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Product Information

Luciferase from *Luciola mingrelica*, recombinant Expressed in *E. coli*

Product Code **L4899**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

EC# 1.13.12.7
Synonym: Firefly Luciferase, recombinant

Product Description

Luciferase from *Luciola mingrelica* (Eastern European firefly) is very similar to luciferase from *Photinus pyralis* (American firefly). The enzyme is produced from the *luc* gene of *Luciola mingrelica* expressed in *E. coli*. The monomeric molecular weight is 61,707 based on sequence information.¹ At high protein concentrations ($\geq 3\text{ mg/ml}$) luciferase is predominantly dimeric (luciferase is approximately 50% dimeric at 3 mg/ml). At typical working concentrations (0.01 to 1 ng/ml) luciferase is primarily monomeric. The isoelectric point (pI) has been determined to be 6.7 and the pH optimum is 7.8.

The reaction of luciferase with luciferin, ATP, and O_2 results in the emission of light and can be used to detect trace amounts of ATP. Firefly luciferase is also one of the most commonly utilized reporter genes and the bioluminescent reaction catalyzed by luciferase is one of the most sensitive analytical tools for measuring gene expression.

Purity: minimum 85% (SDS-PAGE)

Specific Activity: minimum 2×10^6 light units/mg protein

Unit Definition: One light unit produces a biometer peak height equivalent to $0.02\text{ }\mu\text{Ci}$ of ^{14}C in PPO/POPOP cocktail. Light units are measured in a 50 μl assay mixture containing 5 pmole of ATP and 7.5 nmole of luciferin in Tris-glycine buffer at pH 7.6 at $25\text{ }^{\circ}\text{C}$.

Note: Prior to 1991, a unit of firefly luciferase activity was defined as that amount which will produce 1.0 nanomole of pyrophosphate per minute at

pH 7.7 at $25\text{ }^{\circ}\text{C}$, using a system containing 0.6 mM ATP and 0.1 mM D-luciferin. The former nanomolar unit is equivalent to approximately 1.3×10^6 light units.

The product is supplied as a solution of approximately 10 mg of protein per ml of 25 mM Tris acetate, 5 mM MgSO_4 , 1 mM EDTA, and 50% (v/v) glycerol.

Precautions and Disclaimer

This product is for laboratory research use only. Please consult the Material Safety Data Sheet for handling recommendations before working with this material.

Storage/Stability

This product ships on wet ice and storage at or below $-20\text{ }^{\circ}\text{C}$ is recommended. The product, as supplied, is stable for at least 2 years.

References

1. Devine, J.H., et al., Luciferase from the East European Firefly *Luciola mingrelica*: cloning and nucleotide sequence of the cDNA, overexpression in *Escherichia coli* and the purification of the enzyme. *Biochimica et Biophysica Acta*, **1173**, 121-132 (1993).
2. Stanley, P.E., A review of bioluminescent ATP techniques in rapid microbiology. *J. Biolumin. Chemilumin.*, **4**, 375-380 (1989).
3. Kricka, L.J., Clinical and biochemical applications of luciferases and luciferins. *Analyt. Biochem.*, **175**, 14-21 (1988).
4. Rajgopal, S. and Vijayalakshmi, M.A., *Enzyme Microb. Technol.*, **6**, 482-489 (1984).
5. Chappelle, E.W., et al., Determination of bacterial content in fluids, *Meth. Enzymol.*, **57**, 65-72 (1978).

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