

Product Information

Exosome standards, fluorescent

Recombinant, expressed in human cells

SAE0193

Product Description

Extracellular vesicles (EVs) are membranous bodies of submicron-size, which are budded from cells and carry biological molecules (e.g. RNAs, proteins and lipids) from their parent cells.¹ EVs are generally divided into two main groups:

- Exosomes, which originate from endosomes, with a diameter ranging from 50 to 150 nm.
- Microvesicles, which originate from the plasma membrane, and have a diameter of 50-500 nm (and in some cases up to 1 µm).²

EVs are studied as tools for the diagnostics, monitoring and treatment of various diseases, including cancer, neurodegenerative and autoimmune diseases.³ Extraction of EVs is achieved using various techniques, which require appropriate reference materials for accurate calibration, normalization and method development.⁴ Such a reference should have biochemical and physical properties similar to the sample EV and behave similarly to it, while being distinguishable from the sample, to allow for its detection.⁵

This product consists of purified exosomes, extracted from human cells (HEK293T). These exosomes express the fluorescent protein GFP on the surface of their membrane, to allow their detection by instruments equipped with green fluorescence detectors, e.g. 488 nm laser. Examples of suitable instruments include fluorescent plate readers, nanoparticle tracking analyzers (such as Nanosight®), and certain flow cytometry analyzers. Thus, this product can be spiked into samples prior to exosome extraction, and this product can serve as an internal standard for method development and data normalization. It may also be used for instrument calibration and for quality control.

This exosome product was analyzed for intraluminal and membrane proteins characteristic of sample EVs. The following proteins were detected by immunoblotting: ALIX, TSG101, flotillin-1, syntenin-1, CD9, CD81 and CD63.

This product has a typical size distribution in the range of 30-300 nm, with a peak at 100-150 nm. See Figure 1 for a representative size distribution analysis.

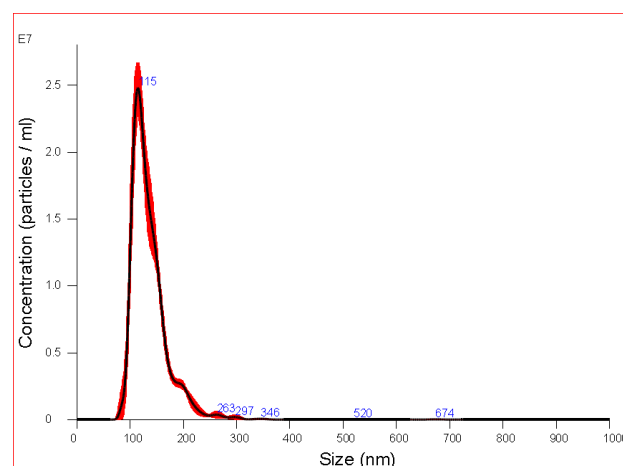


Figure 1. Size distribution of recombinant exosomes, as performed by nanoparticle tracking analysis.

Reagent

This product is supplied as a powder, lyophilized from a solution in PBS, pH 7.4.

Each vial contains $\geq 1 \times 10^9$ particles, measured by nanoparticle tracking analysis. For the exact particles amount per vial, see the specific Certificate of Analysis for each lot. The fluorescence percentage of the exosomes in each vial is $\geq 70\%$.

MERCK

Precautions and Disclaimer

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 lyophilized product at -80°C . The product is stable for at least 2 years as supplied.

Preparation Instructions

- Briefly centrifuge the vial before opening.
- Reconstitute in 100 μL of ice-cold ultrapure water to obtain a particles concentration of $\geq 1 \times 10^{10}$ particles/mL.
- For the exact initial particles concentration, see the lot-specific Certificate of Analysis.
- **Do not vortex.**
- Work on ice.
- This solution can be stored at $2-8^{\circ}\text{C}$ for up to 1 day.
- For extended storage (up to 2 weeks), it is recommended to store in working aliquots at -80°C .

References

1. Kao, C.-Y., and Papoutsakis, E.T., *Curr. Opin. Biotechnol.* **60**, 89-98 (2019).
2. van Niel, G. et al., *Nat. Rev. Mol. Cell Biol.*, **19(4)**, 213-228 (2018).
3. Kalluri, R., *J. Clin. Invest.*, **126(4)**, 1208-1215 (2016).
4. EV-TRACK Consortium; van Deun, J. et al., *Nat. Methods.* **14(3)**, 228-232 (2017).
5. Geeurickx, E. et al., *Nat. Commun.*, **10(1)**, 3288 (2019).

Notice

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.

The information in this document is subject to change without notice and should not be construed as a commitment by the manufacturing or selling entity, or an affiliate. We assume no responsibility for any errors that may appear in this document.

Technical Assistance

Visit the tech service page at SigmaAldrich.com/techservice.

Standard Warranty

The applicable warranty for the products listed in this publication may be found at SigmaAldrich.com/terms.

Contact Information

For the location of the office nearest you, go to SigmaAldrich.com/offices.

The life science business of Merck operates as MilliporeSigma in the U.S. and Canada.

Merck and Sigma-Aldrich are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates. All other trademarks are the property of their respective owners. Detailed information on trademarks is available via publicly accessible resources.

© 2022 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved.

SAE0193pis Rev 02/22 NA, LN, GCY

The Merck logo, consisting of the word "MERCK" in a bold, red, sans-serif font.