



Integrity | Innovation | Professionalism | Excellence

# Kannry Bio Product Catalog

Implant-grade bioactive ceramics and calcium phosphate materials

High-end raw material solutions for orthopedic, dental and regenerative medicine devices

**Calcium Phosphate Series**

**Calcium Silicate Series**

**45S5 Bioactive Glass Series**

**Calcium Sulfate Series**

**Polymers & Composite Systems**

**Advanced Ceramic Components**

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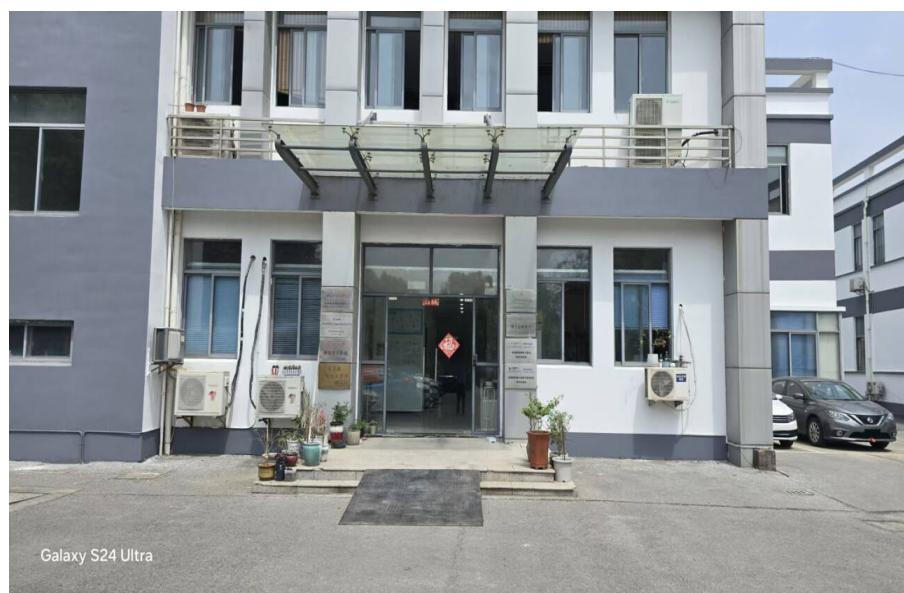
Iphone: 008619822625826

## Company Profile

Hongkong Kannry Industrial Co., Ltd. (Kannrybio) specializes in medical-grade bioactive inorganic materials and implant-grade ceramics for orthopedic, dental, aesthetic and tissue regeneration applications. Our core portfolio covers high-performance calcium phosphate, calcium silicate and bioactive glass systems, manufactured under ISO 13485 with Class II / Class III implant licenses.

Kannrybio supplies over one hundred materials and components to universities, research institutes, hospitals and biomedical companies worldwide, providing customized material design, property evaluation and R&D collaboration to support advanced medical device development and registration

Our flagship materials reference international standards for implantable bioceramics, and we support customers with detailed technical dossiers and batch-specific Full COA packages when needed for registration and audits.



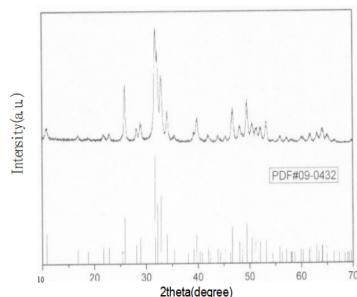
## Core Advantages

Comprehensive implant-grade portfolio covering calcium phosphate powders, cements, scaffolds, bioactive glass, calcium sulfate systems, polymer microspheres and ceramic femoral heads.

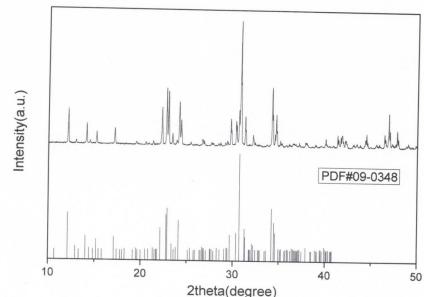
Strong materials science and process engineering background, enabling tight control of phase purity, particle size distribution, surface area, porosity and mechanical properties.

ISO 13485 based quality system with traceable raw materials, validated processes and batch documentation designed to support international regulatory submissions.

Flexible customization and OEM support, including tailored compositions, morphology, particle size cuts and documentation packages for both R&D and commercial-scale programs.



NHA-XRD



Alfa-TCP



## Product Families and Classification

### Calcium Phosphate Series

- Alpha Tricalcium Phosphate
- Beta Tricalcium Phosphate
- Hydroxyapatite (micro)
- Hydroxyapatite Nano (nHA)
- Hydroxyapatite Whisker (HAW)
- Hydroxyapatite Microspheres (HA Microspheres)
- Tetracalcium Phosphate (TTCP)
- Octacalcium Phosphate (OCP)
- Dicalcium Phosphate Anhydrous (DCPA)
- Dicalcium Phosphate Dihydrate (DCPD)
- Functionalized Calcium Phosphate (Mg/Zn/Sr/Si doped HA/TCP)
- Biodegradable Calcium Phosphate Bone Cement (CPC)
- Biodegradable Porous Scaffold
- HA TCP Composite Block

### Calcium Silicate Series

- Nano Tricalcium Silicate
- Micro Tricalcium Silicate
- Nano Dicalcium Silicate
- Micro Dicalcium Silicate

### 45S5 Bioactive Glass Series

- 45S5 Bioactive Glass (micro)
- 45S5 Bioactive Glass Microspheres
- 45S5 Bioactive Glass (Nano)

### Calcium Sulfate Series

- Calcium Sulfate Hemihydrate (micro)
- Calcium Sulfate Dihydrate (micro)

### Polymers & Composite Systems

- PLLA Microspheres

### Advanced Ceramic Components

- Composite Ceramic Femoral Head
- Silicon Nitride Ceramic Head
- Alumina Ceramic Head

## Alpha Tricalcium Phosphate

CAS: 7758-87-4

Appearance: White crystalline powder

Density: ~2.86 g/cm<sup>3</sup>

Melting/Decomposition: Decomposes above ~1400 °C; no true melt under ambient pressure

Solubility: Insoluble in water; dissolves in dilute acids

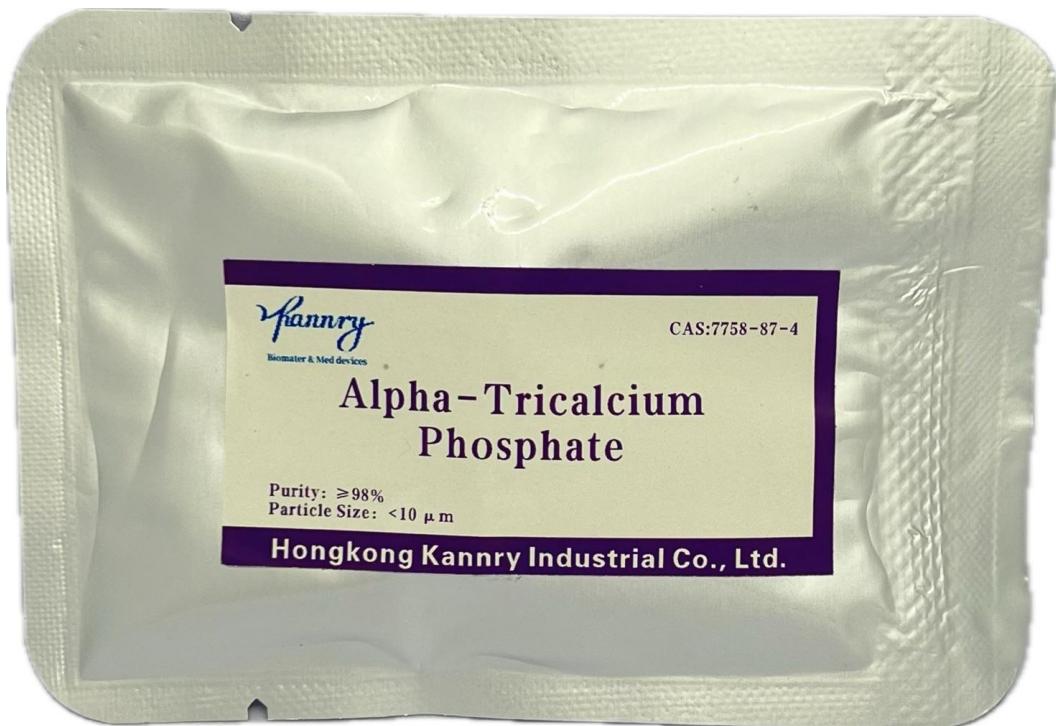
Stability: Hydrolyzes in aqueous media, forming hydroxyapatite (HA)

Applications: Reactive component in CPC paired with TTCP or DCPA/DCPD; precursor for in situ HA; used in coating blends and composites

Technical parameters: Purity >=98% (typical); phase purity typically 99.3 to 99.7 percent; BET SSA 2 to 4 m<sup>2</sup>/g; PSD fine powder < 10µm; total heavy metals < 5 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Beta Tricalcium Phosphate

CAS: 7758-87-4

Appearance: White crystalline powder

Density: ~3.07 g/cm<sup>3</sup>

Melting/Decomposition: Transforms to alpha-TCP at high temperature; stable up to about 1125 °C

Solubility: Sparingly soluble in water; dissolves in acids

Stability: More stable and less soluble than alpha-TCP; slowly resorbable in vivo

Applications: Osteoconductive resorbable granules and blocks; composite fillers; CPC blends; dental and orthopedic graft systems

Technical parameters: Purity >=98% (typical); phase purity typically 99.2 to 99.6 percent; BET SSA 1 to 2 m<sup>2</sup>/g; PSD < 15 µm; total heavy metals < 5 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Hydroxyapatite (micro)

CAS: 1306-06-5

Appearance: White micro powder

Density: ~3.15 g/cm<sup>3</sup>

Melting/Decomposition: Decomposition typically above 1200 to 1400 °C to TCP phases

Solubility: Practically insoluble in water; dissolves in acids

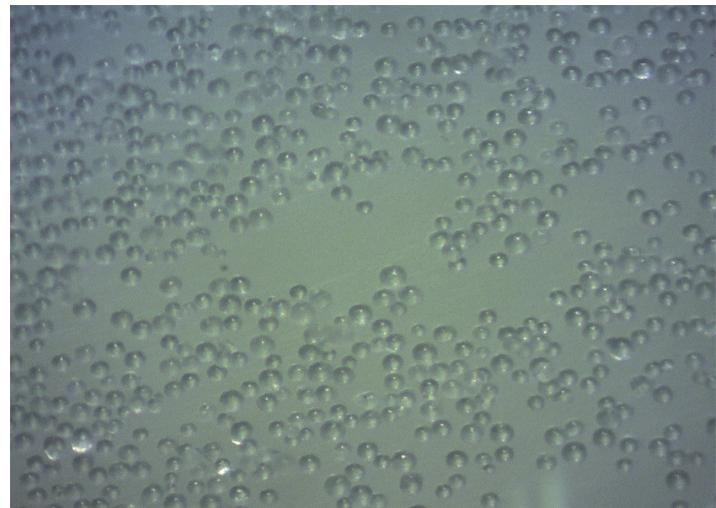
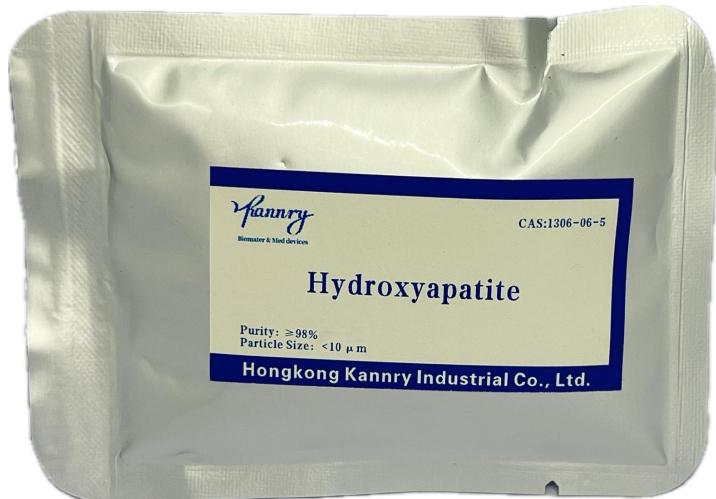
Stability: Chemically stable; excellent biocompatibility; slow in vivo resorption

Applications: Bone void fillers; plasma or slurry coatings; dental pastes and polishes; HA-reinforced composites; CPC modifiers

Technical parameters: Ca/P molar ratio 1.66 +/- 0.01; BET SSA 8 to 25 m<sup>2</sup>/g; PSD < 15 µm; whiteness > 92 percent; total heavy metals < 5 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Hydroxyapatite Nano (nHA)

CAS: 1306-06-5

Appearance: White nano powder (tens of nm)

Density: ~3.15 g/cm<sup>3</sup>

Melting/Decomposition: Decomposition onset typically above 1200 °C

Solubility: Practically insoluble in water; dissolves in acids

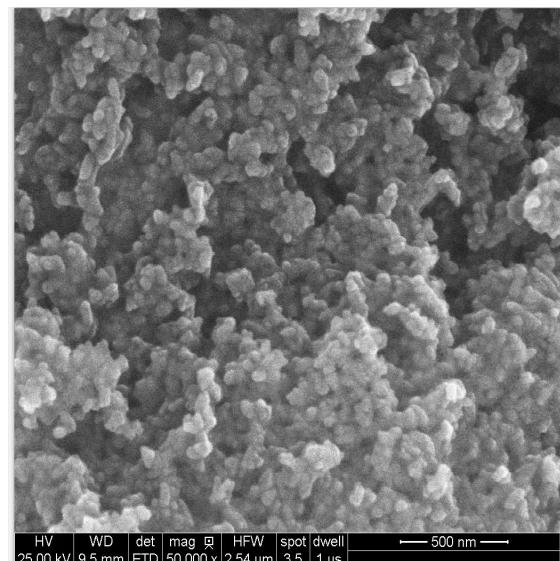
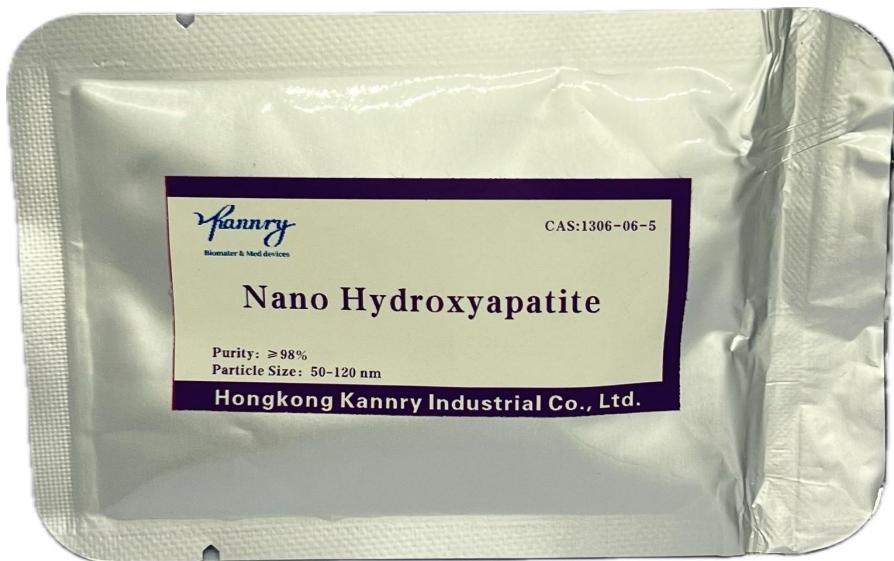
Stability: High surface area; faster conversion in physiological media than micro HA

Applications: Spray or dip coatings; composite reinforcement; bioactive polymer blends; bio-inks and injectable systems; surface functionalization

Technical parameters: Ca/P molar ratio 1.66 +/- 0.01; BET SSA 80 to 150 m<sup>2</sup>/g; controlled agglomerates < 3 µm; total heavy metals < 3 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Hydroxyapatite Whisker (H Aw)

CAS: 1306-06-5

Appearance: White acicular whiskers with aspect ratio typically 15 to 35 to 1

Density: ~3.15 g/cm<sup>3</sup>

Melting/Decomposition: Decomposition above 1200 °C

Solubility: Insoluble in water; soluble in acids

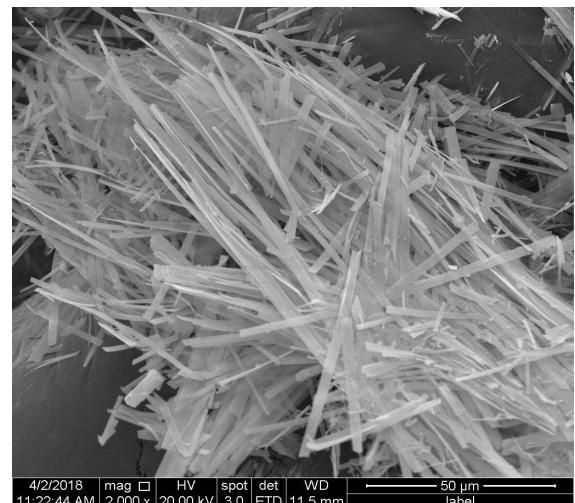
Stability: Reinforcing morphology for composites while maintaining bioactivity

Applications: Reinforcement in dental and orthopedic composites; wear-resistant bioactive coatings; prosthodontic components

Technical parameters: Aspect ratio 15 to 35 to 1; BET SSA 3 to 10 m<sup>2</sup>/g; whiteness > 94 percent; total heavy metals < 5 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Hydroxyapatite Microspheres (HA Microspheres)

CAS: 1306-06-5

Appearance: White spherical microspheres

Density: ~3.15 g/cm<sup>3</sup> (typical)

Melting/Decomposition: Decomposition typically above 1200 to 1400 °C to TCP phases

Solubility: Practically insoluble in water; dissolves in acids

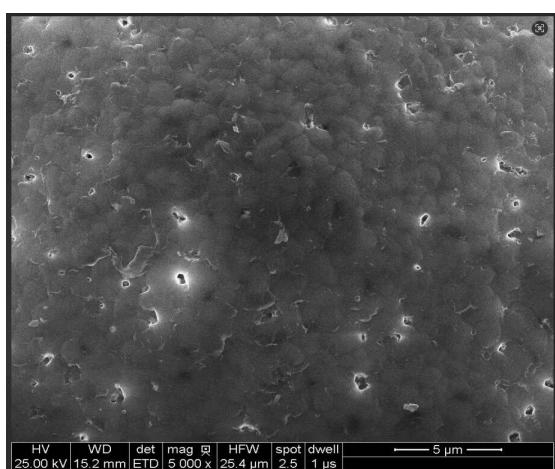
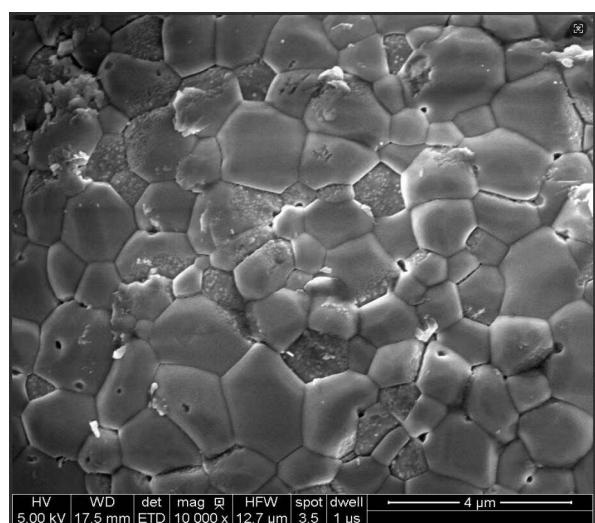
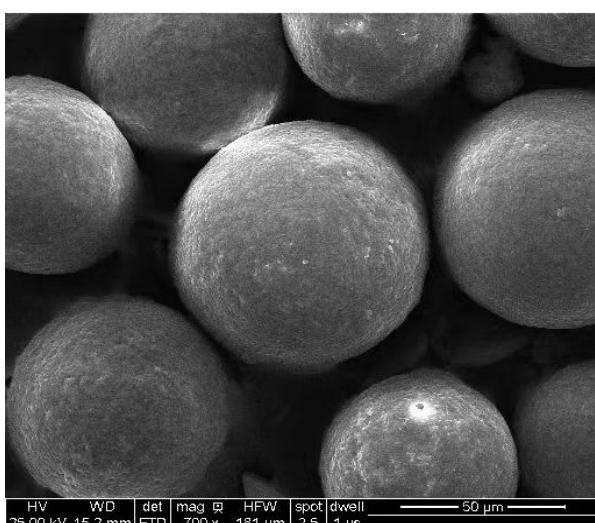
Stability: Chemically stable; excellent biocompatibility; engineered morphology for controlled flow, packing and resorption behaviour

Applications: Implant-grade hydroxyapatite microspheres for injectable bone substitutes, bone void fillers and composite systems; used as carriers for drugs, proteins and growth factors; suitable as a critical raw material in orthopedic and dental bone graft extenders, putties and scaffold formulations in B2B settings.

Technical parameters: Purity >=98% (typical); Ca/P molar ratio 1.66 +/- 0.01; size options 20 to 80 µm and 80 to 150 µm (custom ranges on request); narrow size distribution with typical size CV < 10 percent; sphericity typically > 0.95; whiteness > 92 percent; loss on ignition < 2.0 percent; total heavy metals < 5 ppm; compliance: manufactured under ISO 13485 quality system.

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data. Full COA can include SEM morphology, XRD phase purity and BET surface area on request.



## Tetracalcium Phosphate (TTCP)

CAS: 1306-01-0

Appearance: White crystalline powder

Density: ~3.08 g/cm<sup>3</sup> (typical)

Melting/Decomposition: Hydrolytically unstable in water; formed at high temperature

Solubility: Slightly soluble in water; dissolves in acids

Stability: Rapidly hydrolyzes to HA in CPC formulations

Applications: Key basic component of CPC paired with DCPA or DCPD; HA conversion systems; coating and granulation feedstocks

Technical parameters: Purity >=98% (typical); phase purity typically 99.2 to 99.6 percent; BET SSA 2 to 4 m<sup>2</sup>/g; PSD < 10 µm; total heavy metals < 5 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Octacalcium Phosphate (OCP)

CAS: 13767-12-9

Appearance: White crystalline powder or platelets

Density: ~2.61 g/cm<sup>3</sup> (typical)

Melting/Decomposition: Dehydrates and transforms upon heating; converts toward HA in aqueous media

Solubility: Slightly soluble in water; more soluble than HA

Stability: Metastable precursor toward biological apatite

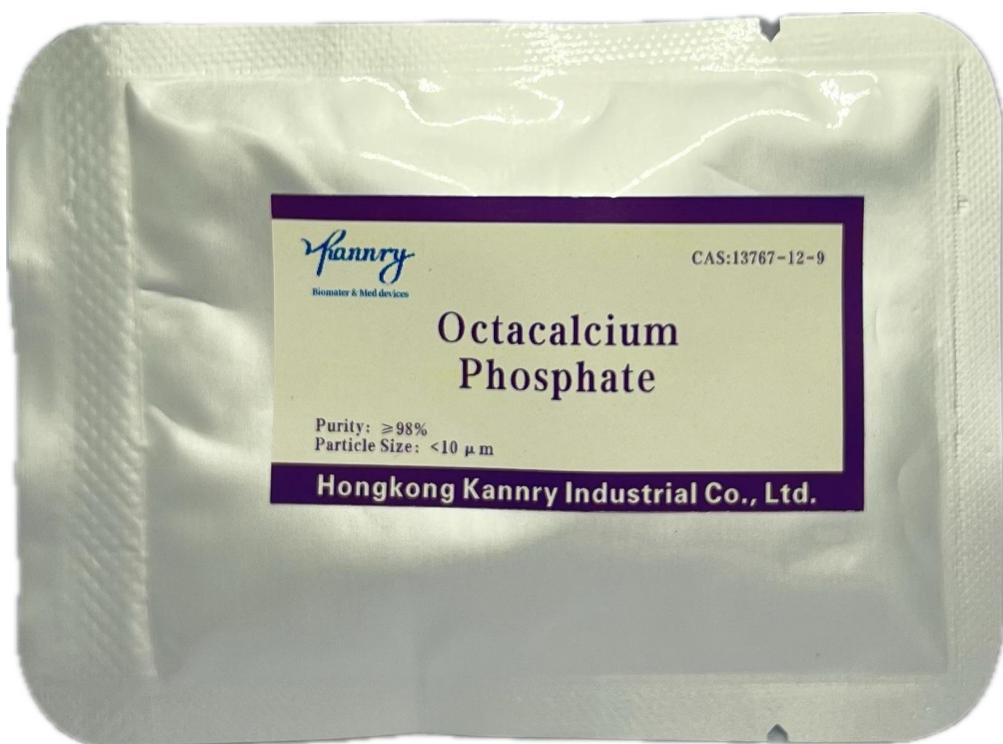
Applications: Bioactive precursor phases; grafts that favor rapid HA formation; coating precursors for apatite growth

Technical parameters: Ca/P molar ratio 1.33; platelets 0.5 to 3 µm; total heavy metals < 5 ppm;

compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Dicalcium Phosphate Anhydrous (DCPA)

CAS: 7757-93-9

Appearance: White crystalline powder or plates

Density: ~2.89 g/cm<sup>3</sup> (mineral monetite)

Melting/Decomposition: Decomposes around 370 to 400 °C

Solubility: Sparingly soluble in water; soluble in acids

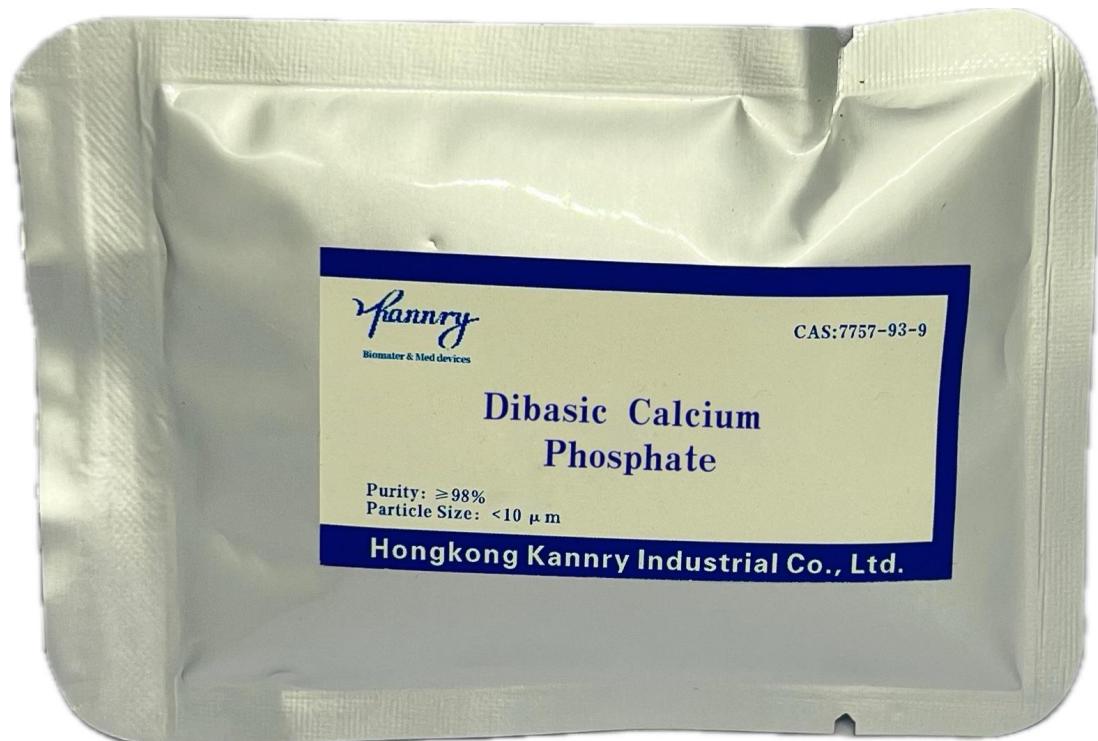
Stability: Stable at ambient; obtained from DCPD on dehydration

Applications: CPC component with TTCP; HA-forming coating precursor; composite scaffolds and granulates

Technical parameters: Ca/P molar ratio 1.00; PSD fine powder < 15 µm ; total heavy metals < 5 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Dicalcium Phosphate Dihydrate (DCPD)

CAS: 7789-77-7

Appearance: White crystalline powder in plates or needles

Density: ~2.32 g/cm<sup>3</sup>

Melting/Decomposition: Dehydrates to DCPA on heating about 80 to 200 °C

Solubility: More soluble than HA or TCP; slightly soluble in water; soluble in acids

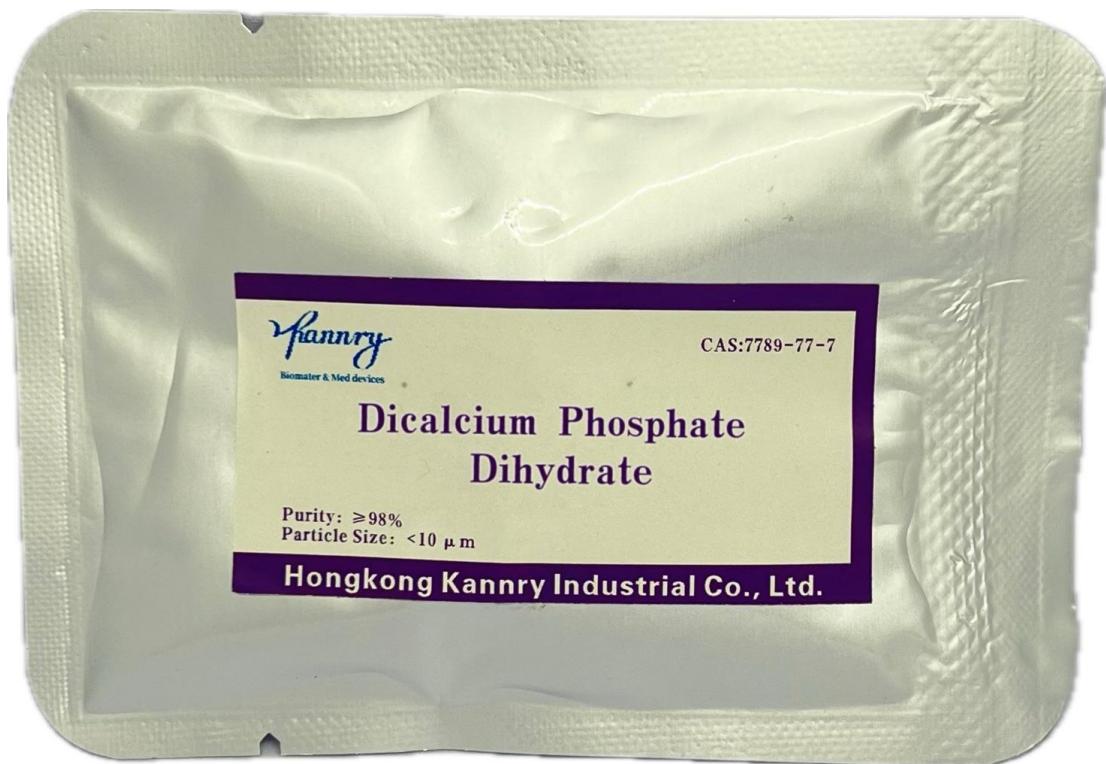
Stability: Metastable; transforms to monetite or apatite depending on conditions

Applications: Fast-setting CPC pastes; resorbable bone fillers; guided remineralization and scaffold systems

Technical parameters: Crystal water ; PSD < 15 µm; total heavy metals < 5 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Functionalized Calcium Phosphate (Mg/Zn/Sr/Si doped HA/TCP)

CAS: -

Appearance: White powder, micro or nano scale; surface modified

Density: ~3.0 to 3.2 g/cm<sup>3</sup>, similar to HA or TCP base phases

Melting/Decomposition: As per base phase; dopants tune thermal behavior

Solubility: As per base phase; dopants adjust dissolution rate

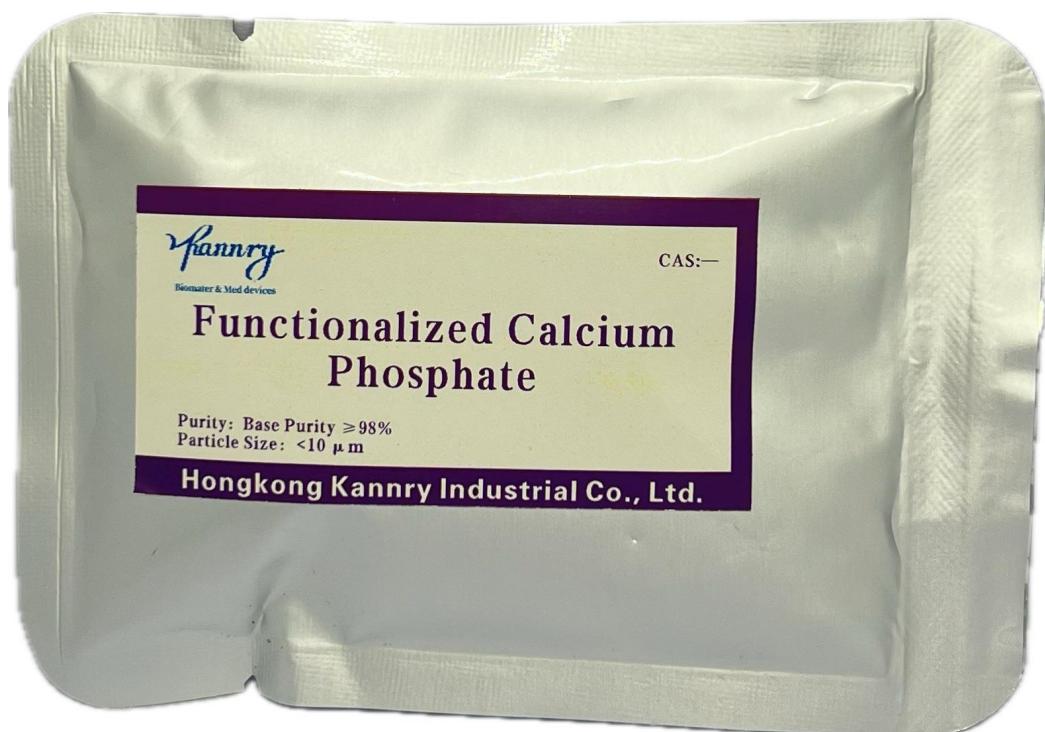
Stability: Ion substitution modulates ion release, bioactivity and resorption kinetics

Applications: Ion-modulating composites; advanced coatings; tailored CPC systems; research and development formulations

Technical parameters: Typical dopant levels: Mg or Zn 0.3 to 0.8 mol percent; Sr 0.3 to 1.5 mol percent; Si 0.6 to 1.2 wt percent; base phase purity as per HA or TCP flagship; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Nano Tricalcium Silicate

CAS: 12168-85-3

Appearance: Off white nano powder

Density: ~3.14 to 3.15 g/cm<sup>3</sup> (typical)

Melting/Decomposition: High melting about 2150 °C; hydraulic hydration in water

Solubility: Slightly soluble; hydrates to C-S-H and Ca(OH)<sup>2</sup>

Stability: Hydraulic; reacts with water forming cementitious phases

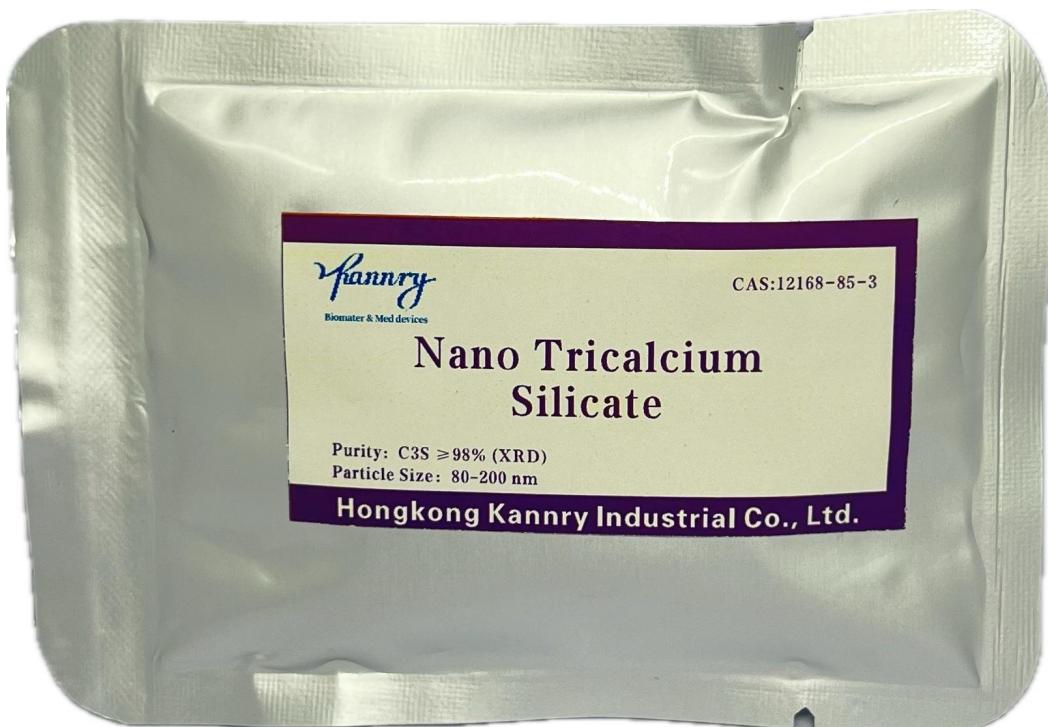
Applications: Dental MTA and bioceramic sealers; endodontic repair; CPC reinforcement; fast-setting repair cements

Technical parameters: Free CaO < 0.30 percent; PSD < 3 µm; trace heavy metals total < 5 ppm;

compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Micro Tricalcium Silicate

CAS: 12168-85-3

Appearance: Off white micro powder

Density: ~3.14 to 3.15 g/cm<sup>3</sup> (typical)

Melting/Decomposition: High melting about 2150 °C

Solubility: Slightly soluble; hydrates in water

Stability: Hydraulic silicate; sensitive to moisture and CO<sub>2</sub> during storage

Applications: Endodontic base materials; CPC modifiers; silicate-based putties and sealers; mineral trioxide aggregate style systems

Technical parameters: Free CaO < 0.30 percent; PSD < 8 µm ; trace heavy metals total < 5 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Nano Dicalcium Silicate

CAS: 10034-77-2

Appearance: Off white nano powder

Density: ~3.28 g/cm<sup>3</sup> (belite)

Melting/Decomposition: Decomposes at high temperature; hydrates slowly

Solubility: Low solubility; slower hydration than C3S

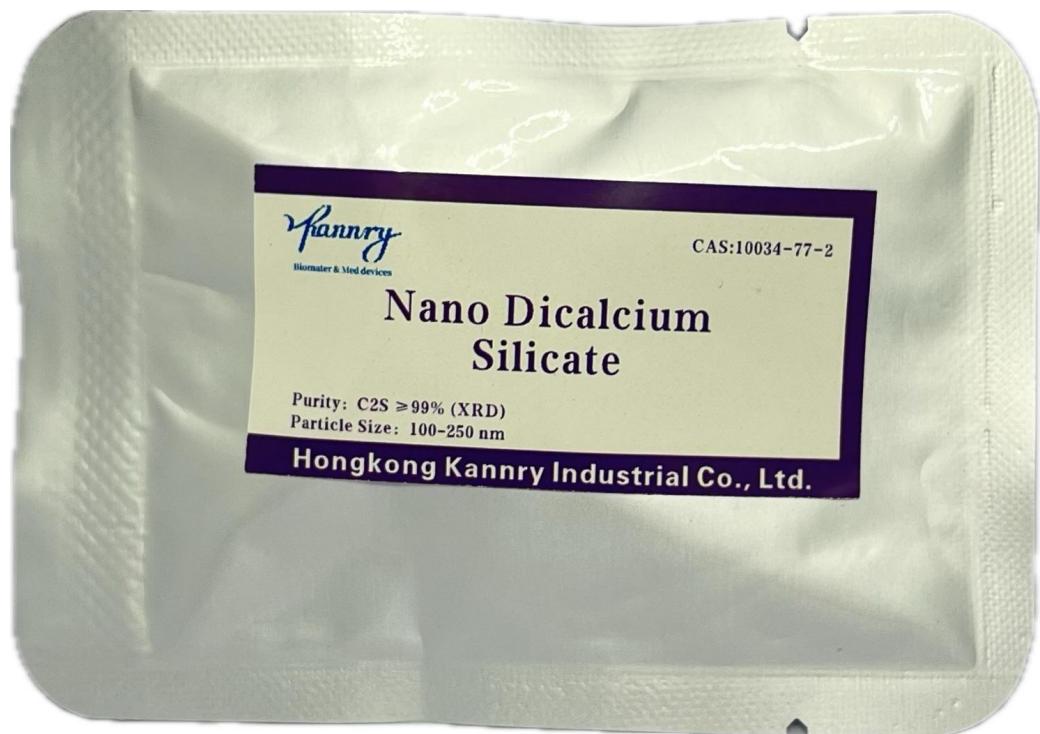
Stability: Hydraulic; slower setting and strength gain

Applications: Endodontic and bone cements requiring lower heat evolution and long-term stability; CPC reinforcement

Technical parameters: Free CaO < 0.20 percent; PSD < 3 µm; trace heavy metals total < 5 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Micro Dicalcium Silicate

CAS: 10034-77-2

Appearance: Off white micro powder

Density: ~3.28 g/cm<sup>3</sup> (typical)

Melting/Decomposition: High temperature hydraulic phase; hydrates slowly

Solubility: Low solubility; slower hydration rate

Stability: Hydraulic; moisture sensitive during storage

Applications: Dental and endodontic cements; low-heat cement systems; CPC blends

Technical parameters: Free CaO < 0.20 percent; PSD < 8 µm; trace heavy metals total < 5 ppm

compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## 45S5 Bioactive Glass (micro)

CAS: -

Appearance: White to off white glass powder

Density: ~2.6 to 2.7 g/cm<sup>3</sup> (typical)

Melting/Decomposition: Glass transition about 550 °C; crystallization onset about 600 to 700 °C

Solubility: Reacts in aqueous media forming hydroxy carbonate apatite; releases calcium, sodium and silicic acid species

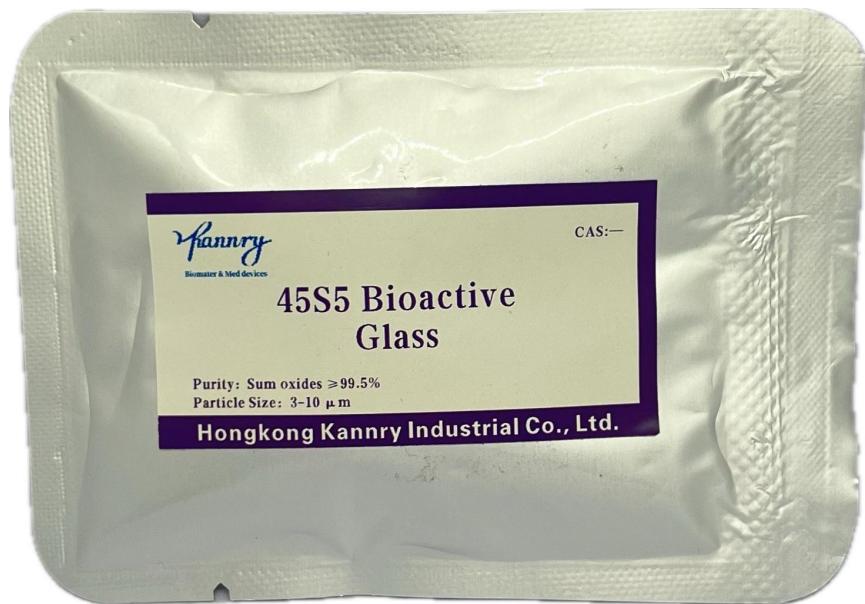
Stability: Chemically reactive in physiological fluids; store dry and sealed

Applications: Bioactive composites; surface activation; granulates; bone graft extenders; dental desensitizing formulations

Technical parameters: Composition 45SiO<sub>2</sub>–24.5Na<sub>2</sub>O–24.5CaO–6P<sub>2</sub>O<sub>5</sub>(wt%); PSD D90 < 32 µm; loss on ignition < 0.5 percent; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## 45S5 Bioactive Glass Microspheres

CAS: -

Appearance: Spherical glass microspheres

Density: ~2.6 to 2.7 g/cm<sup>3</sup> (typical)

Melting/Decomposition: T<sub>g</sub> about 550 °C; crystallization onset about 600 to 700 °C

Solubility: Surface reacts to form hydroxy carbonate apatite; ion releasing

Stability: Reactive in aqueous media; store dry

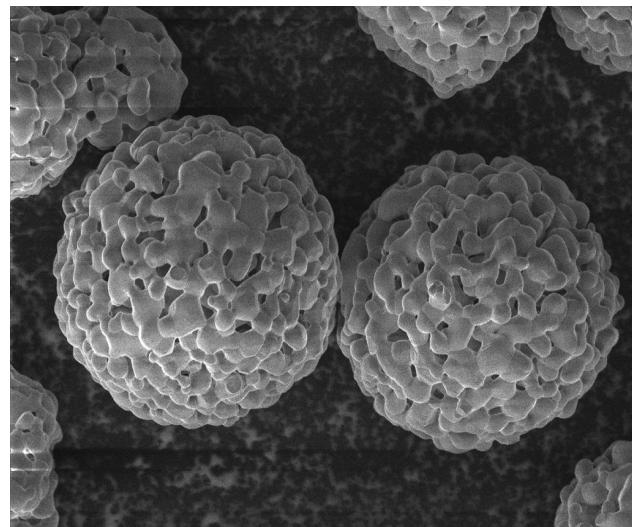
Applications: Injectable fillers; flow control in putties; drug-loading carriers; scaffold blends; spray and dip coatings

Technical parameters: Sphericity > 0.95; size options 20 to 120 µm; Composition 45SiO<sub>2</sub>–24.5Na<sub>2</sub>O–24.5CaO–6P<sub>2</sub>O<sub>5</sub>(wt%);

percent; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## 45S5 Bioactive Glass (Nano)

CAS: -

Appearance: Nanopowder glass

Density: ~2.6 to 2.7 g/cm<sup>3</sup> (typical)

Melting/Decomposition: Tg about 550 °C; crystallization onset about 600 to 700 °C

Solubility: Highly reactive due to high surface area

Stability: Store dry; avoid moisture and CO<sub>2</sub> uptake

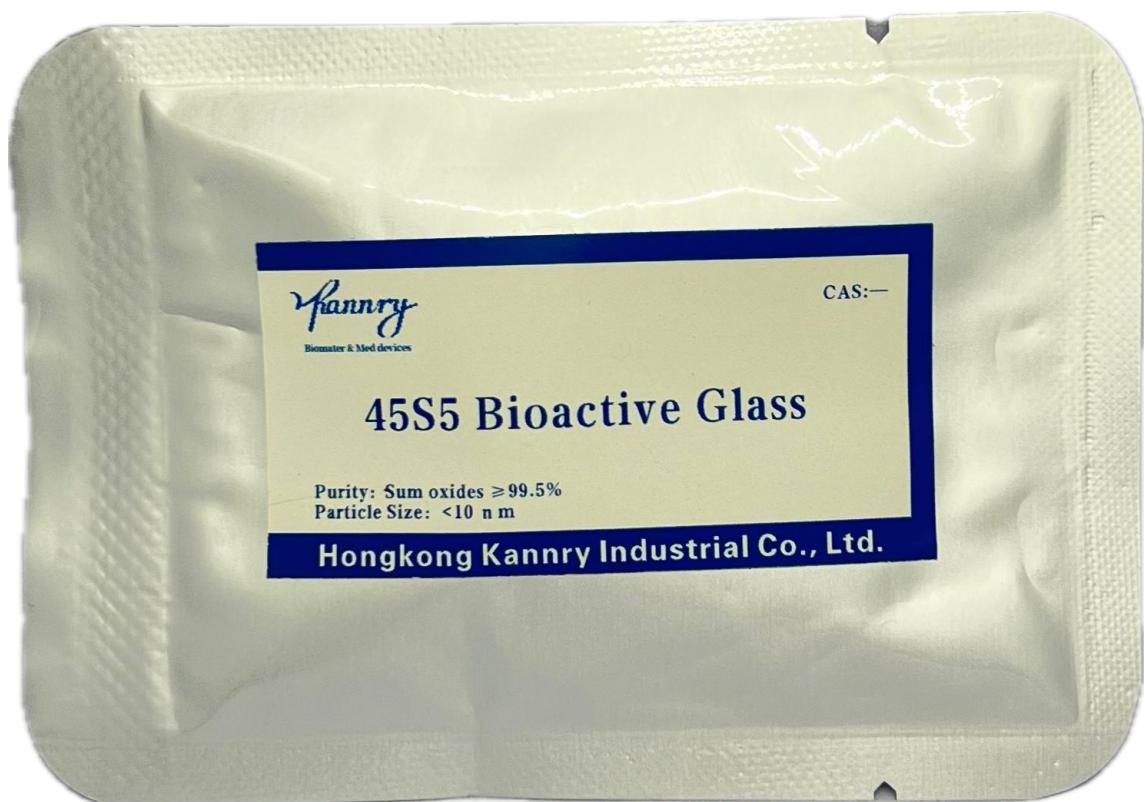
Applications: High activity bioactive fillers; surface functionalization; antibacterial coating strategies

Technical parameters: BET SSA 30 to 60 m<sup>2</sup>/g; composition 45SiO<sub>2</sub>–24.5Na<sub>2</sub>O–24.5CaO–6P<sub>2</sub>O<sub>5</sub> (wt%) percent;

agglomerates typically < 1.5 µm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Calcium Sulfate Hemihydrate (micro)

CAS: 10034-76-1

Appearance: White powder (alpha or beta hemihydrate grades)

Density: ~2.7 to 2.8 g/cm<sup>3</sup> (typical)

Melting/Decomposition: Hydrates to dihydrate; no true melting in normal use

Solubility: Sparingly soluble in water; reacts to gypsum on hydration

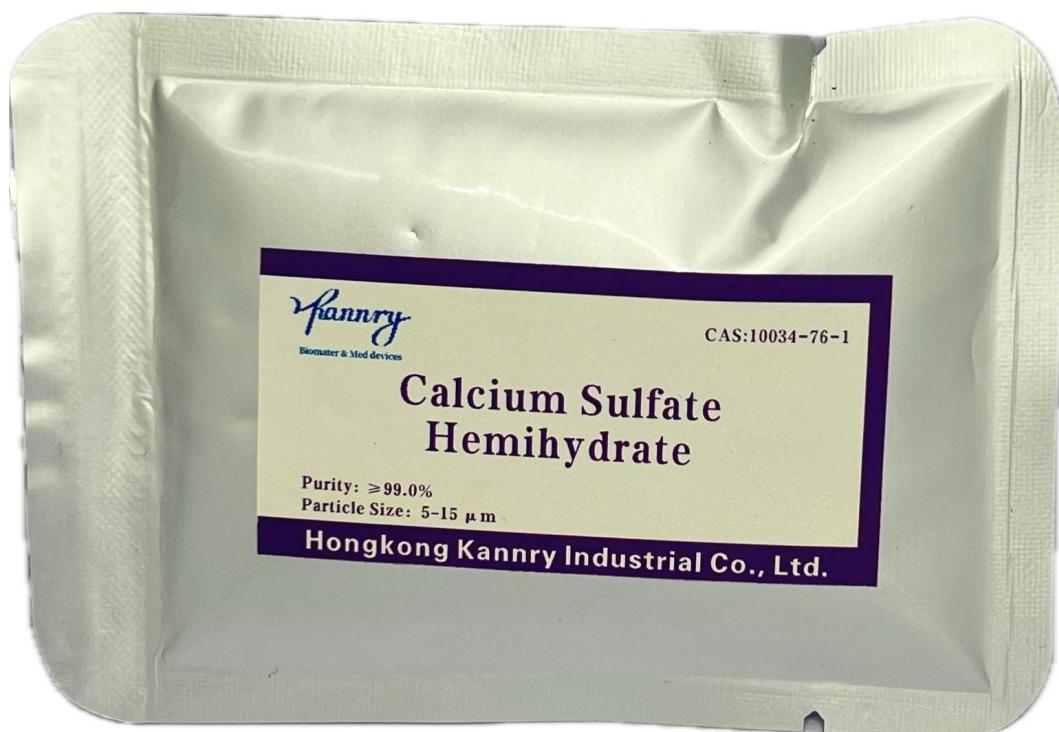
Stability: Moisture sensitive; store sealed and dry

Applications: Medical plaster; bone void fillers; CPC modifiers; temporary space maintenance

Technical parameters: Alpha-type compressive strength of set paste > 40 MPa (lab); PSD < 40 µm ;chloride < 200 ppm; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Calcium Sulfate Dihydrate (micro)

CAS: 10101-41-4

Appearance: White crystalline powder (gypsum)

Density: ~2.32 g/cm<sup>3</sup>

Melting/Decomposition: Dehydrates to hemihydrate on heating about 100 to 150 °C

Solubility: ~2.4 to 2.6 g per L in water at 25 °C (sparingly soluble)

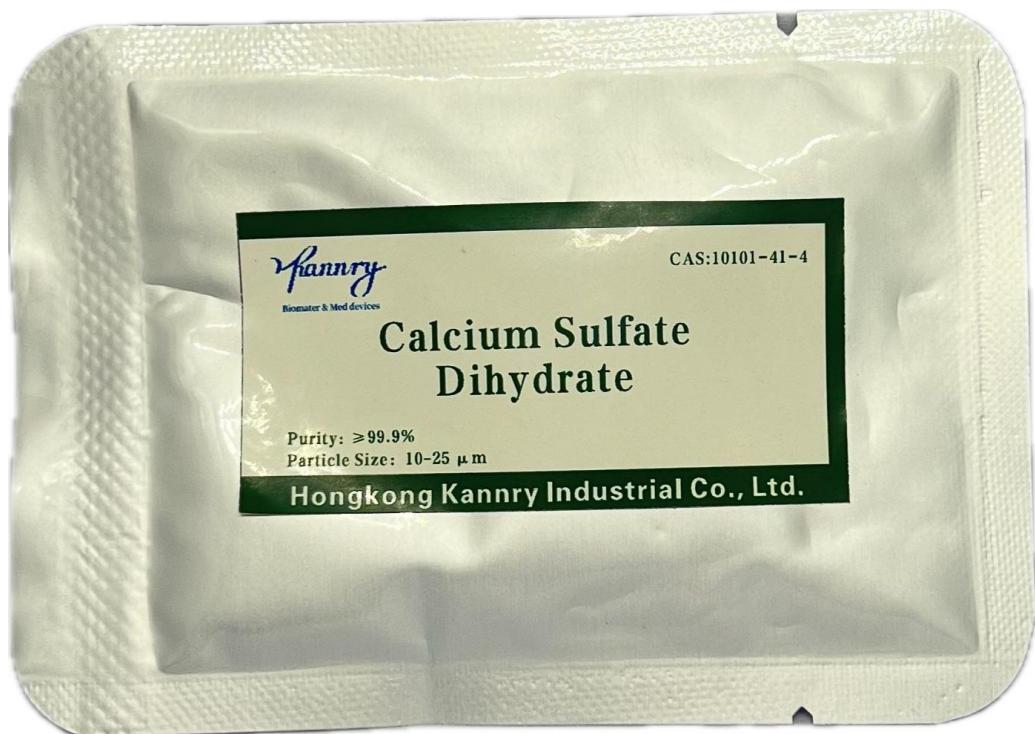
Stability: Stable at ambient; avoid high humidity caking

Applications: Bone graft adjuncts; controlled resorption fillers; CPC components and blends

Technical parameters: Purity >=98% (typical); PSD < 40 µm; chloride < 200 ppm; compliance  
:manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Biodegradable Calcium Phosphate Bone Cement (CPC)

CAS: -

Appearance: Two-component powder system (acidic and basic)

Density: N/A (mixture; bulk density depends on blend)

Melting/Decomposition: Aqueous setting at room temperature to nanocrystalline HA

Solubility: Unreacted powders sparingly soluble; set HA insoluble in water

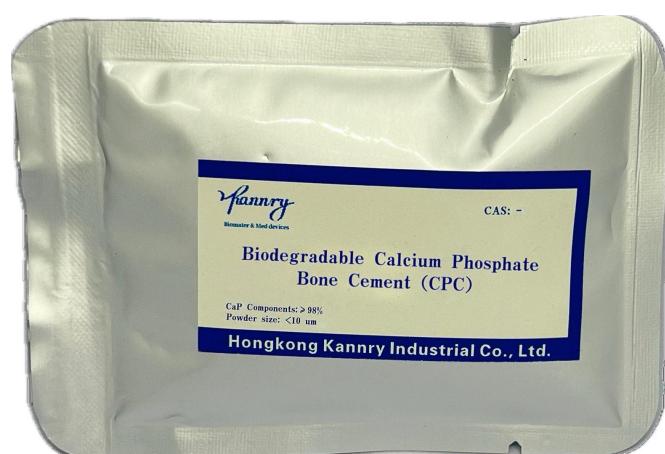
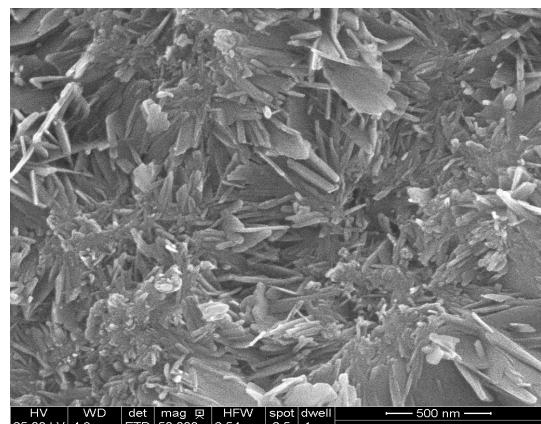
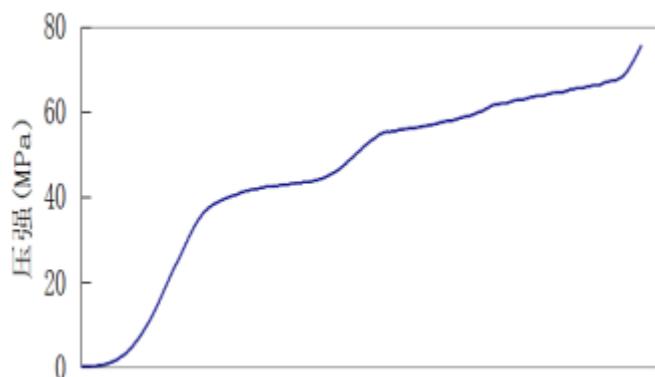
Stability: Keep powders dry; reacts with moisture; shelf life depends on packaging

Applications: Injectable or moldable bone void filling; CPC for orthopedic and dental indications; lab and pilot scale R and D

Technical parameters: Initial setting at 37 °C: 8 to 12 min (formulation-dependent); compressive strength 35 to 60 MPa at 24 h; injectability > 90 percent with 18G needle at 23 °C; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Biodegradable Porous Scaffold

CAS: -

Appearance: 3D porous architecture; typical porosity 50 to 80 percent

Density: Varies with porosity and composition

Melting/Decomposition: Depends on matrix system (ceramic, polymer, or composite)

Solubility: Varies; designed resorption or degradation profile

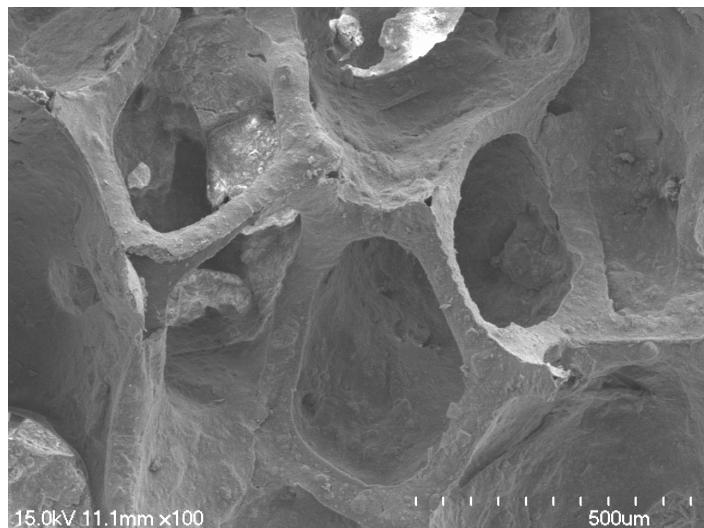
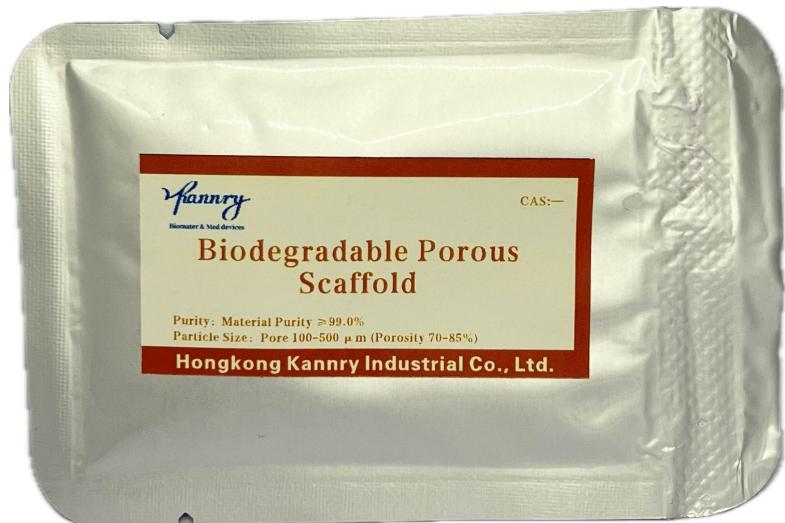
Stability: Tailored degradation in physiological media; mechanically stable as designed

Applications: Bone regeneration templates; drug or growth factor loading; defect-specific implants; tissue engineering studies

Technical parameters: Open porosity 65 to 80 percent; pore size 150 to 500 um; compressive strength 5 to 15 MPa (material-dependent); compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## HA TCP Composite Block

CAS: -

Appearance: Sintered biphasic ceramic block

Density: ~2.9 to 3.2 g/cm<sup>3</sup> (typical)

Melting/Decomposition: High temperature sintered; no melt in service

Solubility: Controlled resorption via HA to beta-TCP ratio

Stability: Osteoconductive; composition-dependent resorption and strength

Applications: Machinable blocks for dental and orthopedic use; scaffold bases; coating substrates

Technical parameters: HA to beta-TCP ratio 60 40 or 70 30; porosity 25 to 45 percent; compressive strength 40 to 100 MPa; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## PLLA Microspheres

CAS: 33135-50-1

Appearance: White spherical microspheres

Density: ~1.25 g/cm<sup>3</sup>

Melting/Decomposition: Melting about 160 to 180 °C; Tg about 55 to 65 °C

Solubility: Insoluble in water; soluble in some organic solvents depending on grade

Stability: Hydrolytically degradable over months to years depending on conditions

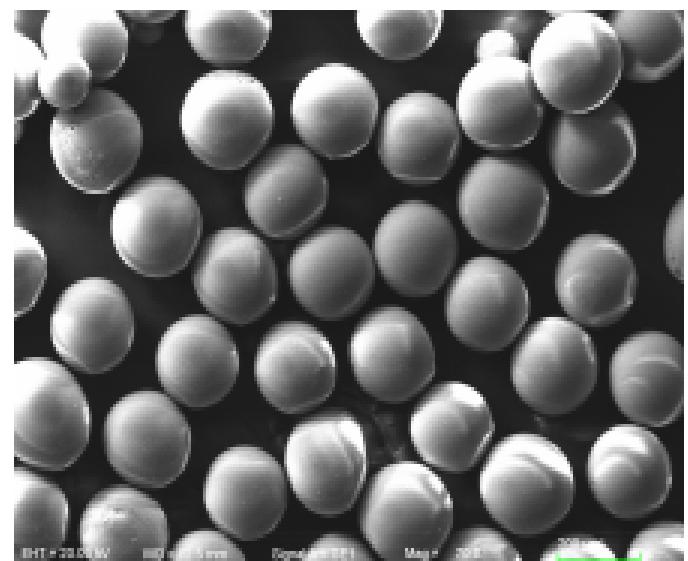
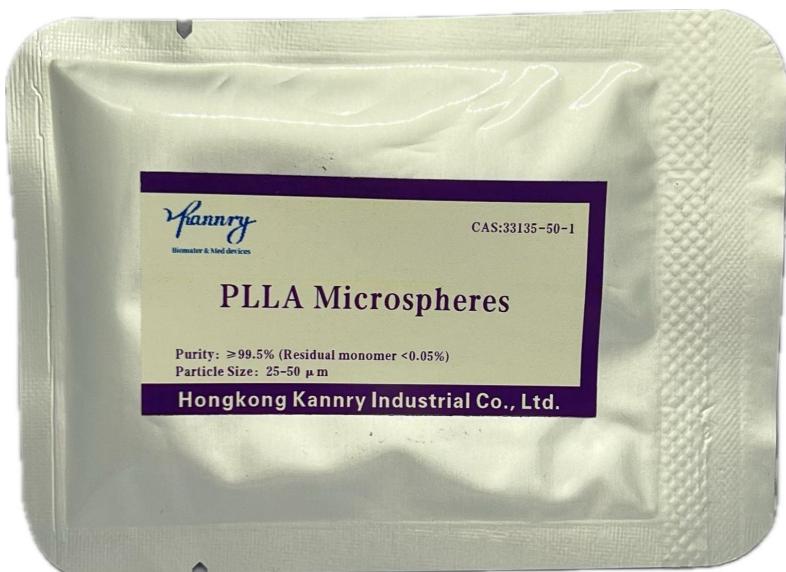
Applications: Drug delivery R and D; composite reinforcement; injectable fillers in B2B contexts; microsphere carriers for bioactive agents

Technical parameters: Size options 20 to 80 µm; residual monomer < 0.3 percent; size distribution

CV < 10 percent; compliance: manufactured under ISO 13485 quality system

Packaging: 100 g, 1000 g, 2000 g, 5000 g

Note: Values shown are typical for representative batches; see Full COA for batch data.



## Composite Ceramic Femoral Head

Material System: ZTA or ATZ composite ceramic (zirconia toughened alumina or alumina toughened zirconia)

Density: ~4.2 to 6.0 g/cm<sup>3</sup> depending on composition

Surface Finish: Surface finish Ra < 0.008 µm

Mechanical: Indicative fracture toughness 6 to 10 MPa\*m<sup>0.5</sup>; hardness > 12 GPa

Taper Compatibility: Taper compatibility examples 12/14; others on request

Sterilization: Sterilization options steam, gamma, EtO per customer process

Technical parameters: Compliance with ISO 13485 quality system; dimensional tolerance diameter +/- 0.003 mm; roundness <= 0.002 mm; 100 percent visual inspection

Packaging: Individual sterile barrier or bulk non-sterile per order

Note: Values shown are typical for representative batches; device-related claims depend on verification and regulatory approvals.



## Silicon Nitride Ceramic Head

Material System: Silicon nitride ceramic

Density: ~3.2 g/cm<sup>3</sup>

Surface Finish: Surface finish Ra < 0.008 µm

Mechanical: High strength and wear resistance; fracture toughness 6 to 8 MPa\*m<sup>0.5</sup>

Taper Compatibility: Taper compatibility examples 12/14; others on request

Sterilization: Sterilization options steam, gamma, EtO per customer process

Technical parameters: Compliance with ISO 13485 quality system; dimensional tolerance +/- 0.003 mm; roundness <= 0.002 mm; proof load per order

Packaging: Individual sterile barrier or bulk non-sterile per order

Note: Values shown are typical for representative batches; device-related claims depend on verification and regulatory approvals.



## Alumina Ceramic Head

Material System: High purity alumina ceramic

Density: ~3.97 g/cm<sup>3</sup>

Surface Finish: Surface finish Ra < 0.008µm

Mechanical: Hardness > 19 GPa; high wear resistance

Taper Compatibility: Taper compatibility examples 12/14; others on request

Sterilization: Sterilization options steam, gamma, EtO per customer process

Technical parameters: Compliance with ISO 13485 quality system; diameter tolerance +/- 0.003 mm; roundness <= 0.002 mm; lot certificates available

Packaging: Individual sterile barrier or bulk non-sterile per order

Note: Values shown are typical for representative batches; device-related claims depend on verification and regulatory approvals.

