

# Certificate of Analysis

**Promecens Entosystems Private Limited**

*Phosphorylated Chitosan (P-Ch)*

## Product Identification

- **Product Name:** Phosphorylated Chitosan
- **Product Code:** PCh/01/2025
- **Synonyms:** Phospho-chitosan, P-Ch
- **CAS Number:** 9012-76-4
- **Molecular Formula:**  $(C_6H_{11}NO_4PO_3)_n$
- **Average Molecular Weight:** ~400–600 Da
- **Degree of Substitution (DS):** 0.93
- **Phosphorus Content:** 4.3% (w/w)
- **Date of Manufacture:** June 2025
- **Expiry Date:** May 2028
- **Manufacturer:** Promecens Entosystems Private Limited
  - **Registered Office:** 3196, Sector-15, Sonipat, Haryana, India – 131001
  - **R&D and Production Site:** Venture Center, 100 NCL Innovation Park, Pune, Maharashtra, India – 411008

## Intended Use

Phosphorylated Chitosan is a functionalized biopolymer intended for use in:

- **Biomedical devices** (bone tissue engineering, dental adhesives)
- **Pharmaceutical applications** (hemostatic agents, mucoadhesive platforms)
- **Agriculture** (biofertilizer carrier, plant immunity enhancer)
- **Cosmeceuticals** (hydration systems, barrier-repair active ingredient)

## Analytical Test Results

Sr. No.	Test Parameter	Specification	Result
1	Appearance	Off-white to pale yellow powder	Conforms (Pale yellow fine powder)
2	Odor	Odorless	Conforms
3	Solubility in Water	Fully soluble	Passes
4	Purity (on dry basis)	≥ 98.0%	98.9%
5	Phosphorus Content (w/w)	2.0 – 6.0%	4.3%
6	pH (1% aqueous solution)	4.5 – 6.5	5.2
7	Moisture Content (Karl Fischer)	≤ 10%	7.6%
8	Insoluble Matter	≤ 1.0%	0.21%
9	Heavy Metals (as Pb, ppm)	≤ 10 ppm	Not detected (NIL)

10	Degree of Substitution (DS)	0.3 – 1.0	0.73
11	Bulk Density	0.3 – 0.6 g/cm <sup>3</sup>	0.48 g/cm <sup>3</sup>
12	Residual Ash	≤ 1.5%	0.93%

## Quality Conclusion

This batch of **Phosphorylated Chitosan (Batch No. PCh/01/2025)** has been manufactured and tested in accordance with internal SOPs and international quality standards. It complies with all critical specifications required for its use in high-performance applications across pharmaceutical, cosmetic, biomedical, and agricultural industries.

## Remarks

- This product is biodegradable, biocompatible, and derived from renewable chitosan sources.
- Store in original, sealed packaging under dry and cool conditions (<30°C) to maintain stability.
- Shelf life: 36 months from the date of manufacture, if stored as recommended.
- No additives, solvents, or preservatives are present in the product.

## Authorized Signatory

**Abhinav Chauhan**

*Quality Assurance*

Issued on behalf of:

**Promecens Entosystems Private Limited**

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