纳维盈医化科技
NEWAY SINOPHC TECH

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Technical Data Sheet (TDS)

1. Product Overview

- **Product Name**: Barium Carbonate
- **English Name**: Barium Carbonate
- **CAS Number**: 513-77-9
- **Formula**: $BaCO_3$
- **Molecular Weight**: 197.34 g/mol
- **Product Characteristics**: High-purity white crystalline powder, non-hygroscopic, insoluble in water, neutral pH. Non-combustible, chemically stable under normal storage, reacts with strong acids to release toxic barium salts and CO_2 gas, decomposes at high temperature. Ultra-low impurity content, uniform particle size (D50 2-5μm), high whiteness. Excellent performance as ceramic glaze raw material and glass clarifier; suitable for ceramic, glass, electronic ceramic, barium salt synthesis and pigment filler applications. Note: Toxic if swallowed and very toxic to aquatic life.

2. Technical Specifications (Industrial Grade)

Item	Specification
Appearance	White crystalline powder
Purity ($BaCO_3$)	≥ 99.0%
Moisture Content	≤ 0.2%
Chloride (Cl^-) Content	≤ 0.05%
Sulfate (SO_4^{2-}) Content	≤ 0.05%
Iron (Fe)	≤ 5 ppm
Heavy Metals (Pb)	≤ 3 ppm
Calcium (Ca) Content	≤ 0.1%
Strontium (Sr) Content	≤ 0.1%
Insoluble Matter in Dilute Acid	≤ 0.1%
Particle Size (D50)	2-5 μm
Whiteness	≥ 95%
Density (25℃)	4.40-4.45 g/cm³

3. Product Advantages

1. **High Purity & Ultra-Low Impurities**: ≥99% $BaCO_3$ purity with ultra-low heavy metal (Pb) and alkaline earth metal (Ca/Sr) impurities; ensures stable performance in ceramic/glass/electronic applications.
2. **Uniform Particle Size**: Narrow particle size distribution (D50 2-5μm); good dispersibility; improves product uniformity in ceramic glaze and electronic ceramic.
3. **High Whiteness**: ≥95% whiteness; ideal for ceramic glaze, glass and pigment filler applications; enhances product appearance and brightness.
4. **Excellent Chemical Stability**: Non-hygroscopic, 36-month shelf life under normal storage; no degradation at room temperature; suitable for long-term storage and transportation.
5. **Good Compatibility**: Excellent compatibility with ceramic/glass raw materials; improves glaze fluidity and glass transparency; no adverse effect on product performance.
6. **Controlled Particle Size**: Customizable particle size (1-10μm) available upon request for different application scenarios (e.g., fine particle size for electronic ceramic).

4. Application Fields

- **Ceramic Industry**: Core raw material for ceramic glazes (sanitary ware, ceramic tiles); improves glaze whiteness, gloss and wear resistance; reduces glaze cracking and pinholes; addition amount 10-30% (w/w).
- **Glass Industry**: Glass clarifier and flux for optical glass, float glass and colored glass; removes bubbles and impurities in glass; improves glass transparency and thermal stability; addition amount 1-5% (w/w).

- **Electronic Industry**: Raw material for electronic ceramic components (piezoelectric ceramic, dielectric ceramic); used in capacitors, resonators and sensors; high purity ensures excellent electrical performance.
- **Chemical Synthesis**: Core raw material for barium salt synthesis (barium nitrate, barium chloride, barium sulfate); used in chemical, pharmaceutical and pesticide production.
- **Pigment & Filler**: White pigment filler for paint, ink and plastic; high whiteness and hiding power; improves product weather resistance and scratch resistance.

5. Usage Methods

- **Ceramic Glaze**: Mix barium carbonate with other glaze raw materials (quartz, feldspar, clay) in proportion (10-30%); grind to fine powder (D90 <10μm) with ball mill; adjust glaze viscosity with water; apply to ceramic body and fire at 1100-1300℃.
- **Glass Production**: Add barium carbonate (1-5%) to glass batch materials; mix evenly and melt at 1400-1600℃; the product acts as clarifier and flux to remove bubbles and improve transparency.
- **Electronic Ceramic**: Use high-purity barium carbonate (≥99.5%) with narrow particle size distribution; mix with titanium dioxide in molar ratio 1:1; calcine at 800-1000℃ to produce barium titanate ($BaTiO_3$) ceramic powder.
- **Barium Salt Synthesis**: React barium carbonate with dilute acid (HCl/HNO_3) in a closed reactor (good ventilation); control reaction temperature at 20-50℃; filter and crystallize to obtain barium chloride/barium nitrate.
- **Key Operation**: Wear full PPE for all handling; avoid mixing with strong acids; no dust generation; dispose of waste as hazardous waste; no environmental release.

6. Packaging & Storage

- **Packaging Specifications**: 25 kg coated woven bags (with PE inner liner), 50 kg HDPE drums, 1000 kg FIBC (flexible intermediate bulk containers, coated); customized packaging available upon request. All packages are labeled with GHS hazard signs and product information.
- **Storage Conditions**: Cool, dry, well-ventilated warehouse (≤25℃); store in sealed packaging in a **dedicated hazardous chemical area**; avoid direct sunlight and high humidity; keep away from strong acids, food, feed, cosmetics and drinking water; separate from other chemicals with a distance of ≥1m.
- **Shelf Life**: 36 months (unopened, specified conditions); 12 months after opening (seal tightly and store in original packaging).
- **Transportation**: UN 1564, Class 6.1 toxic substance, Packaging Group II; transport by **dedicated hazardous chemical transport vehicles**; comply with IMDG/IATA/ADR regulations; avoid collision, leakage and direct sunlight; separate from strong acids, food and feed during transport; marine pollutant – avoid transport near waterways.

7. Safety & Protection

- **Mandatory PPE**: Wear chemical splash goggles + face shield, N95 dust mask, chemical-resistant nitrile gloves, full protective suit and safety shoes for **all handling operations** (no exceptions).
- **Handling Precautions**: Operate in well-ventilated area with local exhaust ventilation; use dust collection system for bulk processing; avoid dust inhalation, skin/eye contact and oral ingestion; no eating/drinking/smoking in the work area; wash hands/face thoroughly with soap after handling.

8. Quality Assurance

- Manufactured under ISO 9001 (quality) and ISO 14001 (environmental) management systems; strict raw material inspection, production process control and finished product testing.
- Each batch is tested for purity, impurities, particle size and whiteness; accompanied by a Certificate of Analysis (COA) to ensure compliance with industrial standards.
- Customized products available: high-purity grade (≥99.5%/99.9%), fine particle size grade (D50 1-2μm) and high-whiteness grade (≥98%); suitable for electronic ceramic and high-end glass applications.