rubber compounds at high temperatures.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document.

For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to this document.

GB/T 15340 Sampling and sample preparation methods for natural and synthetic raw rubber (GB/T 15340-2025, ISO 1795:2017, IDT) GB/T 24131.1 Determination of volatile matter content of raw rubber Part 1: Hot roll method and oven method (GB/T 24131.1-2018, ISO 248:2011, MOD)

3 Terms and definitions

There are no terms or definitions that require definition in this document.