Heparinase I Lyophilized

Part No
60-010 (0.5 IU/vial)
60-012 (2 IU/vial)
60-014 (10 IU/vial)

Storage Temperature: 2 – 8°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

Parameters (enzymatic activity assay)	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: Heparinase I is formulated in 0.33 mg Sodium Phosphate & 0.29 mg Sodium Chloride & 12.5 mg Sucrose (pH 7.0) as lyophilisate in a vacuum-sealed vial. No BSA or preservative.

Shipping: Shipped at ambient temperature.

Receipt: Store refrigerated upon receipt.

Purity: ≥ 95 % by reverse-phase HPLC analysis (from PN 50-009).

Activity
- One international unit (IU) is defined as the amount of enzyme that will liberate 1.0 µmole unsaturated oligosaccharides from porcine mucosal heparin per minute at 30 ± 0.5°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 µmol of unsaturated uronic acid per hour; ***1 IU is equivalent to 600 U***

Stability & Activity: Refer to the lot-specific Certificate of Analysis (CoA) for the shelf life when the products are stored as lyophilized vials (without reconstitution) at 2 – 8°C and the actual activity post-reconstitution.

Reconstitution & Concentration Post-reconstitution

Part No	Purified Water	Concentration	Activity
60-010	250 µL	≥ 2 IU/mL	≥ 0.5 IU/vial
60-012	250 µL	≥ 8 IU/mL	≥ 2 IU/vial
60-014	250 µL	≥ 40 IU/mL	≥ 10 IU/vial

Precautions & Disclaimer:
- These products are for ***in vitro*** **R&D use only** & not for therapeutic or other uses.
- Reconstitute just before use
- DO NOT freeze the reconstituted enzyme.

Applications
- *In vitro* neutralization of heparin in blood & plasma samples before analysis.
- Preparation of disaccharides of heparin & the 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 analysis, 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 & 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.