SIGMA-ALDRICH®
sigma-aldrich.com
3050 Spruce Street, St. Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Product Information

SAvPhire™ Monomeric Streptavidin
high affinity
recombinant, expressed in *E. coli*

Catalog Number **SAE0094**
Storage Temperature –20 °C

Product Description

Streptavidin is a tetrameric protein that is widely used as a probe in various molecular detection systems, particularly because of the high affinity of streptavidin for biotin.[1] One technical challenge in the streptavidin-biotin system is the target aggregation that results from multivalent binding. Such challenges have led to efforts to create modified streptavidins, such as various monomeric streptavidins, to overcome these situations. However, many monomeric streptavidin proteins have rapid dissociation kinetics, which prevent their use in stable labeling applications.[1-4]

SAvPhire™ Monomeric Streptavidin is a high-affinity recombinant variant of streptavidin.[5] This product has been engineered to have a dissociation rate comparable to that of tetrameric streptavidin, as indicated in Table 1:

Table 1.
Dissociation kinetics of streptavidin variants, as measured by fluorescence polarization spectroscopy.

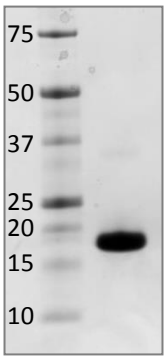
Streptavidin variant	k_{off} ($\times 10^{-3}$ min^{-1})	$t_{1/2}$ (min)
Native tetramer	0.92	751
Non-engineered monomers	63	11
SAvPhire Monomeric Streptavidin	**2.1**	**329**

The size and monovalency of this product provide advantages over tetrameric streptavidin in applications such as functional cell surface labeling and atomic force spectroscopy. These advantages include:

- Minimizing distribution or dynamics in the probing of biotinylated targets
- Reducing risk of aggregation, precipitation, and crosslinking in pre-incubation steps with biotinylated molecules
- Easier access to the desired target

SAvPhire Monomeric Streptavidin has a molecular mass of 15.5 kDa, as shown in Figure 1:

Figure 1.
SDS-PAGE analysis of SAvPhire Monomeric Streptavidin.



- Left lane: sizing standard with indicated molecular masses in kDa
- Right lane: SAvPhire Monomeric Streptavidin

This product can be used in traditional biotin-binding applications, including Western blotting, immunoprecipitation, immunohistochemistry, and flow cytometry.

SAvPhire Monomeric Streptavidin is produced recombinantly in *E. coli*. It has an N-terminal 6×-Histidine tag and a C-terminal FLAG® tag.

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.

Preparation Instructions
This product is lyophilized from PBS, pH 7.4. Reconstitute the vial contents to a 4 mg/mL solution by adding water as follows:

- 1 mg vial: add 250 µL of water for a 4 mg/mL solution
- 5 mg vial: add 1.25 mL of water for a 4 mg/mL solution

The reconstituted product can be further diluted in water or PBS as needed.

Storage/Stability
This product ships at cooler temperature conditions ('wet ice'). Store the lyophilized product at –20 °C. Once reconstituted, the solution can be stored at 2-8 °C for at least 1 month. For long-term storage, aliquot and store at –20 °C.

Procedure
1. For maximum binding of biotinylated targets, mix SAvPhire Monomeric Streptavidin with the desired biotinylated target at a 1:1 molar ratio.
2. Incubate overnight at room temperature. Shorter incubations may decrease the efficiency of target binding.

References
1. Lim, K.H. *et al*., *Biotechnol. Bioeng.*, **110(1)**, 57-67 (2013).
2. Lim, K.H. *et al.*, *Biochemistry*, **50(40)**, 8682-8691 (2011).
3. Dundas, C.M. *et al*., *Appl. Microbiol. Biotechnol*., **97(21)**, 9343-9353 (2013).
4. Demonte, D. *et al*., *Appl. Microbiol. Biotechnol*., **98(14)**, 6285-6295 (2014).
5. Kroestch, A. *et al.*, *Appl. Microbiol. Biotechnol.*, **102(23)**, 10079-10089 (2018).

JAS,GCY,MAM 01/19-1