

LumiLys Series: LumiLys Dual 670-780 670-780

1. Product description

1.1 Introduction

LumiLys Dual 670-780 is a silica-based nanoparticulate fluorescent label. LumiLys Dual 670-780 is designed for cellular labeling and of *in vivo* experiments. LumiLys Dual 670-780 belongs to the LumiLys Series which include LumiLys UC, LumiLys 670 and LumiLys 780 products with various surface functionalizations available for each. LumiLys Dual 670-780 can be used with any devices which require fluorescence properties (FACS, epifluorescence microscopy, NIR imaging systems...).

LumiLys Dual 670-780 resists to common fixative aldehyde solutions and therefore can be used before fixation.

1.2 Product format and storage

LumiLys Dual 670-780 is supplied as a dried powder. Suspension (1 mg/mL) in glucose (5%), or in another solution on demand, has to be reconstituted by mixing the dried powder and the medium furnished, followed by sonication.

Dry nanoparticles can be preserved indefinitely in the absence of light.

LumiLys Dual 670-780 suspension can be stored for a long time at -18°C (or minus) after being sonificated to ensure a good dispersion stability.

Nanoparticles in suspension (water or glucose) should be used within 7 days and strongly sonificated just before using to ensure a good dispersion.

1.3 Quality control

LumiLys Dual 670-780 is tested to ensure lot-to-lot consistency. Size of the nanoparticles is examined by Transmission Electron Microscopy.

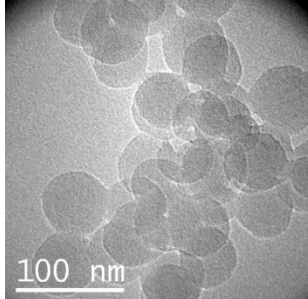
Fluorescence quality is controlled by spectrophotometry.

1.4 Security

For laboratory and animal research use only. Not for human or animal therapeutic or diagnostic use. Make sure to carefully observe the legislation on animal experimentation.

2. Characteristics

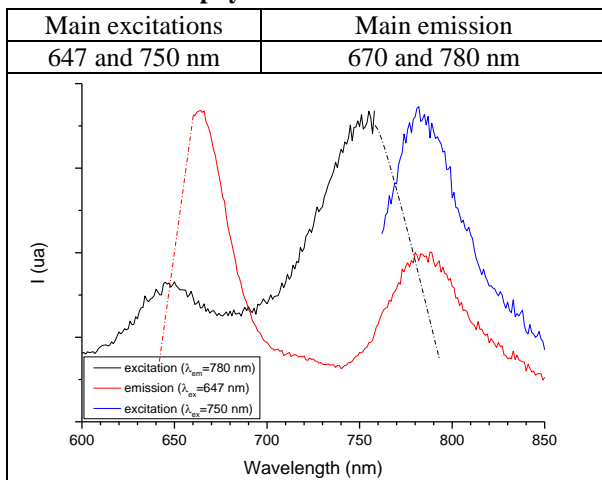
2.1 Physico-chemical characteristics

Crystalline Phase	Morphology	Size
	Spherical	25 nm
Amorphous silica		

Available functions: NH₂
PEG
COOH
Azide
PEG-COOH
PEG- NH₂
PEG-NHS
PEG-biotin

Other functions on demand

2.2 Photo-physical characteristics



Best excitations are obtained at 647 or 750 nm. Main emissions are centered on 670 and 780 nm. LumiLys Dual 670-780 NPs are designed to be excited at 647 nm and observed at 780 nm using FRET phenomenon between two phosphores. However it is also possible to excite the NPs at 647 nm and observed it at 670 nm, or to excite the NPs at 647/750 nm and observed it at 780 nm. Consequently, LumiLys Dual 670-780 can be observed using a classical epifluorescent microscope ($\lambda_{ex} = 647\text{nm}$) but also using an *in vivo* NIR imaging system (λ_{ex} 647 and/or 750 nm).

3. How to use LumiLys Dual 670-780

LumiLys Dual 670-780 is supplied as dried powder or as a suspension in glucose at a concentration of 1 mg.mL⁻¹ corresponding to 1,67.10⁻³ mol.L⁻¹ of SiO₂.

To ensure a good dispersion of the nanoparticles in the suspension, it is strongly recommended to sonicate the vial for 5 to 10 minutes prior to any uses.

LumiLys Dual 670-780 can be diluted in water, glucose (5%), or culture medium. Avoid use of phosphate buffer saline which causes aggregation effects.

4. Cell labeling with LumiLys Dual 670-780

LumiLys products contain no preservatives. Avoid any microbial contamination during use.

It is strongly recommended to test different amounts of LumiLys Dual 670-780 per cell, measured as $\mu\text{g}/\text{cell}$. At high concentration LumiLys Dual 670-780 should induce some toxic effect.

Here is a general protocol for labeling cells *in vitro*:

- Define the amount of LumiLys Dual 670-780 per cell and multiply this amount with the number of cells to be labeled.
- Sonicate the vial of LumiLys Dual 670-780 for 1 to 5 minutes.
- Dilute LumiLys Dual 670-780 in sterile water to obtained desired concentration.
- Add LumiLys Dual 670-780 to the cell culture and incubate for 8 to 24 hours depending on the cell line.

Usually, dilution of LumiLys Dual 670-780 with culture media in ratio 1/10 gives good labelling without toxic effect (0,1 mg/ml).

LumiLys 780 can be also directly injected in the systemic blood stream using highly concentrated Pegylated solution (200 μl at 3mg/ml for mouse).

Please contact us for any additional advice: contact@chromalys.fr

5. References

Cousinié S., Mauline L., Gressier M., Kandibanda S.R., Datas L., Reber C., Menu M.J., Bulk or surface grafted silylated Ru(ii) complexes on silica as luminescent nanomaterials. (2012) *New Journal of Chemistry*, vol. 36 (n° 6). pp. 1355-1367

6. Related products

LumiLys 450
LumiLys 525
LumiLys 650
Lumilys 670
Lumilys 780