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

GB/T 13589-2026

Replacing GB/T 13589-2007

Recycled zinc and zinc alloy raw materials

再生锌及锌合金原料

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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 replaces GB/T 13589-2007 "Zinc and Zinc Alloy Scrap". Compared with GB/T 13589-2007, the main differences are structural adjustments and revisions. Aside from the logical changes, the main technical changes are as follows:

- a) The file name was changed from "Zinc and Zinc Alloy Waste" to "Recycled Zinc and Zinc Alloy Raw Materials";
- b) Added terms and definitions (recycled zinc and zinc alloy raw materials, samples, inclusions, coatings, volatiles, non-zinc metals, zinc and zinc alloys) Physical quantity, metal recovery rate, chemical composition of samples, radioactive contamination, dismantling, crushing and separation, sorting, and treatment (see Chapter 3);
- c) The classification of raw materials has been changed, and Category III zinc and zinc alloy ash has been removed (see Chapter 4, Chapter 3 of the 2007 edition);
- d) The raw material grades have been removed (see Chapter 3 of the 2007 edition);
- e) The "apparent characteristics" and "pretreatment methods" of raw materials have been added (see Chapter 4);

f) Increased requirements for radioactive contamination of raw materials, hazardous waste, inclusions and coatings, volatiles, and the physical quantity of zinc and zinc alloys (see [reference]). 5.2~5.6);

g) The test method was expanded to include testing for radioactive contamination of raw materials, hazardous waste, inclusions and coatings, other volatiles, and the actual quantity of zinc and zinc alloys. Law (see 6.2-6.6);

h) Additional detection methods for other volatile substances have been added (see Appendix A);

i) Added methods for preparing chemical composition samples and detecting metal recovery rate (see Appendix B). 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 Nonferrous Metals Industry Association. This document is under the jurisdiction of the National Technical Committee on Standardization of Nonferrous Metals (SAC/TC243). This document was drafted by: Shaoguan Smelter of Shenzhen Zhongjin Lingnan Nonferrous Metals Co., Ltd., and Jiangxi Jinbo Rhenium Resource Recycling New Technology. Limited Liability Company, Guangxi Wuzhou Yongxin Environmental Protection Technology Co., Ltd., Huludao Zinc Industry Co., Ltd., Shenzhen Zhongjin Lingnan Nonferrous Metals Co., Ltd. Limited Liability Company, Center for International Cooperation and Exchange of the Ministry of Ecology and Environment, Nonferrous Metals Technology and Economics Research Institute Co., Ltd., Zhaoqing Nandu Recycling Aluminum Industry Co., Ltd., China Nonferrous Metals Industry Technology Development and Exchange Center Co., Ltd., Henan Yuguang Zinc Industry Co., Ltd., Zhuzhou Smelting Group Joint-stock limited company, Yunnan Chihong Zinc & Germanium Co., Ltd., Luxi Lantian High-Tech Co., Ltd., Yangzhou Xinda Renewable Resources Technology Co., Ltd. company. The main drafters of this document are. Su Fei, Zhuo Yurui, Lin Lin, Lin Ruoxu, Chen Ping, Li Liangdong, Liu Fangfang, Pan Jiechang, Xie Jiahong, Peng Zheng, and Cai Jiebing. Shao Zhuqiang, Shen Chen, Liu Ying, Wu Shuaijin, Yan Yuanzhong, Chen Xueyun, Meng Qingwu, Ma Liyang, Zhou Lizhi, Duan Yanan, Liao Jihong, Yang Chunyu, Gao Yanfen Yang Yu and Ju Qibiao. This document was first published in.1992, revised for the first time in.2007, and this is the second revision. Recycled zinc and zinc alloy raw materials

1.Scope This document specifies the classification, technical requirements, test methods, inspection rules, and packaging of recycled zinc and zinc alloy raw materials (hereinafter referred to as "raw materials"). Packaging, transportation, storage, and accompanying documents and order details. This document applies to recycled zinc and zinc alloy raw materials obtained after pretreatment such as dismantling, crushing, and sorting.

4.Classification Raw materials are classified into two categories based on their appearance, source, and pretreatment methods. block materials and scrap materials. The categories, names, and appearance characteristics of raw materials are detailed below. The sources of

raw materials and pretreatment methods are shown in Table 1.

5 Technical Requirements

5.1 Appearance Quality The raw materials should be clean in appearance, without any obvious impurities. For scrap materials, there should be no dripping.

5.2 Radioactive contamination Radioactive contamination control in raw materials must meet the following requirements.

- a) It should not contain radioactive materials;
- b) The ambient dose equivalent rate of X-rays and gamma radiation from raw materials (including packaging) should not exceed the local natural radiation background value. $0.25 \mu\text{Sv/h}$;
- c) alpha and beta surface contamination levels. The measurement area should be greater than 300 cm^2 , and the alpha surface contamination should not exceed 0.04 Bq/cm^2 , beta surface contamination should not exceed 0.04 Bq/cm^2 . Pollution should not exceed 0.4 Bq/cm^2 .

5.3 Hazardous waste

5.3.1 The following hazardous substances shall be restricted from being mixed into raw materials.

- a) Waste listed in the National Hazardous Waste List;
- b) Identification shall be performed in accordance with GB 5085.1~5085.6. Any substance exhibiting one or more of the following properties: corrosiveness, toxicity, flammability, and reactivity. Other hazardous wastes with hazardous properties.

5.3.2 The mass of hazardous waste in the raw materials should not exceed 0.01% of the total mass of the raw materials.

5.4 Inclusions and Coatings

5.4.1 The requirements for inclusions in raw materials shall comply with the provisions of Table

2. This includes inclusions and contamination of powdery substances (dust, sludge, crystalline salts, metals, etc.). The mass fraction of oxides and fiber dust (etc.) should not exceed 0.1%.

5.4.2 The mass of raw materials containing coatings should not exceed 5% of the total

mass of the raw materials.

5.5 Volatile Matter The moisture content of the volatiles in the raw materials shall be negotiated between the supplier and the buyer, and other volatiles shall comply with the provisions of Table 2.

5.6 Physical quantity of zinc and zinc alloys The actual quantity of zinc and zinc alloys in the raw materials should conform to the provisions of Table 2.

5.7 Metal recovery rate and chemical composition The metal recovery rate and chemical composition of the raw materials should meet the requirements of Table 3.

5.8 Other requirements

5.8.1 The raw materials shall not contain flammable or explosive materials.

5.8.2 The raw materials shall not contain sealed containers, pressure vessels or other similar items.

6 Test Methods

6.1 Appearance Quality The appearance quality of raw materials is inspected visually.

6.2 Radioactive Contamination The testing for radioactive contamination of raw materials shall be conducted in accordance with the provisions of SN/T 0570-2023.

6.3 Hazardous waste Hazardous waste from raw materials shall be subject to sensory inspection. If the determination is uncertain, the provisions of GB 5085.1 to GB 5085.6 shall apply.

6.4 Inclusions and Coatings

6.4.1 The proportion of inclusions in raw materials shall be estimated by visual inspection. When it is uncertain whether the requirements are met, inspection shall be carried out according to

6.4.2 Weigh and record the sample mass (m). Use a sieve with 2mm apertures to sieve the sample, removing powder particles with a diameter no larger than 2mm. Weigh and record the mass (m_1) of the separated powdery material (dust, sludge, crystalline salts, metal oxides, and fiber dust, etc.). Formula (1) is used to calculate the mass fraction (w_F) of the powder, and the value is expressed as %.

6.4.3 Continue sorting other impurities, removing waste wood, waste paper, waste plastic, waste rubber, waste glass, and stones, etc. (If necessary) At this time, the sample is broken up to mechanically separate any inclusions embedded within it. If separation is not possible, the entire piece of material is treated as an inclusion. Weighing and recording are then performed. The mass of other inclusions separated (m_2). The mass fraction of inclusions