

SIGMA-ALDRICH

93014 SIGMA

Manganese peroxidase from white-rot fungus (*Phanerochaete chrysosporium*)

powder, light brown, ≥20 U/g

Synonym: Manganese-dependent ligin peroxidase, MnP, Peroxidase, manganese

SDS SIMILAR PRODUCTS

CAS Number 114995-15-2 Enzyme Commission (EC) Number 1.11.1.13 (BRENDA | IUBMB)

MDL number MFCD03792385

1: Prevention



It is better to prevent waste than to treat or clean up waste after it has been created.

Properties

Related Categories	1.11.x.x Peroxide as receptor, 1.x.x.x Oxidoreductases, Application Index, Biochemicals and Reagents, Chemical Synthesis, More...
form	powder
greener alternative product characteristics	Waste Prevention: Greener alternative product characteristics Learn more about the Principles of Green Chemistry.
color	light brown
greener alternative category	Enabling
shipped in	wet ice
storage temp.	−20°C

Description

General description

Sigma Life Science is committed to bringing you Greener Alternative Products, which adhere to one or more of The 12 Principles of Greener Chemistry. This product has been enhanced for waste prevention when used in fuel cell and cellulosic ethanol research. For more information see the article in biofiles.

Other Notes

This product is supplied as a mixture of isozymes, mol. mass (40-65 kDa).

Unit Definition

One unit corresponds to the amount of enzyme, which oxidizes 1 μmole Mn²⁺ per minute to Mn³⁺ at pH 4.5 and 25 °C

Physical form

Supplied as a lyophilized powder containing ~50% sodium tartrate

only partially soluble in water or buffer

Application

Manganese peroxidase from white-rot fungus (*Phanerochaete chrysosporium*) is from the peroxidase family and is used to oxidize manganese. It may be used to study wound healing^[1].

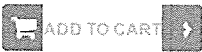
Biochem/physiol Actions

Manganese peroxidase catalyzes the oxidation of Mn²⁺ to Mn³⁺. Mn³⁺ is then in complex with oxalate, which is able to oxidize lignin. Manganese peroxidase from *Phanerochaete chrysosporium* binds 2 calcium ions per subunit. It binds 1 heme B (iron-protoporphyrin IX) group per subunit^[1].

Price and Availability

SKU-Pack Size	Availability	Price (USD)	Quantity
93014-10MG-F	Available to ship on 01/18/17 - FROM	143.50	0
93014-100MG-F	Estimated to ship on 02/16/17	759.00	0

Bulk orders?



Personalized Product Recommendations



- 42603

Lignin Peroxidase

powder, slightly beige, >0.1 U/mg
- 75117

Laccase from *Pleurotus ostreatus* (mushroom)

≥4.0 U/mg

Customers Also Viewed



- 41563

Manganese Peroxidase from *Nematoloma frowardii*

≥4.2 U/mg
- 42603

Lignin Peroxidase

powder, slightly beige, >0.1 U/mg
- 803057

Manganese Peroxidase from white-rot fungus (*Phanerochaete chrysosporium*) recombinant, expressed in corn, lyophilized powder, ≥200 units/g solid
- 68528

Peroxidase from *Bjerkandera adusta*

≥2.8 U/mg
- 75117

Laccase from *Pleurotus ostreatus* (mushroom)

≥4.0 U/mg



- 40452

Laccase from *Agaricus bisporus*

powder, deep brown, ≥4 U/mg
- L2157

Laccase from *Rhus vernicifera*

crude acetone powder, ≥50 units/mg solid
- 46071

Esterase from *Saccharomyces cerevisiae*

lyophilized, powder, beige, ~2 U/g
- 38837

Laccase, *Coriolus versicolor*, CLEA

≥0.3 U/mg
- 51639

Laccase from *Trametes versicolor*

≥10 U/mg

Safety Information

Personal Protective Equipment	Eyeshields, Gloves, type N95 (US), type P1 (EN143) respirator filter
RIDADR	NONH for all modes of transport
WGK Germany	3

Documents

Certificate of Analysis

Enter Lot No.

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Keywords: Cell signaling, Diagnostic, Drug discovery, Molecular biology

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1. Reorganizing the protein space at the Universal Protein Resource (UniProt).

Nucleic Acids Research, 40(Database issue), D71-D75 (2012)

The mission of UniProt is to support biological research by providing a freely accessible, stable, comprehensive, fully classified, richly and accurately annotated protein sequence knowledgebase, with extensive cross-references and querying interface...[Read More](#)

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2. Predominance of a versatile-peroxidase-encoding gene, mnp4, as demonstrated by gene replacement via a gene targeting system for *Pleurotus ostreatus*.

Tomer M Salame et. al

Applied and Environmental Microbiology, 78(15), 5341-5352 (2012)

Pleurotus ostreatus (the oyster mushroom) and other white rot filamentous basidiomycetes are key players in the global carbon cycle. *P. ostreatus* is also a commercially important edible fungus with medicinal properties and is important for biotechno...[Read More](#)

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3. Lignin-degrading enzyme activities.

Yi-ru Chen et. al

Methods in Molecular Biology, 908, 251-268 (2012)

Over the past three decades, the activities of four kinds of enzyme have been purported to furnish the mechanistic foundations for macromolecular lignin depolymerization in decaying plant cell walls. The pertinent fungal enzymes comprise lignin pero...[Read More](#)

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4. Kinetic and thermodynamic characterization of the functional properties of a hybrid versatile peroxidase using isothermal titration calorimetry: Insight into manganese peroxidase activation and lignin peroxidase inhibition.

Haluk Ertan et. al

Biochimie, 94(5), 1221-1231 (2012)

Isothermal titration calorimetry (ITC) was developed for measuring lignin peroxidase (LiP) and manganese peroxidase (MnP) activities of versatile peroxidase (VP) from *Bjerkandera adusta*. Developing an ITC approach provided an alternative to colorime...[Read More](#)

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5. [Isolation and purification of Mn-peroxidase from *Azospirillum brasilense* Sp245].

M A Kupriashina et. al

Prikladnaya Biokhimiya i Mikrobiologiya, 48(1), 23-26 (2012)

Homogenous Mn-peroxidase of a 26-fold purity grade was isolated from a culture of *Azospirillum brasilense* Sp245 cultivated on a medium containing 0.1 mM pyrocatechol. The molecular weight of the enzyme is 43 kD as revealed by electrophoresis in SDS-...[Read More](#)

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6. Comparative evaluation of manganese peroxidase- and Mn(III)-initiated peroxidation of C18 unsaturated fatty acids by different methods

Alexander N. Kapich et. al

Enzyme and Microbial Technology, 49(1), 25-29 (2011)

The peroxidation of C18 unsaturated fatty acids by fungal manganese peroxidase (MnP)/Mn(II) and by chelated Mn(III) was studied with application of three different methods: by monitoring oxygen consumption, by measuring conjugated dienes and by...[Read More](#)

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7. Fungal laccase, manganese peroxidase and lignin peroxidase: gene expression and regulation.

Grzegorz Janusz et. al

Enzyme and Microbial Technology, 52(1), 1-12 (2013)

Extensive research efforts have been dedicated to characterizing expression of laccases and peroxidases and their regulation in numerous fungal species. Much attention has been brought to these enzymes broad substrate specificity resulting in oxidat...[Read More](#)

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8. Alkadienyl and alkenyl itaconic acids (ceriporic acids G and H) from the selective white-rot fungus *Ceriporiopsis subvermispora*: a new class of metabolites initiating ligninolytic lipid peroxidation.

Hiroshi Nishimura et. al

Organic & Biomolecular Chemistry, 10(31), 6432-6442 (2012)

New ceriporic acids-alkadienyl and alkenyl itaconic acids having a bis-allyl (3-[(Z,Z)-hexadec-7,10-dienyl]-itaconic acid; ceriporic acid G) and a monoene (3-[(Z)-octadec-9-enyl]-itaconic acid; ceriporic acid H) structure in their side chains-were i...[Read More](#)

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9. Kraft lignin biodegradation by *Novosphingobium* sp. B-7 and analysis of the degradation process.

Yuehui Chen et. al

Bioresource Technology, 123, 682-685 (2012)

This study focused on the biodegradation of kraft lignin (KL) by *Novosphingobium* sp. B-7 using KL as sole carbon source. Results revealed that *Novosphingobium* sp. B-7 reduced the chemical oxygen demand (COD) by 34.7% in KL mineral salt medium after ...[Read More](#)

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10. Mn(II) oxidation is the principal function of the extracellular Mn-peroxidase from *Phanerochaete chrysosporium*.

J K Glenn et. al

Archives of Biochemistry and Biophysics, 251(2), 688-696 (1986)

The manganese peroxidase (MnP), from the lignin-degrading fungus *Phanerochaete chrysosporium*, an H₂O₂-dependent heme enzyme, oxidizes a variety of organic compounds but only in the presence of Mn(II). The homogeneous enzyme rapidly oxidizes Mn(II) t...[Read More](#)

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11. Comparison of ligninase-I and peroxidase-M2 from the white-rot fungus *Phanerochaete chrysosporium*.

A Paszczyński et. al

Archives of Biochemistry and Biophysics, 244(2), 750-765 (1986)

Ligninase-I (Mr 42,000-43,000; carbohydrate, 21%) and peroxidase-M2 (Mr 45,000-47,000; carbohydrate, 17%), two representative, hydrogen peroxide-dependent extracellular enzymes produced by ligninolytic cultures of the white-rot fungus *Phanerochaete* ...[Read More](#)

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12. Continuous treatment of coloured industry wastewater using immobilized *Phanerochaete chrysosporium* in a rotating biological contactor reactor.

Kannan Pakshirajan and Sumeet Kheria
Journal of Environmental Management, 101, 118-123 (2012)
Coloured industry wastewaters often contain dyes and other toxic ingredients, and, therefore, pose serious threat to the receiving environment. Among the available methods the eco-friendly biological method has gained maximum attention due to its ma...Read More

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13. Manganese peroxidase from the basidiomycete Phanerochaete chrysosporium: spectral characterization of the oxidized states and the catalytic cycle.
H Warilshi et. al
Biochemistry (Washington), 27(14), 5365-5370 (1988)
Manganese peroxidase (MnP), an extracellular heme enzyme from the lignin-degrading fungus Phanerochaete chrysosporium, catalyzes the Mn(II)-dependent oxidation of a variety of phenols. Herein, we spectroscopically characterize the oxidized states of...Read More

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14. Release of Pleurotus ostreatus versatile-peroxidase from Mn2+ repression enhances anthropogenic and natural substrate degradation.
Tomer M Salame et. al
PLOS ONE, 7(12), e52446 (2012)
The versatile-peroxidase (VP) encoded by mnp4 is one of the nine members of the manganese-peroxidase (MnP) gene family that constitutes part of the ligninolytic system of the white-rot basidiomycete Pleurotus ostreatus (oyster mushroom). VP enzymes ...Read More

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15. Effect of copper, nutrient nitrogen, and wood-supplement on the production of lignin-modifying enzymes by the white-rot fungus Phlebia radiata.
Miia R Mäkelä et. al
Fungal Biology, 117(1), 62-70 (2013)
Production of the oxidoreductive lignin-modifying enzymes - lignin and manganese peroxidases (MnPs), and laccase - of the white-rot basidiomycete Phlebia radiata was investigated in semi-solid cultures supplemented with milled grey alder or Norway s...Read More
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