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OF THE PEOPLE'S REPUBLIC OF CHINA**

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Titanium gypsum

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Titanium gypsum

1 Scope

This document specifies the classification and labeling, requirements, test methods, inspection rules and packaging, marking, transportation and storage of titanium gypsum.

This document applies to the titanium gypsum - with calcium sulfate dihydrate as the main component - that is produced by the neutralization of limestone powder, lime, carbide slag AND acidic wastewater during the production of titanium dioxide by the sulfuric acid method.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 2007.1, General rules for the sampling and sample preparation of minerals in bulk - Sampling by manual method

GB/T 5484-2012, Methods for chemical analysis of gypsum

GB 6566, Limits of radionuclides in building materials

3 Terms and definitions

No terms and definitions need to be defined in this document.

4 Classification and labeling

4.1 Classification

Titanium gypsum is divided into grade-1 product (A), grade-2 product (B) and grade-3 product (C), according to the content of calcium sulfate dihydrate in titanium gypsum, from high to low.

4.2 Labeling

It is labeled in the order of product name, document number, and classification.

$$\omega(\text{CaSO}_4 \cdot 2\text{H}_2\text{O}) = \frac{\omega_c}{20.9275} \times 100\% \quad \dots\dots\dots (1)$$

Where:

$\omega(\text{CaSO}_4 \cdot 2\text{H}_2\text{O})$ – calcium sulfate dihydrate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) content (mass fraction), %;

ω_c – crystal water content (mass fraction), %;

20.9275 – conversion factor of crystal water content to calcium sulfate dihydrate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$) content.

The calculation results are accurate to 0.01%.

6.2 Determination of ferric oxide (Fe_2O_3) content

Determine according to the o-phenanthroline spectrophotometry (standard method) in GB/T 5484-2012.

6.3 Determination of water-soluble magnesium oxide (MgO) content

Determine according to Chapter 27 of GB/T 5484-2012.

6.4 Determination of water-soluble sodium oxide (Na_2O) content

Determine according to Chapter 28 of GB/T 5484-2012.

6.5 Determination of water-soluble potassium oxide (K_2O) content

Determine according to Chapter 28 of GB/T 5484-2012.

6.6 Determination of chloride ion (Cl^-) content

Determine according to Chapter 29 of GB/T 5484-2012.

6.7 pH value

Determine according to Chapter 25 of GB/T 5484-2012.

6.8 Limits of radionuclides

Determine according to the method specified in GB 6566.

6.9 Determination of attached water content

Determine according to Chapter 9 of GB/T 5481-2012. Drying conditions: dry in a constant temperature drying oven at $(40 \pm 2)^\circ\text{C}$, where the first drying time is 2 h.

7 Inspection rules

7.1 Inspection classification

7.1.1 Delivery inspection

The delivery inspection items include: attached water content, calcium sulfate dihydrate ($\text{CaSO}_4 \cdot 2\text{H}_2\text{O}$), ferric oxide (Fe_2O_3) and pH value.

7.1.2 Type inspection

The type inspection items include all the requirements specified in Chapter 5. The type inspection shall be carried out in any of the following cases:

- a) When there are major changes in raw materials, ratio, process and product structure;
- b) Once a year during normal production;
- c) When the production - which has been suspended for more half a year - is resumed;
- d) When there is a significant difference between the delivery inspection results and the previous type inspection results.

7.2 Batching and Sampling

7.2.1 Batching

Take 1 000 t of products as one batch, and any amount of products less than 1 000 t as one batch, too.

7.2.2 Sampling

Take samples according to the method specified in GB/T 2007.1; the total sampling amount per batch shall not be less than 2 kg. Divide the samples into two equal parts, one as a test sample and the other as a spare sample which shall be sealed and stored.

7.3 Judgement rules

If the inspection results of the tested samples meet the requirements of Chapter 5, judge the batch of products to be qualified.

If any of the inspection results does not meet the requirements specified in Chapter 5, use the spare sample to re-inspect the unqualified item. If the re-inspection is qualified, judge the batch of products to be qualified; otherwise, judge the batch to be unqualified.

If two or more of the inspection results do not meet the requirements specified in Chapter 5, judge the batch of products to be unqualified.

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