

LAC

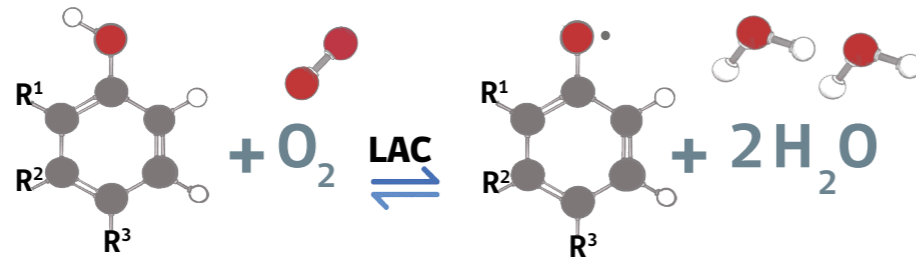


Recombinant Bacterial
LACCASE

 **swiss austral**
Unlock the Power of Nature™

Enzymes from extremophiles (extremozymes) are inherently more stable, active and robust than their mesophilic counterparts.

Laccase enzymes are green biocatalysts that catalyze the oxidation of a wide array of phenolic and non-phenolic compounds. Only requiring molecular oxygen (O₂) as co-substrate, releasing water (H₂O) as by-product.

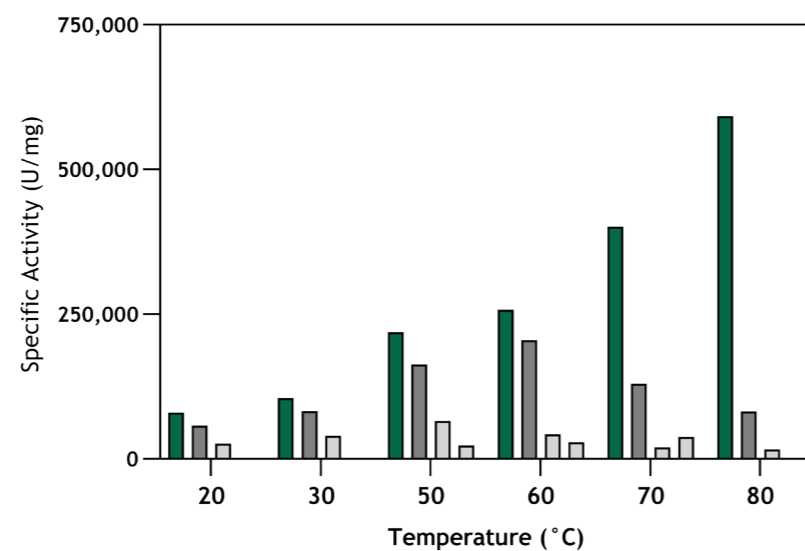


Swissaustral has developed a **High-performance™ LACCASE enzyme product**

It is derived from an extremophilic bacterium that grows optimally at 50 °C, pH 8.0 (thermoalkaliphile)

Swissaustral LAC

is more active than fungal laccases in a broad range of temperatures (20 - 80 °C), specially above 60 °C



■ Swissaustral Bacterial LAC Competitor 2 Fungal LAC
 Competitor 1 Fungal LAC Competitor 3 Fungal LAC

Figure 1. Comparison of the specific activity at different temperatures of four commercial laccases. Swissaustral bacterial LAC, and three other fungal laccases. Unit definition (°).

LACCASE

LAC

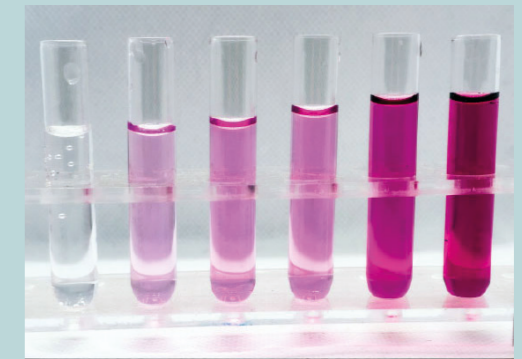
Extremely reliable: is active in a wide range of temperatures (20 - 90 °C), with optimal temperature of 80 °C.

Exceptional thermostability: maintains over 60% of its activity for 2 h at 70 °C and 80% of its activity for 6 h at 60 °C.

Remarkable catalytic activity: over 300,000 U/mg (°) with syringaldazine substrate at 70 °C, pH 6.0.

Robust: tolerant to common inhibitors such as SDS and NaCl.

Wide substrate range: high activity towards several structurally diverse substrates, including synthetic dyes and antibiotics, even without the use of redox mediators.



Key Characteristics

Bioremediation
Degradation of toxic pollutants (e.g. dyestuff, polycyclic aromatic hydrocarbons, antibiotics), in contaminated land and wastewater.

Food & Beverage
To remove excess polyphenols, preventing haze formation in beer, wine, and fruit juices.

Paper & Pulp
Eco-friendly paper production, laccases are used in lignin degradation, reducing the need for harsh chemicals in bleaching.

Biosensors
In the development of enzymatic biosensors for detection of phenolic compounds.

Textile
Enzymatic treatment for synthetic dyes decolorization, fabric processing and functionalization.

Chemical Synthesis
Enzymatic modification of industrial products. Laccase is used for polymer cross-linking in adhesives and coatings.

Bioenergy
To remove or modify lignin in lignocellulosic biomass for bioethanol production. Can be used in biofuel cells to generate energy.

Potential Applications



Specifications

Enzyme name:	LACCASE (benzenediol: oxidoreductase)
EC number:	EC 1.10.3.2
CAS number:	80498-15-3
Molecular mass:	~ 59 kDa
Number of subunits:	One
Production source:	From thermophilic origin. Fast and sustainable recombinant production in a non-pathogenic <i>Escherichia coli</i> strain. Free from any animal or plant related contamination.
Unit definition (*):	One laccase unit (U) is defined as a change in absorbance at 530 nm of 0.001 per minute at 70 °C, pH 6.0 using syringaldazine substrate
Temperature range:	20 - 90 °C (optimal: 80 °C)
Thermal stability:	Maintains over 50% of its activity after 3 h at 60°C
Other substrates:	Syntetic dyes: Congo red, Malachite green, Remazol Brilliant Blue (RBB) Antibiotics: Tetracycline, doxyciclin, ciprofloxacin, amoxicillin Polycyclic Aromatic Hydrocarbons (PAH): Anthracene, benzo[a]pyrene



Available format

	Lyophilized LAC
Product Number	enz_lac_005
Presentation	Lyophilized powder
Activity	≥ 300,000 U/mg
Other components	0.05M Tris Buffer pH 8.0, 0.85M NaCl
Storage conditions	At -20 °C, it maintains the reported activity (≥ 300,000 U/mg) for at least 24 months



Disclaimer: Swissaustral enz_lac_005 is not produced in a GMP facility. This enzyme product is for research purposes only and not intended for human or animal consumption or applications.

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