

Product Information

Luciferase from *Photinus pyralis* (firefly) recombinant, expressed in *Escherichia coli*

Catalog Number **SRE0045**
Storage Temperature $-20\text{ }^{\circ}\text{C}$

CAS RN 61970-00-1

EC 1.13.12.7

Synonyms: Luciferin 4-monooxygenase, Firefly Luciferase

Product Description

Firefly luciferase is a 62 kDa protein that catalyzes the production of light. The enzyme requires ATP, molecular oxygen, and the heterocyclic compound, firefly luciferin, to generate light in a two-step process.¹ The light producing reaction is initiated by luciferin activation (adenylation of its carboxylate group) and proceeds in the presence of molecular oxygen to yield a photon of yellow-green light.^{1,2}

Firefly luciferase is used extensively in molecular and cell biology, in particular for the efficient detection and quantitation of ATP and as a reporter for genetic function.^{3,4}

This product is a recombinant luciferase from *Photinus pyralis* (American firefly) produced from the *luc* gene expressed in *E. coli*. It is lyophilized from a buffered solution containing HEPES, pH 7.5, NaCl, MgCl₂, EDTA, DTT, and a carbohydrate stabilizer.

Specific Activity: $\geq 10 \times 10^{10}$ light units/mg protein

Unit definition: One luciferase enzyme unit will produce one Relative Light Unit (RLU) at $20\text{--}25\text{ }^{\circ}\text{C}$ over a 10 second period, measured in 100 μl assay mixture containing 40 pmole ATP and 15 nmole luciferin in Tris-glycine buffer, pH 7.6, using a GloMax® 20/20 Luminometer.

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

To obtain maximal solubility it is important to reconstitute the enzyme at a high salt concentration, such as 1 M Tris buffer with any counter ion at pH 7–8. The enzyme can be prepared at a concentration of up to 5 mg protein/ml. Do not vortex and avoid agitation.

Storage/Stability

Store the product at $-20\text{ }^{\circ}\text{C}$.

After reconstitution, the enzyme solutions can be kept at $4\text{--}8\text{ }^{\circ}\text{C}$ for up to 2 days or frozen in working aliquots at $-20\text{ }^{\circ}\text{C}$ for at least one month. Repeated freezing and thawing is not recommended. Do not store in a frost-free freezer.

References

1. DeWet, J.R. et al., Firefly luciferase gene: Structure and expression in mammalian cells. *Mol. Cell. Biol.*, **7**, 725-737 (1987).
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. Chappelle, E.W. et al., Determination of bacterial content in fluids. *Meth. Enzymol.*, **57**, 65-72 (1978).

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