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

GB/T 46326.1-2025

**Rubber products - Determination of toxic and harmful
substances - Part 1: Pentachlorothiophenol (PCTP)**

橡胶制品 有毒有害物质的测定 第1部分：五氯苯硫酚

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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 46326, "Determination of Toxic and Hazardous Substances in Rubber Products". GB/T 46326 has been published. The following section.

1. Pentachlorothiophenol;

2. Short-chain chlorinated paraffins. 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). This document was drafted by: China Criminal Police University, Shandong Linglong Tire Co., Ltd., and Double Coin Group Shanghai Tire Research Institute Co., Ltd. The company, Shandong Yanggu Huatai Chemical Co., Ltd., Zhejiang Tiantie Technology Co., Ltd., and Beijing Academy of Science and Technology Analysis and Testing Research Institute (Beijing Municipal Center for Physical and Chemical Analysis and Testing), Liaocheng Jingge Synthetic Materials Co., Ltd., Bayi Rubber Co., Ltd., Shanghai Anpu Technology Co., Ltd. Test Technology Co., Ltd., Beijing Rubber & Tire Testing Technology Service Co., Ltd., and Beijing Rubber Industry Research & Design Institute Co., Ltd. The main drafters of this document are. Jin Yi, Li Biao, Jia Airui, Lu Yuan, Dong Wenwu, Geng Qinqin, Shi Lilong, Zhu Xiaohua, Chen Xiang, Liu Yingming, and Shao Peng. Zhou Yang, Liu Xiuzheng, Liu Wanxing, Yao Ming, Liu Jun, Jiang Chenzhou, Ma Haijian, Dong Caiyu, Niu Danwei, Ding Xiaoying, Wang Na.

Pentachlorobenzylthiophenol (PCTP), as an effective plasticizer and regenerator, can improve the processing properties of rubber and is widely used in various rubber products. The processing and recycling of pentachlorothiophenol plasticizers. However, pentachlorothiophenol plasticizers are toxic and have a strong odor, which may lead to serious environmental pollution and harm to humans. It poses a threat to public health. To protect the environment and promote the green and sustainable development of the rubber

industry, a non-standard method for determining pentachlorothiophenol content needs to be established. It is often necessary. GB/T 46326, "Determination of Toxic and Hazardous Substances in Rubber Products," aims to provide a method for determining the content of toxic and hazardous substances in rubber products. The law is proposed to be divided into the following parts.

1. Pentachlorothiophenol;

2. Short-chain chlorinated paraffins;

---Part x. Lead;

---Part x. Cadmium;

---Part x. Polycyclic Aromatic Hydrocarbons;

---Part x. Polybrominated biphenyls and polybrominated diphenyl ethers; Determination of toxic and harmful substances in rubber products Part

1 Scope

GB/T 46326.1-2025 is the Chinese national standard covering measuring PCTP in rubber - the peptiser used to break down natural rubber, restricted because it carries and generates pentachlorophenol - with the extraction, the chromatographic determination and the limit of quantification. Part 1 of the series, first edition, in force from 1 May 2026. Issued on 31 October 2025, it has been in force since 1 May 2026.

---Personnel using this document should have practical experience working in a formal laboratory. This document does not address all possible safety issues. Users are responsible for taking appropriate safety and health measures and ensuring compliance with relevant national regulations.

Note. Using the procedures outlined in this document may involve the use or generation of certain substances, potentially resulting in waste. This may lead to... It may cause harm to the local environment. After use, it should be handled and disposed of safely in accordance with the relevant documents.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included. 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.

GB/T 6682 Specifications and test methods for water used in analytical laboratories

GB/T 17783 Preparation of chemical test samples and specimens for vulcanized or thermoplastic rubber

3 Terms and Definitions

This document does not contain any terms or definitions that need to be defined.

4.Principles The sample was added to toluene containing acetic anhydride, and then subjected to ultrasonic extraction and acetylation. After filtration, potassium carbonate solution was added, and the mixture was subjected to alkaline treatment. Acetic anhydride and pentachlorothiophenol undergo further acetylation reaction under certain conditions. The reaction solution is then separated and dehydrated before being analyzed by gas chromatography-mass spectrometry (GC-MS). The instrument uses selected ion monitoring mode for determination and external standard method for quantification.

5.Reagents or materials Unless otherwise specified, all reagents used shall be of analytical grade, and laboratory water shall meet the requirements for Class II water in GB/T 6682.

5.2 Pentachlorothiophenol. Standard, purity (mass fraction) not less than 99% or known purity.

5.3 Acetic anhydride.

5.4 Anhydrous potassium carbonate.

5.5 Potassium carbonate solution.

0.1 mol/L aqueous solution. Weigh

13.8 g of anhydrous potassium carbonate (5.4) and dissolve it in water, then make up to 1000 mL.

5.6 Anhydrous sodium sulfate. ignite at 650°C for 4 hours, cool and store in a desiccator for later use.