

Product Information

Chitosanase from *Streptomyces griseus*

Catalog Number **C9830**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

EC 3.2.1.132
CAS RN 51570-20-8
Synonym: Chitosan N-acetylglucosaminohydrolase

Product Description

Chitosanase is an enzyme used for the lysis of cell walls of fungi belonging to the group Mucorales and found in several types of microorganisms.¹

Purified chitosanases have been classified into two types:

1. Enzymes hydrolyzing only chitosan.
2. Enzymes hydrolyzing both chitosan and carboxymethyl cellulose.

Chitosan is a $\beta(1\rightarrow4)$ linked glucosamine polymer, which, unlike chitin, contains only low percentages (10–30%) of *N*-acetyl substitution. It produces chito-oligosaccharides with a degree of polymerization (DP) of 2 to 6. Chitosanase can also hydrolyze chitosan to give heterogeneous hydrolysis products containing both *D*-glucosamine and *N*-acetyl-*D*-glucosamine. *Streptomyces griseus* excretes chitosanase into the culture broth when grown on a minimal medium in the presence of chitosan,^{2,3} and the isolated enzyme is classified as the second type.

Chitosanase activity (EC 3.2.1.132) is the endohydrolysis of $\beta(1\rightarrow4)$ linkages between *N*-acetyl-*D*-glucosamine and *D*-glucosamine residues in partially deacetylated chitosan. This is not to be confused with chitinase activity (EC 3.2.1.14), which is the random hydrolysis of *N*-acetyl- β -*D*-glucosaminide $\beta(1\rightarrow4)$ linkages in chitin and chitodextrins. The enzyme from a *Bacillus sp.* is reported to cleave $\text{GlcN}\rightarrow\text{GlcN}$ bonds where there are at least 3 adjacent GlcN residues.⁴ Both the reducing and non-reducing end residues of the product are GlcN .

The product is supplied as a lyophilized powder containing potassium phosphate buffer salts.

Specific Activity: ≥ 50 units/mg protein
Contaminant activity: Chitinase (≤ 1.0 unit/mg protein)

Unit definition: One unit will release 1 μmole of glucosamine from chitosan per minute at pH 5.0 at $37\text{ }^{\circ}\text{C}$ as measured in the fluorimetric assay of Osswald, et al. (1992).

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Prepare a stock solution by reconstituting a 10 unit vial with 300 μl of water. For long term solution storage reconstitute vial with 50% glycerol solution.

Dilute to working concentrations with a 0.1% BSA solution.

Storage/Stability

Store the product desiccated at $-20\text{ }^{\circ}\text{C}$.

References

1. Fenton, D.M., and Eveleigh, D.E., J. Gen. Microbiol., **126**, 151-165 (1981).
2. Ohtakara, A. et al., in Chitin, Chitosan and related enzymes, Zakakis, J.P., ed., Academic Press (San Diego, CA: 1984), p. 147.
3. Ohtakara, A., Methods in Enzymol., **161**, 505-510 (1988).
4. Izume M. et al., Biosci. Biotech. Biochem., **56**, 448-453 (1992).

EM,TA,GY,MAM 06/11-1

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.