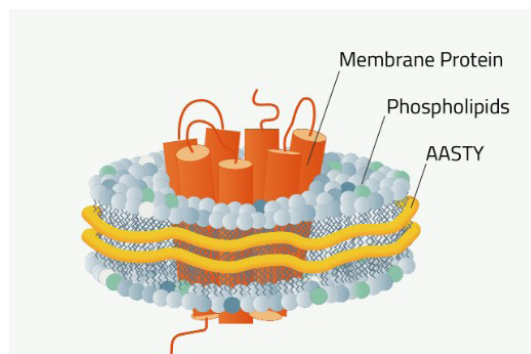
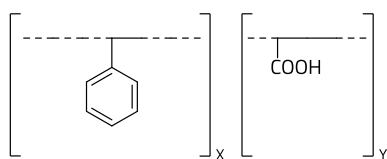


AASTY 6-45



Product	Catalog No.	Package size
AASTY 6-45 (10x50 mg)	18250	10 tubes each with 50 mg powder
AASTY 6-45 (1 g)	18251	1 g lyophilized powder
AASTY 6-45 (10 mg)	18252	10 g lyophilized powder



Product Description

The use of a styrene/acrylic acid copolymer for stabilization of membrane proteins was first described by Smith and coworkers (1). These copolymers could provide bicelles with membrane proteins from native membranes in absence of detergents, by wrapping around a patch of a lipid bilayer to form a disc-like particle or nanodisc. The AASTY HEPES based products contain the copolymer and a 50 mM HEPES buffer, adjusted to pH 7.5, so only dd water has to be added for direct application. T

he pH value has been selected being very effective for protein solubilization. AASTY 6-45 from Cube Biotech is a highly purified copolymer of styrene and acrylic acid, with a molecular weight (Mw) of 5.500. After solubilization, the copolymer is in a concentration from 1.5 to 6.0%, leading to high concentrations, when added to the membrane protein.

Copolymers provide a hydrophobic surface facing the lipids, and a hydrophilic surface at the outside. This setup makes nanodiscs highly soluble in aqueous solutions and allows for the solubilization of membrane proteins in the absence of detergents. The product can be used with phospholipids, such as dimyristoyl-glycero-phosphocholine (DMPC) or palmitoyloleoyl-phosphatidyl-choline (POPC) in combination with sodium cholate. The complex from AASTY and membrane protein can be used with many biophysical assays, such as SDS-PAGE, SEC, WesternBlot, UV/Vis spectroscopy, and many chromatographic procedures.

Reconstitution of copolymer solution

Cube AASTY copolymers are delivered lyophilized from a solution containing 50 mM HEPES, pH 7.5. Each aliquot contains 50 mg of polymer or 1 g respectively. Adding 0.5 ml double distilled water per 50 mg of polymer will restore the original solution with a copolymer concentration of 10%. This stock can be diluted further as required by the different application protocols.

Technical Details

Name	Styrene Acrylic Acid copolymer, sodium salt in 50 mM HEPES, pH 7.5
Adsorbance (280 nm, 1% solution)	> 0.1
AA/STY Ratio	45:55
Solubility	>10% (H ₂ O)
Color	white to light yellow
Odor	Odorless
pH (dissolved)	7.5 ± 0.3
Molecular Weight	5.500 g/mol

Shipping & Storage

Shipping Temperature	Ambient temperature
Storage of lyophilized copolymer	-20°C for several years
Storage of dissolved copolymer	2-8°C for several days

Additional Information

For the protocols and other related information about this product visit our homepage at: <https://cube-biotech.com/products/membrane-protein-stabilization/>, and enter the catalogue number in the search bar above.

For purification of His-tagged proteins from dilute solutions, we recommend using PureCube Ni-NTA MagBeads. For affinity purification of GST-tagged, Rho1d4-tagged or Strep®-tagged proteins, Cube Biotech offers dedicated agarose resins, magnetic beads and prepacked cartridges.

Literature References

1. Anton A.A. Smith, Henriette E. Autzen, Bryan Faust, Joseph L. Mann, Benjamin W. Muir, Shaun Howard, Almar Postma, Andrew J. Spakowitz, Yifan Cheng, and Eric A. Appel; Lipid Nanodiscs via Ordered Copolymers Chem 6, 2782–2795, October 8, 2020.
2. M Timcenko, AAA Autzen, HE Autzen Characterization of divalent cation interactions with AASTY native nanodiscs. Biorxiv, doi: <https://doi.org/10.1101/2021.10.07.463511>

Disclaimer

The use of styrene acrylic anhydride copolymer (AASTY) products for the manufacturing of styrene acrylic acid copolymer - lipid particles (nanodiscs), and the use of AASTY, are covered by one or more of the following patent applications: U.S. Patent Application, Serial Number 62/864,696, filed June 21 2019, and PCT application PCT/US2020/038714 filed June 19, 2020.

The purchaser is licensed under those patents to use the AASTY; for the manufacture of lipid particles and to use AASTY so manufactured for the purpose of research and development of proteins, including their production (including purification and solubilization), screening, testing, analysis, characterization (including structural analysis and characterization), including for the purpose of drug screening, but not for the purpose of delivery of agents to humans or other animals for therapeutic, diagnostic, prophylactic purposes, which uses are specifically prohibited.