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Titanium dioxide for cosmetic use

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Foreword

The four indexes in Chapter 5, namely heavy metals, arsenic, lead and mercury, AND Chapter 8 of this Standard are mandatory; while others are recommended.

This Standard is drafted according to the rules given in GB/T 1.1-2009.

This Standard was proposed by China Petroleum and Chemical Industry Federation.

This Standard shall be under the jurisdiction of the Inorganic Chemical Subcommittee of National Technical Committee for Standardization of Chemistry (SAC/TC 63/SC 1).

Drafting organizations of this Standard: Shanghai Jianghu Titanium White Product Co., Ltd, CNOOC Tianjin Chemical Research and Design Institute, Jiangsu Hehai Nanometer Science and Technology Co., Ltd, and Henan Billions Chemicals Co., Ltd.

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Titanium dioxide for cosmetic use

1 Scope

This Standard specifies the classification, requirements, test methods, inspection rules, marks, labels, packaging, transportation and storage of the titanium dioxide for cosmetic use.

This Standard is applicable to the titanium dioxide powder mainly used as cosmetic raw materials.

2 Normative references

The following documents are essential to the application of this document. For dated references, only the editions with the dates indicated are applicable to this document. For undated references, only the latest editions (including all the amendments) are applicable to this document.

GB/T 191-2008 *Packaging - Pictorial marking for handling of goods*

GB/T 1706-2006 *Titanium dioxide pigments*

GB/T 5009.74-2003 *Method for limit test of heavy metals in food additives*

GB/T 6679 *General rules for sampling solid chemical products*

GB/T 6682-2008 *Water for analytical laboratory use - Specification and test methods*

GB/T 7917.1-1987 *Standard methods of hygienic test for cosmetics - Mercury*

GB/T 7917.2-1987 *Standard methods of hygienic test for cosmetics - Arsenic*

GB/T 7917.3-1987 *Standard methods of hygienic test for cosmetics - Lead*

GB/T 8170 *Rules of rounding off for numerical values & expression and judgement of limiting values*

GB/T 9086-2007 *The white standard plate for colorimetry and photometry*

GB/T 19591-2004 *Nano-titanium dioxide*

USE the visual observation method to determine the appearance in natural light.

6.4 Identification test

6.4.1 Reagents

6.4.1.1 Sulfuric acid.

6.4.1.2 Hydrogen peroxide solution: 20%.

6.4.2 Analysis procedures

WEIGH about 0.5g of test samples. ADD 5mL of sulfuric acid. CONDUCT slow heating until the sulfuric acid generates smog. After cooling, cautiously USE water to dilute to 100mL. FILTER afterwards. TAKE about 5mL of filtrate afterwards. ADD a few drops of hydrogen peroxide solution. The filtrate becomes orange red.

6.5 Crystal form determination

6.5.1 Instrument

X-ray diffractometer: The power of the X-ray generator can come up to (40kV / 40mA).

6.5.2 Analysis procedures

CONDUCT tableting to the samples according to the requirements of the X-ray diffractometer. DETERMINE afterwards. ADJUST the diffractometer gain so that the diffraction peak height of the crystal surface to be determined comes up to the maximum value within the recording range. The angle shall be within the range of 20° to 80°. OBSERVE the position of the characteristic diffraction peak of the crystal surface to be determined (for the anatase type, the angle is 25° or so; for the rutile type, the angle is 27° or so), so as to determine the crystal forms of the samples.

6.6 Determination of the titanium dioxide content - aluminum reduction method

6.6.1 Method summary

Same as the Section 7.1.1 of GB/T 1706-2006.

6.6.2 Reagents and materials

Same as the Section 7.1.2 of GB/T 1706-2006.

6.6.3 Instruments and equipment

m - Numerical values of the masses of specimens before ignition, in unit of gram (g).

TAKE the arithmetic mean value of the parallel determination results as determination result. The absolute difference of two parallel determination results shall not be greater than 0.05%.

6.9 Determination of the water-soluble matters

Same as the Section 7.3 of GB/T 1706-2006.

6.10 Determination of the heavy metal content

6.10.1 Method summary

Same as the Chapter 2 of GB/T 5009.74-2003.

6.10.2 Reagents

6.10.2.1 Hydrochloric acid: 1 + 19.

6.10.2.2 Acetic acid solution: 1 + 19.

6.10.2.3 Other reagents are the same with those in the Chapter 3 of GB/T 5009.74-2003.

6.10.3 Instruments and equipment

Same as the Chapter 4 of GB/T 5009.74-2003.

6.10.4 Analysis procedures

6.10.4.1 Preparation of the test solution A

WEIGH 10.0g ± 0.1g of the test samples. PLACE the test samples in a 250mL beaker. ADD 50mL of hydrochloric acid. HEAT to boiling. Slowly BOIL for 15min. USE the centrifugal separation method for the settlement of insoluble matters. USE qualitative filter paper to filter the supernatant. USE 10mL of hot water to wash the beaker and residues. Repeatedly WASH for 3 times. USE 10mL to 15mL of hot water to flush the filter paper eventually. After cooling, TRANSFER all the collected filtrate and washing liquid to a 100mL volumetric flask. ADD water to the scale. SHAKE evenly. USE this solution as test solution A. KEEP this solution for the determination of heavy metals, arsenic, lead and mercury.

6.10.4.2 Determination

TAKE 10mL of test solution A. PLACE it in a 50mL Nessler colorimetric tube. ADD one drop of phenolphthalein indicator solution. Dropwise ADD ammonia

powder dish. USE a bright and clean glass plate to cover on the surface of the test samples. COMPRESS the test samples. Slightly ROTATE the test samples afterwards. REMOVE the glass plate. Or USE a constant pressure powder sampler for pressure sampling. OBSERVE the surface of the test samples along the horizontal direction. There shall be no abnormal situations, such as bumps, defects, spots, etc.

PLACE the sample dish on the instrument platform. DETERMINE the Hunter whiteness value (Wh). ACCURATE to 0.1. ROTATE the sample dish on the instrument platform for 90°. DETERMINE the whiteness value. ACCURATE to 0.1. ROTATE for 90° again. DETERMINE the whiteness value. ACCURATE to 0.1. The range of three readings shall not be greater than 0.5.

TAKE the arithmetic mean value of the parallel determination results as determination result. The absolute difference of two parallel determination results shall not be greater than 1.

6.16 Fineness determination

The fineness (< 45μm) determination is the same with the Section 7.4 of GB/T 1706-2006.

6.17 Determination of the mean grain size

6.17.1 Instrument

X-ray diffractometer: The comprehensive stability shall be greater than 1%. The goniometer accuracy shall be greater than 0.001°.

6.17.2 Analysis procedures

Same as the Section 5.6 of GB/T 19591-2004.

6.18 Determination of the UV transmittance

It is allowed to conduct the determination of the UV transmittance according to the methods in the agreement.

7 Inspection rules

7.1 All the items specified in the requirements of this Standard are exit-factory inspection items, which shall be conducted with lot-by-lot inspection.

7.2 The same level of titanium dioxide for cosmetic use, which are produced by using the same materials under basically the same production conditions,

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