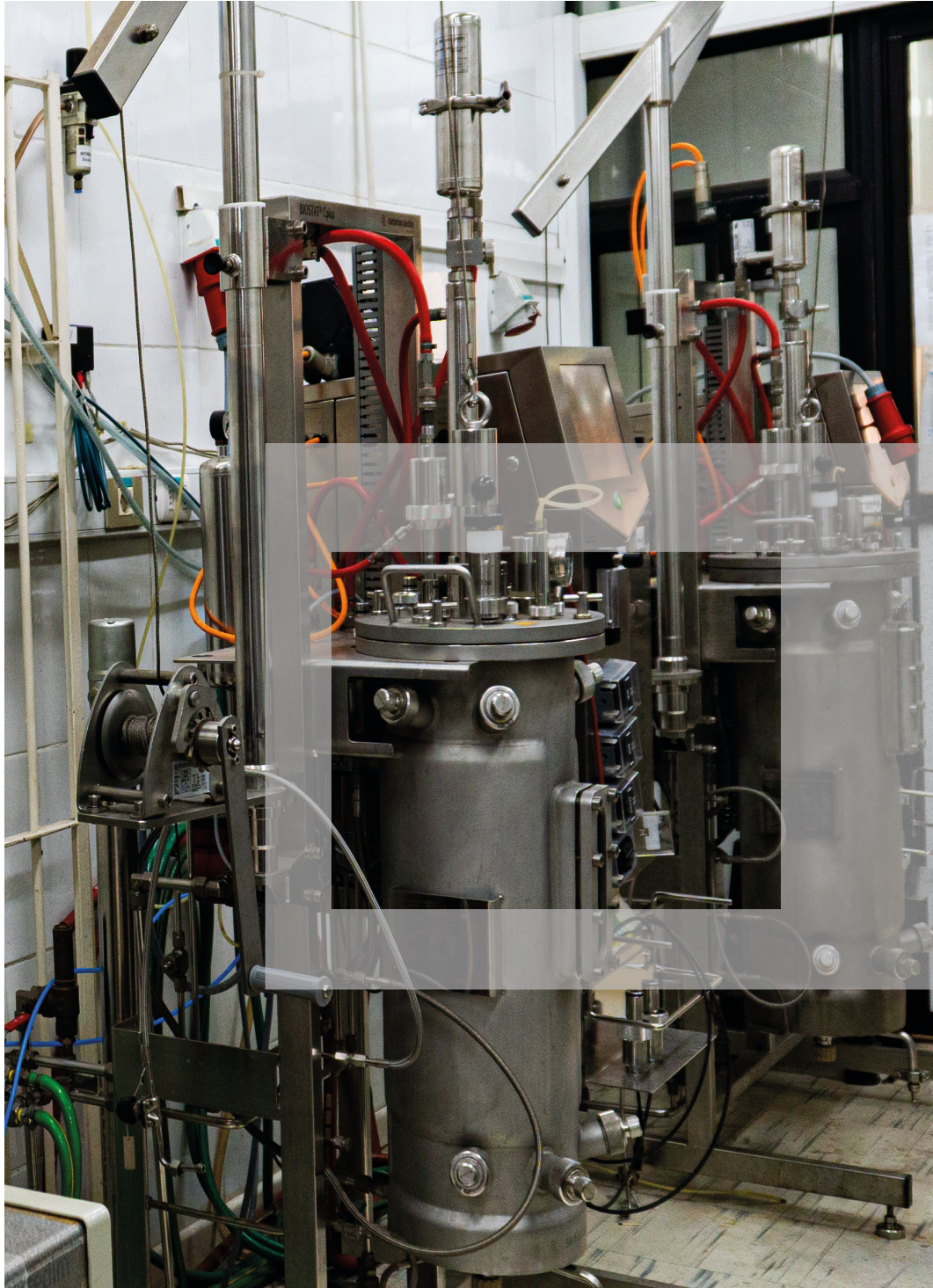


CAT



Recombinant Bacterial
CATALASE

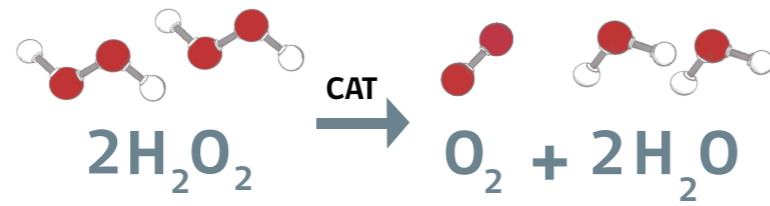
 **swiss austral**
Unlock the Power of Nature™

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

CATALASE

CAT

Catalase enzymes are efficient biocatalysts that catalyze the eco-friendly decomposition of hydrogen peroxide (H₂O₂) into molecular oxygen (O₂) and water (H₂O). They are natural antioxidant, protecting the cells against oxidative damage.



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

It is derived from an extremophilic bacterium that grows optimally at 22°C (psychrotolerant).

Swissaustral CAT is more active than fungal and bovine liver catalases in a broad range of temperatures (20 - 70 °C)

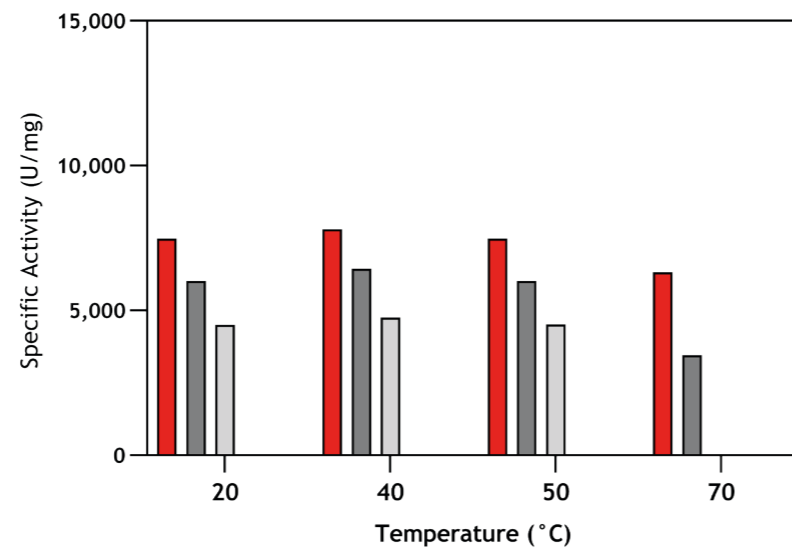


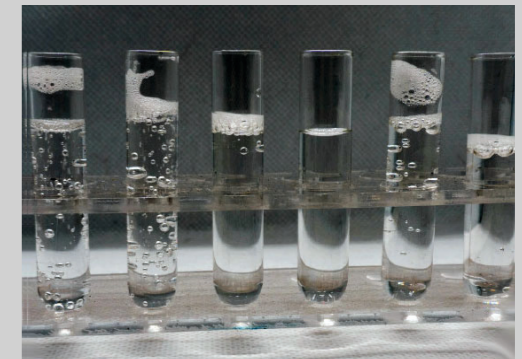
Figure 1. Comparison of the specific activity at different temperatures of three commercial catalases. Swissaustral bacterial CAT, a fungal catalase and one from bovine liver. Unit definition (*).

Extremely reliable: maintains over 80% of its catalytic activity in a broad range of temperatures (20 - 80 °C), with optimal activity under mild conditions (30 - 40 °C).

Exceptional thermostability: maintains over 50% of its activity after 7 h at 50 °C, which is remarkable considering its psychrotolerant origin.

Robust: high H₂O₂ tolerance up to 40 g/L, whereas commercial catalases only tolerates up to 14 g/L.

Wide pH range: functions between pH 4.0 and 11.0, outperforming commercial bovine liver catalases, which loses activity above pH 9.0.



Key Characteristics

- Bioremediation**
Eco-friendly wastewater treatment of H₂O₂-contaminated industrial wastes, eliminating the need for additional chemical agents.
- Food & Beverage**
Pre-treatment of food wrappers to prevent oxidation and food deterioration. Removal of residual H₂O₂ after food sterilization.
- Clinical Diagnostics**
Control and standard in testing/assay validation. Positive control in catalase detection kits.
- Life Sciences Research**
For studies related to aging, DNA repair systems, free radicals & effects of oxidative stress in gene expression and apoptosis.
- Chemical Synthesis**
Production of gluconic acid (used in Food & Pharma industries). Production of glycolic acid (used for Cosmetics).
- Pulp & Paper**
Decomposition of H₂O₂ after cellulose pulp bleaching without generating toxic wastes.
- Textile**
Efficient removal of H₂O₂ before fabric dyeing and after bleaching, reducing water and energy consumption.
- Pharmaceuticals**
Potential use in the controlled removal of H₂O₂ in manufacturing or product sterilization. Additive in formulations to enhance drug stability.

Potential Applications



Specifications

Enzyme name: CATALASE
(hydrogen peroxide oxidoreductase)

EC number: EC 1.11.1.6

CAS number: 9001-05-2

Molecular mass: ~ 220 kDa

Number of subunits: Four. Each subunit has ≈ 55 kDa

Production source: From psychrotolerant origin. Fast and sustainable recombinant production in a non-pathogenic *Escherichia coli* strain. Free from any animal or plant related contamination.

Unit definition (*): One unit (U) of catalase activity is defined as the decomposition of 1 μmol of H₂O₂ per minute at 25 °C, pH 7.0 measured at 240 nm

Temperature range: 20 - 80 °C (optimal: 30 - 40 °C)

pH range: 4.0 -11 (optimal: 7.5)

Thermal stability: Maintains over 50% of its activity after 7 h at 50 °C



Available formats

	Liquid CAT	Lyophilized CAT	Special CAT Ultra pure (95%)	Special CAT Low endotoxin
Product Number	enz_cat_001	enz_cat_004	enz_cat_006	enz_cat_007
Presentation	Liquid solution	Lyophilized powder	Lyophilized powder	Lyophilized powder
Activity	≥ 65000 U/mL	≥ 8000 U/mg	≥ 8000 U/mg	≥ 8000 U/mg
Other components	0.05M Tris Buffer pH 8.0, 0.5M NaCl 20% v/v glycerol	0.05M Tris Buffer pH 8.0, 0.5M NaCl	0.05M Tris Buffer pH 8.0, 0.5M NaCl	0.05M Tris Buffer pH 8.0, 0.5M NaCl
Storage conditions	At -20 °C, it maintains the reported activity (≥ 65000 U/mg) for at least 18 months	At -20 °C, it maintains the reported activity (≥ 8000 U/mg) for at least 2 years	At -20 °C, it maintains the reported activity (≥ 8000 U/mg) for at least 2 years	At -20 °C, it maintains the reported activity (≥ 8000 U/mg) for at least 2 years

Disclaimer: Swisssaustral enz_cat_001, enz_cat_004, enz_cat_006 and enz_cat_007 are not produced in a GMP facility. These enzyme products are for research purposes only and not intended for human or animal consumption or applications.

Worldwide:

Swisssaustral USA LLC

111 Riverbend Road, Office # 271
Athens, Georgia, GA 30605
USA

Phone: +1 706 224 2752

www.instagram.com/swisssaustral

South America:

Swisssaustral Chile

José Domingo Cañas 2280
Ñuñoa, Santiago, 7750132
Chile

Phone: +56 2 2343 2578

www.linkedin.com/company/swisssaustral

www.swisssaustral.com

