

Active Recombinant Glucose Oxidase, Diagnostic Reagent Grade

Cat. No. GOx-23A **Lot. No.** (See product label)

SPECIFICATION

Product Overview	From yeast cells with cloned gene encoding genetically engineered fungus <i>Aspergillus niger</i> glucose oxidase. Diagnostic Reagent Grade: May contain traces of amylase, maltase, glycogenase, invertase, and galactose oxidase
Species	<i>Aspergillus niger</i>
Source	Yeast
Description	Glucose oxidase is a well-characterized flavoprotein that catalyzes oxidation of β -D-Glucose at its first hydroxyl group, utilizing molecular oxygen as the electron acceptor, to produce D-glucono-delta-lactone and hydrogen peroxide. Glucose oxidase is a homodimeric enzyme, with an FAD molecule monocovalently but tightly bound at the active site of each 80 KDa subunit. The enzyme consists of two identical polypeptide chain subunits (80,000 Daltons) covalently linked by disulfide bonds. Each subunit contains one mole of Fe and one mole of FAD (flavin-adenine dinucleotide). The molecule consists of approximately 74% protein, 16% neutral sugar and 2% amino sugars. The FAD is replaceable with FHD (flavin-hypoxanthine dinucleotide) without loss of activity.
Form	The product is available as lyophilized powder and also as buffered aqueous glycerol solution.
Bio-activity	≥ 50 U/mg lyophilized powder

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Molecular Mass	153 kDa
Applications	Biosensors: Glucose Monitoring: Glucose Oxidase is widely used in glucose biosensors, particularly in blood glucose meters for diabetes management. The enzyme's reaction with glucose produces hydrogen peroxide, which can be detected electrochemically, allowing for accurate glucose measurements. Food and Beverage Industry: Glucose Detection: Employed in the food industry for detecting and quantifying glucose levels in various products, such as juices, wines, and dairy. This helps in quality control and ensuring product consistency. Food Preservation: The enzyme is used to remove glucose from food products, which helps in preventing browning reactions and extending shelf life, particularly in egg whites and other products where glucose can cause spoilage. Biotechnological Applications: Enzymatic Fuel Cells: Glucose Oxidase is used in biofuel cells where it helps convert glucose into electrical energy. This application is explored for powering small devices and biosensors. Enzymatic Assays: Utilized in various diagnostic kits to measure glucose levels in biological samples, leveraging the enzyme's specificity for glucose. Pharmaceutical Industry: Diagnostic Reagents: The enzyme is a key component in many diagnostic reagents used to measure glucose in blood, urine, and other body fluids. Its recombinant production ensures high purity and reduces variability in diagnostic results. Textile Industry: Fabric Processing: Glucose Oxidase can be used in the textile industry for fabric processing, where it helps in the removal of residual hydrogen peroxide after bleaching, improving fabric quality. Environmental Applications: Waste Treatment: The enzyme is used in bioremediation processes to detect and degrade glucose in wastewater, contributing to more efficient and environmentally friendly waste management.
Storage	At -20 centigrade for lyophilized powder. Lyophilized powder is stable for 3 years when stored below 4 centigrade. Transport at room temperature. Storage Recommended below 4 centigrade.

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CAS No.	9001-37-0
Unit Definition	One unit will oxidize 1.0 μ mole of β -D-glucose to D-gluconolactone and H ₂ O ₂ per min at pH 5.1 at 35 centigrade, equivalent to an O ₂ uptake of 22.4 μ L per min. If the reaction mixture is saturated with oxygen, the activity may increase by up to 100%.
EC No.	1.1.3.4
pH range	4-7, optimum pH: 4.5
Advantages	High Purity and Consistency: Recombinant production ensures that the enzyme is free from contaminants and batch-to-batch variations, which is crucial for sensitive applications. Stability: The recombinant enzyme often exhibits enhanced stability under various conditions, making it suitable for long-term storage and use in industrial processes. Sustainability Production: Recombinant production methods reduce the reliance on natural sources, aligning with sustainability goals. Reduced Risk of Contaminants: Recombinant Glucose Oxidase minimizes the risk of contamination with fungal proteins or other undesired substances, which can be a concern with enzymes extracted directly from <i>Aspergillus niger</i>.
Dilution Buffer	20 mM Tris-Cl(pH 8.0), 2 mM MgCl ₂ , 20 mM NaCl.
Storage Buffer	20 mM Tris-Cl (pH 8.0), 2 mM MgCl ₂ , 20 mM NaCl, 50% glycerol.
Temperature profile	Optimum temperature 42 centigrade Temperature range of enzyme activity: 40-50 centigrade
Inhibitors	Glucose oxidase does not require any activator, but it is inhibited by Ag ⁺ , Hg ₂ ⁺ , Cu ₂ ⁺ , phenylmercuric acetate, and p-chloromercuribenzoate (pCMB). It is not inhibited by the nonmetallic SH reagents: N-ethylmaleimide, iodoacetate, and

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iodoacetamide.

GENE INFORMATION

Official Symbol	GOx
Synonyms	β-D-Glucose: oxygen 1- oxidoreductase; G.Od.; GOx; Glucose Oxidase