KEEP INGREDIENTS CO. LTD

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TECHNICAL DATA SHEET

Hydroxyapatite (Calcium Hydroxy Apatite)

1. PRODUCT DESCRIPTION

Hydroxyapatite is a calcium phosphate mineral with the molecular formula Ca5(PO4)3OH and CAS No. 1306-06-5. The product is supplied as a white, ultra-fine powder. It is manufactured by reacting food-grade calcium oxide with food-grade phosphoric acid, followed by filter pressing, drying, calcination and ultrafine milling. The supplied quality report indicates an industrial grade product.

2. PRODUCT INFORMATION

Item	Information
Product name	Hydroxyapatite
Chemical name	Calcium Hydroxy Apatite
Molecular formula	Ca5(PO4)3OH
CAS number	1306-06-5
Appearance	Ultra-fine powder
Colour	White
Product grade	Industrial grade
Country of origin	China
Shelf life	2 years
Packing	Inner plastic / outer paper kraft bag, 25 kg/bag; 400 kg or 500 kg per pallet

3. PRODUCT SPECIFICATION

Table 1 — Particle size distribution

Property	Target	Min	Max	UoM	Test method
Particle size D10	1.1	—	—	µm	Laser diffraction (wet)
Particle size D50	3	3	5	µm	Laser diffraction (wet)
Particle size D90	10	—	10	µm	Laser diffraction (wet)
Particle size distribution (range 1)	45	—	0.1	µm	Laser diffraction (wet)

Table 2 — Chemical and physical analysis

Property	Min	Max	UoM	Test method

Property	Min	Max	UoM	Test method
Assay (as Ca)	34	40	%	EDTA titration
Soluble matter in water	—	0.5	%	GBT 1874-1995
Insoluble matter in acid	—	0.1	%	GBT 23948-2023
Loss on ignition	—	4	%	GBT 23951-2009
pH (10% solution in water, 25 °C)	6.5	7.5	Value	GBT 9724-2007
Chloride	—	0.14	%	GBT 3051-2000

Table 3 — Additives / contaminants

Property	Max	UoM	Test method
Arsenic (As)	2	mg/kg	GBT 23950-2009
Cadmium (Cd)	2	mg/kg	GBT 23950-2009
Cobalt (Co)	1	mg/kg	GBT 23950-2009
Chromium (Cr)	1	mg/kg	GBT 23950-2009
Mercury (Hg)	1	mg/kg	GBT 23950-2009
Nickel (Ni)	1	mg/kg	GBT 23950-2009
Lead (Pb)	5	mg/kg	GBT 23950-2009
Antimony (Sb)	5	mg/kg	GBT 23950-2009
Heavy metals total (as Pb)	15	mg/kg	GBT 23950-2009
Fluoride	50	mg/kg	GBT 23950-2009
Sulphates	8000	mg/kg	GBT 23950-2009

Table 4 — Microbiological specifications

Property	Limit	UoM	Test method
Aerobic plate count	≤ 100	CFU/g	Safety and Technical Standards for Cosmetics (2015 edition)
Yeasts and moulds	≤ 100	CFU/g	Safety and Technical Standards for Cosmetics (2015 edition)
Gram-negative bacteria	0	CFU/g	Safety and Technical Standards for Cosmetics (2015 edition)

4. CERTIFICATE OF ANALYSIS

Field	Detail
Product grade	Industrial grade
Batch No.	KYHY2026032405
Production date	2026/03/24
Batch quantity	20 T
Analysis date	2026/03/26

Item	Requirement	Result
P2O5 (%)	38.0 – 41.0	39.90
CaO (%)	50.0 – 55.0	52.81
Insoluble matter in hydrochloric acid (%)	≤ 0.05	Not detected

Item	Requirement	Result
pH value	6.5 – 8.5	7.23
Moisture (%)	≤ 3.0	2.0
Whiteness	≥ 90	94.3
Loss on drying (%)	≤ 2.0	2.0
Loss on ignition (%)	≤ 4.5	4.0
Suspensibility (3 h, mL)	40 – 80	55
Fineness (D50)	Micron level	4.62 μm
Conductivity (μs/cm)	≤ 150	102.8
Appearance	White powder	Conforms
Odour	No odour	Conforms

Note: the batch is a white amorphous powder with all indicators within specification

5. PROCESS FLOW

1. **Calcium oxide hydrolysis**: food-grade calcium oxide reacts with water in a closed, negative-pressure vessel to form a calcium hydroxide solution (CaO + H2O → Ca(OH)2), up to 100 °C; impurities are removed by suspension, vibrating screen and tubular filtration; aged for 48 hours.
2. **Hydroxyl control**: the calcium hydroxide solution reacts with 85% food-grade phosphoric acid at low concentration under closed conditions (Ca(OH)2 + H3PO4 → Ca5(PO4)3OH + H2O); reaction start temperature 40 °C, end temperature 90 °C, pH 7 (neutral); nano-shearing is applied and the mass is homogenized and aged for 48 hours.
3. **Filter pressing:** the qualified suspension is separated by a double-membrane filter press; the filtrate is recycled after multi-stage settling.
4. **Drying:** the filter cake is dried by flash drying at 280 °C; exhaust gas is collected by two-stage cyclone and bag collection (collection efficiency 99.8%).
5. **Calcination:** the semi-finished product is calcined at 500–1200 °C to control purity, ensuring the hydroxyapatite content reaches ≥ 99%, then cooled.
6. **Ultra fine milling and packaging:** the cooled semi-finished product is ultrafine milled (fineness adjustable) and collected by cyclone and bag collection for packaging.
7. **Warehousing:** the packaged finished product is palletized and labelled by specification and stored in the designated warehouse.

6. STATEMENTS AND COMPLIANCE

Assay and moisture. According to the supplied Material Safety Data Sheet, the product has an assay of 99% (hydroxyapatite content) and moisture of not more than 5%.

Hazard classification. According to the supplied Material Safety Data Sheet, the product contains no dangerous components and hazard description is not applicable; no acute toxicity, no skin or eye irritation (inhalation of powder may irritate the respiratory tract), and no sensitizing effects are known.

Ecological. According to the supplied Material Safety Data Sheet, the product is not known to be hazardous to water.

Transport. According to the supplied Material Safety Data Sheet, the product is transported by sea or by air (ADR/RID class).

Quality. The supplied quality report confirms that the batch is a white amorphous powder with all indicators within specification.

7. STORAGE AND TRANSPORTATION

- Shelf life: 2 years; protect from sunlight, moisture and packaging damage; store in a cool, ventilated, dry warehouse.
- Storage: keep in a cool, dry place, away from light and heat; metal containers are not used.
- Packing: inner plastic / outer paper kraft bag, 25 kg per bag; 400 kg or 500 kg per pallet.
- Transport: by sea or by air (ADR/RID class).

