

Recombinant charged elastin-like protein polymer

Recombinant glutamic acid-rich protein polymer

Product Number: TP10305

Lot. No. (See product label)

Mol. Weight: Monodisperse recombinant protein containing 382 amino acids and having a molecular weight of 31.9 kDa by MALDI-TOF mass spectrometry.

p.I.: 2.9

Purity: >97% by SDS-PAGE gel

Additional characterization: FT-IR, ¹H-NMR (DMSO)

Sequence:

MESLLP-
[VPGVGVPGVGVPGEGVPGVGVPGVG]₁₅-V

Description: The monomer unit contains two different functional blocks in order to achieve an adequate balance of thermal and mechanical responses. The VPGVG sequence confers the mechanical properties (similar to the natural elastin), the biocompatibility and the stimuli-responsive nature. The second building block VPGE is a modification of the first, containing glutamic acids, confers pH-responsiveness. In addition, the side chain carboxylic acid functional groups can be used for crosslinking purposes and other chemical modifications.

Source: Microbial production.

Formulation: Sterile lyophilized form (white foam) from a 0.2 µm-filtered solution using deionized ultrapure water.

Preparation Instructions: Lyophilized protein can be reconstituted in water or aqueous buffer solutions up a concentration of 300 mg/mL at cold temperature (4 °C). Other organic solvents: DMF, DMSO, TFE (100 mg/mL).

Storage and Stability: This lyophilized preparation is stable at room temperature, long storage it should be kept at -20 °C.

Reconstituted material should be stored in working aliquots at 4 °C for 2 weeks.

Additional information for water-based solutions:

Stimuli-responsiveness and T_t : These protein polymers undergo a phase transition in response to changes in the temperature. Below the so-called inverse transition temperature (ITT) the uncrosslinked polymer chains are soluble in water, however, above the transition temperature (T_t) the polymer chains form nano- and microaggregates which segregate from the solution.

This reversible process is monitored by DSC showing a T_t :

DEIONIZED ULTRAPURE WATER (50 mg/mL)		
pH	3.5	7.2
T_t (°C)	32-33	-

References:

European Polymer Journal 2010, **46**, 643-650.
JACS, 2004, **126**, 13212-13213.
Soft Matter 2011, **7**, 9402-9409.
Advanced Functional Materials 2010, **20**, 1011-1018.

Product use limitation: This product is exclusively for *research purposes and in vitro use only*. The product was not tested for administration to humans or animals.