

## Product Information

# SUMO Protease, histidine-tagged

Recombinant, expressed in *E. coli***SAE0067**

## Product Description

Synonyms: Ubiquitin-like-specific protease 1, Ulp1, UBL specific protease 1

SUMO proteases are a general class of enzymes that specifically remove the post-translational protein modification (PTM) known as **s**mall **u**biquitin-related **m**odifier (SUMO), which falls into the PTM class of ubiquitin and/or ubiquitin-like proteins (UBL).<sup>1</sup> The enzyme commonly referred to as 'SUMO protease' is the Ubl-specific protease 1 (Ulp1) from *Saccharomyces cerevisiae*. This was the first of this class of enzymes to be isolated.<sup>2</sup>

SUMO protease specifically cleaves the SUMO moiety in a 'scarless' manner. SUMO protease recognizes the tertiary structure of the Ubiquitin-like SUMO domain and hydrolyzes the peptide bond in the x-Gly-Gly-x sequence after the Gly-Gly bond, at the C-terminus of the SUMO domain.<sup>3</sup> In addition to cleavage of natural SUMO-modified proteins, SUMO protease is used to cleave recombinant SUMO fusion proteins. The SUMO domain is a known solubility-enhancing fusion tag that is used in recombinant protein expression.<sup>4</sup> A histidine tag can also be added at the N-terminus of the SUMO domain as a purification tag.<sup>5</sup>

This SUMO protease product carries a 6× Histidine tag. This SUMO protease product can thus be easily removed together with the cleaved SUMO domain, following the digestion reaction. Several publications cite use of product SAE0067 in their research.<sup>6-10</sup>

## 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.

## Product

Unit definition: One unit is defined as the amount that will cleave 90% of 100 pmole of SUMO-GST in 1 hour at 30 °C.

## Storage/Stability

Store the lyophilized powder at -20 °C. The product is expected to retain activity for at least 2 years when stored at -20 °C.

## Preparation Instructions

Store the reconstituted product at -20 °C. It is recommended to reconstitute the enzyme in 100 µL of either water or 50% glycerol (v/v), supplemented with 1 mM DTT. Solutions in water/DTT should be stored in frozen aliquots to avoid freeze-thaw cycles, which can adversely affect the protease activity.

## Procedure

SUMO protease is active over a wide range of temperatures (2-30 °C), ionic strengths (0-400 mM NaCl), and pH ranges (6-8.5). However, its activity may vary depending on the substrate and conditions. Researchers will need to optimize their specific reaction conditions.

As an initial suggestion, 20 units of SUMO protease can be used per mg of target protein for 1 hour at 30 °C, or overnight at 2-8 °C. The cleavage efficiency can then be estimated by SDS-PAGE. If necessary, the amount of SUMO protease can then be adjusted.

SUMO protease works better in the presence of reducing agents, such as 0.5-2 mM DTT. DTT in the reaction mixture can significantly enhance cleavage efficiency, especially during longer incubations.

## References

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4. Kimple, M.E. *et al.*, *Curr. Protoc. Protein Sci.*, **24**, 73:Unit 9.9 (2013).
5. Lee, C.-D. *et al.*, *Protein Sci.*, **17(7)**, 1241-1248 (2008).
6. Crickard, J.B. *et al.*, *Cell*, **181(6)**, 1380-1394.e18 (2020).
7. Suzuki, S.W. *et al.*, *eLife*, **10**, e69883 (2021).
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SAE0067pis Rev 05/22 DT,DK,GCY,LB,MAM

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