PRODUCT DATA SHEET

Product Name	**Heparinase I**
Synonyms	Heparin Lyase I
Source	*Flavobacterium heparinum* (ATCC 13125) (recombinant)
Product Code	Hep I
EC Number	4.2.2.7
CAS Number	9025-39-2
Catalyzed Reaction	Heparinase I cleaves heparin and S-domain of heparan sulphate in a reaction rate of about 3:1. The enzyme cleaves selectively, via an elimination mechanism, highly sulphated polysaccharide chains containing 1-4 linkages between hexosamines and O-sulfated iduronic acids residues. The elimination reaction yields oligosaccharides (mainly disaccharides) containing unsaturated uronic acids which can be detected by UV spectroscopy at 232 nm. Heparinase I also cleaves the antithrombin III binding pentasaccharide domain in the heparin molecule.
Substrates	Heparin; sulphated domain of Heparan Sulphate.
Properties	• Molecular weight: 43 KDa • Optimal testing temperature: 25 °C
Storage	Optimal storage temperature: - 15 °C to -80°C. Avoid repeated freeze- thawing.
Purity	≥ 97 % by SDS PAGE.
Description	The enzyme is formulated with glycerol, 0.22 µm sterile-filtered and dispensed into sterile vials. The enzyme solution is supplied world-wide as frozen solution shipped on dry ice. Heparinase I expiration is established at 3 years after manufacturing.
Unit Definition	One Unit of Heparinase I is defined as the amount of enzyme required to form one µmole of unsaturated uronic acid per minute at 25°C and pH 7.0 using heparin sodium as substrate.
Application	• Use for USP Chemical Tests /⟨207⟩1,6-Anhydro Derivative for Enoxaparin Sodium and for depolymerization of heparin, LMW heparin and heparan sulphate. • For the neutralization of heparin in blood and plasma samples before analysis.

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	• For the similar in vitro neutralization of low molecular weight heparins. • As integral part of in vitro diagnostic tests for the neutralization of heparin (blood clotting tests, platelet tests). • For the preparation of low molecular weight heparins from unfractionated heparin. • As a research reagent (glycosaminoglycan degradation). • For the preparation of disaccharides of heparin and the preparation of oligosaccharide libraries.
Safety Information	We are not aware of any toxicity associated with this product. In common with good laboratory practice the material should only be handled by qualified personnel trained in laboratory procedures and familiar with potential hazards. For in vitro research use only. Not for human or drug use.
References	• Linhardt, R.J., et al., Examination of the substrate specificity of heparin and heparan sulphate lyases. Biochem., 29 (10), 2611-2617 (1990). • Izraeli, S., et al., Detection of gene expression by PCR amplification of RNA derived from frozen heparinized whole blood. Nuc. Acids Res., 19 (21), 6051 (1991). • Turnbull, J.E. and Gallagher, J.T., Distribution of iduronate 2-sulphate residues in heparan sulphate. Evidence for an ordered polymeric structure. Biochem. J., 273, 553-559 (1991). • Desai, U.R., et al., Specificity studies on the heparin lyases from Flavobacterium heparinum. Biochemistry, 32 (32), 8140–8145 (1993). • Wei, Z., et al., Distinct substrate specificities of bacterial heparinases against N-unsubstituted glucosamine residues in heparan sulphate. J. Biol. Chem., 280, 15742–15748 (2005). • Ernst, S., et al., Enzymatic Degradation of Glycosaminoglycans. Crit. Rev. Biochem Mol. Biol., 30 (5), 387-444 (1995). • Lohse, D.L., and Linhardt, R.J., Purification and characterization of heparin lyases from Flavobacterium heparinum. J. Biol. Chem., 267, 24347 (1992). • Sommers, C.D., et al., Characterization of currently marketed heparin products: analysis of molecular weight and heparinase-I digest patterns. Anal. Bioanal. Chem., 401(8), 2445-2454 (2011). • V.C.Yang, et al., Purification and Characterization of Heparinase from Flavobacterium heparinum. J. Biol. Chem. 260(3): 1849-1857 (1985). • R. Sasisekharan , et al., Heparinase I from Flavobacterium heparinum. Mapping and Characterization of the Heparin Binding Domain. J. Biol. Chem. 271 (6): 3124-3131 (1996).

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