

Heparinase I Diagnostic Grade

Part Nos: 50-008 & 50-009

Storage Temperature: -70 °C

Synonyms: Heparinase; Heparin lyase; Heparin eliminase

Source: *Flavobacterium heparinum* (Recombinant)

EC Number: 4.2.2.7

CAS Number: 9025-39-2

Catalyzed Reaction: The enzyme cleaves selectively (via an elimination mechanism) highly sulfated polysaccharide chains containing 1-4 linkages between hexosamines & O-sulfated iduronic acid residues. The reaction yields oligosaccharide products (mainly disaccharides) containing unsaturated uronic acids, which can be detected by UV spectroscopy at 232 nm. The enzyme also cleaves the antithrombin III binding pentasaccharide domain in the heparin molecule.

Substrate Specificity: Heparin; heparan sulfate (specific activity with heparin is approx. **three** times higher than with heparan sulfate).

Properties

- O-glycosylated at Ser-39
- Molecular weight: 42,508 Da
- Isoelectric point: 9.3 – 9.5

Parameter	Range	Optimum
pH	4.0 – 9.0	7.0
Temperature	20 – 37°C	30°C
Calcium Concentration	1.0 – 5.0 mM	2.5 mM

Product Format

PN: 50-008 is presented as Heparinase I at ≥ 200 IU/mL in buffer containing 25 mM Sodium Phosphate & 150 mM Sodium Chloride (pH 7.0) as a frozen solution. No BSA or preservative.

PN: 50-009 is presented as Heparinase I at ≥ 200 IU/mL in buffer containing 10 mM Sodium Phosphate, 20 mM Sodium Chloride & 5% (w/v) Sucrose (pH 7.0) as a frozen solution. No BSA or preservative.

Volume

Both PNs, 50-008 & 50-009 can be aliquoted from 10 μ L to 900 mL per container as per the customer's request.

Purity: ≥ 95 % by reverse-phase HPLC analysis.

Shipping: Shipped on dry ice.

Activity

- One International Unit (IU) is defined as the amount of enzyme that will liberate 1.0 μ mole unsaturated oligosaccharides from porcine mucosal heparin per minute at $30 \pm 0.5^\circ\text{C}$ & pH 7.0 ± 0.1 . (Activity depends on the assay temperature, the buffer, the source & the type of Heparin used).
- One Unit (U) is also defined in other preparation as 1 U that liberates 0.1 μ mol of unsaturated uronic acid per hour; **1 IU is equivalent to 600 U**

Precautions & Disclaimer

- These products are inputs for further manufacture of medical diagnostic devices or for R&D use only & are not for therapeutic or other uses.
- Refer to the respective lot-specific certificate of analysis for the actual activity & the shelf life.
- Once thawed, aliquot as needed & freeze at -70°C to avoid multiple freeze-thaw cycles.

Applications

- *In vitro* neutralization of heparin in blood & plasma samples before analysis.
- Preparation of disaccharides of heparin & preparation of oligosaccharide libraries.
- Measurement of heparin in blood & plasma using the *in vitro* thromboelastography (TEG) tests.
- Coagulation & anticoagulation efficacy studies.
- Production of low- & ultra-low molecular weight heparins from unfractionated heparin & immobilization of heparinase I for such use.
- Structural analyses, mass spectral analysis & characterization of heparin, heparan sulfate (HS), low molecular weight heparins, & synthetic heparin pentasaccharides & oligosaccharides.
- Depolymerization of heparin, HS & chemically modified heparins, & molecular weight profiling of heparins.
- Quantification of contaminants in heparin such as over-sulfated chondroitin sulfate & persulfonated heparin & quantification of process-related impurities.
- Glycobiology & cancer biology research.
- Identification of the biological properties of HS that depend on the integrity of the S-domains & determination of the spacing between S-domains.
- *In vitro* host-pathogen interactions in viral infections, virus-adhesion inhibition studies, virus-plaque inhibition assays, cell culture experiments, etc.
- *In vivo* inhibition studies of neovascularization & proliferation of capillary endothelial cells.
- Circumventing the inhibitory effects of heparin in PCR, RT-PCR, real-time RT-qPCR reaction & Western Blot.
- *In vitro* histochemistry, immunohistochemistry, immunocytochemistry & flow cytometry, etc.

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