

Product Information

Luciferase from *Photinus pyralis* (firefly)

Recombinant, expressed in *E. coli*, lyophilized powder, $\geq 10 \times 10^{10}$ units/mg protein

SRE0045

Product Description

CAS Registry Number: 61970-00-1

Enzyme Commission (EC) Number: 1.13.12.7

Synonyms: Luciferin 4-monooxygenase, Firefly Luciferase

Storage Temperature: $-20\text{ }^{\circ}\text{C}$

Firefly luciferase is a 62 kDa protein that catalyzes the production of light. The enzyme requires ATP, molecular oxygen, and luciferin, a heterocyclic compound, 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*. Several references⁵⁻¹² and dissertations^{13,14} have cited use of this product in their research.

Product

This product is lyophilized from a buffered solution that contains 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 20-25 °C over a 10-second period, measured in a 100 µL assay mixture that contains 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.

Storage/Stability

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

Preparation Instructions

The enzyme can be prepared at a concentration of up to 5 mg protein/mL. To obtain maximal solubility, it is important to reconstitute the enzyme at a high salt concentration, such as 1 M Tris buffer with any counterion at pH 7-8. **Do not vortex. Avoid agitation.**

After reconstitution, the enzyme solutions can be kept at 4-8 °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

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