

1. PRODUCT IDENTIFICATION

Trade name	ChitoBlue Chitosan — R&D Grade
IUPAC name	Poly-(1,4)-2-amino-2-deoxy- β -D-glucan
CAS number	9012-76-4
EINECS/ELINCS	618-480-0
Biological origin	Shells of <i>Callinectes sapidus</i> (blue crab) Italy (FAO 37.2.1)
Product category	Natural biopolymer — deacetylated polysaccharide
Grade	R&D / Research & Development
Document number	TDS-CB-001
Revision	Rev. 2 - June 2026
Document status	FINAL

2. QUALITY SPECIFICATIONS AND MOLECULAR CHARACTERISTICS

ChitoBlue chitosan is obtained by extraction from the shells of ***Callinectes sapidus*** following an optimised protocol. It is a linear copolymer of GlcN and GlcNAc units linked by $\beta(1\rightarrow4)$ glycosidic bonds, characterised by high purity and the absence of calcite contamination, confirmed by FT-IR ATR analysis.

PARAMETER	SPECIFICATION	ANALYTICAL METHOD
Degree of deacetylation (DD%)	90–95%	FT-IR ATR Brugnerotto (A_{1320}/A_{1420})
Degree of acetylation (DA%)	5–10%	FT-IR ATR Brugnerotto
Moisture	$\leq 10\%$	Gravimetric (105°C, 2h)
Ash (inorganic residue)	≤ 0.3 g/100g	Gravimetric (550°C, 4h)
Appearance	White/ivory powder	Visual inspection
Solubility	Soluble in 1% v/v AcOH	In-house dissolution test
Molecular weight (Mw)	To be determined on request	Capillary viscometry
Particle size	60 mesh (~0.25 mm)	Sieving

3. CERTIFIED ANALYTICAL DATA

3.1 — Heavy Metals, Ash and Microbial Load (Neutron SpA, Modena — Report no. 26E00640-It-0)

PARAMETER	METHOD	RESULT	LIMIT	LABORATORY
Ash (inorganic residue)	Gravimetric (S48) ACCREDIA	< 0.3 g/100g	≤ 2 g/100g	Neutron SpA

Arsenic (As)	ICP-MS (05) ACCREDIA	< 0.03 mg/kg	< 1 mg/kg	Neutron SpA
Cadmium (Cd)	ICP-MS (05) ACCREDIA	< 0.01 mg/kg	< 0.1 mg/kg	Neutron SpA
Mercury (Hg)	ICP-MS (05) ACCREDIA	< 0.01 mg/kg	< 0.1 mg/kg	Neutron SpA
Lead (Pb)	ICP-MS (05) ACCREDIA	< 0.1 mg/kg	< 1 mg/kg	Neutron SpA
TAMC (Total Microbial Count)	EU PHARMA 01/2025:20612	< 40 CFU/g	< 1000 CFU/g	Neutron SpA

ACCREDIA-accredited laboratory no. 00023

4. PHYSICO-CHEMICAL PROPERTIES

Molecular formula	(C ₆ H ₁₁ NO ₄) _n — deacetylated units
Physical state	Solid — fine powder (60 mesh, ~0.25 mm)
Colour	White / light ivory
Melting point	Decomposition > 250°C
Bulk density	~ 0.3 – 0.5 g/cm ³
Stability in solution	Stable in acidic environment (pH < 6.5)
Incompatibility	Strong oxidising agents, concentrated bases
Solubility in water	Insoluble at neutral/basic pH

5. RECOMMENDED RESEARCH AND DEVELOPMENT AREAS

SECTOR	SPECIFIC APPLICATIONS
Biomedical R&D	Tissue engineering scaffolds, wound healing, haemostasis (R&D only)
Cosmetics	Film-forming, moisturising, antibacterial formulations; hair serums and active skincare (R&D only)
Agriculture	Plant defence elicitor, seed coating, biofungicide, post-harvest treatment (R&D only)
Water Treatment	Natural flocculant, heavy metal removal, turbidity reduction (R&D only)
Food R&D	Antimicrobial coating, thickener, chelating agent (R&D only - not for direct food use)
Advanced Materials	Biodegradable films, composites, selective membranes (R&D only)

6. STORAGE AND SHELF-LIFE

Temperature	+15°C / +25°C (controlled room temperature)
Relative humidity	≤ 60% RH
Container	Sealed PE bag
Light	Protect from direct sunlight exposure
Shelf-life	24 months from the production date (sealed container)
After opening	Use within 6 months; reseal immediately after use

7. ALLERGENS, SAFETY AND REGULATORY COMPLIANCE

⚠ ALLERGEN — CONTAINS CRUSTACEAN DERIVATIVES

This product is derived from crab shells (***Callinectes sapidus***). It may cause severe allergic reactions in individuals sensitive to crustaceans or molluscs. Handle with care in environments where at-risk individuals are present.

CLP classification	Not classified as a hazardous substance (Reg. EC 1272/2008)
REACH	Art. 2(2) — natural polymer; CSR not required
Oral toxicity LD50	> 10,000 mg/kg (mouse) — not acutely toxic
Irritation	Not classified (data available in SDS-CB-001)
Waste disposal	Organic waste — Legislative Decree 152/2006 and local regulations
Intended use	For R&D and industrial use only. Not for direct food or pharmaceutical use without further validation.

8. TECHNICAL SUPPORT AND CONTACTS

Company	ChitoBlue S.r.l.
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The information contained in this document is based on experimental analyses and analytical certificates from accredited laboratories. ChitoBlue S.r.l. reserves the right to update the technical specifications without prior notice.

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