

TECHNICAL NOTE

Hydrolysis of PPS Silent® Surfactant Eliminates Detergent Interference

A MASS SPECTROMETRY COMPATIBLE SURFACTANT

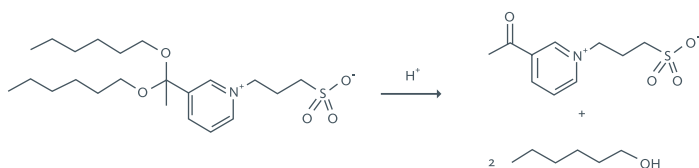
PPS Silent® Surfactant was designed, synthesized, and characterized as part of a research project to develop MALDI-friendly surfactants to replace common laboratory detergents such as sodium dodecyl sulfate and *n*-octyl-β-d-glucopyranoside.¹ A principal objective of the project was to enable elimination of detergent properties that interfere with MALDI after protein extraction.

The acid-cleavable PPS surfactant molecule was found to improve MALDI analysis of proteins by improving protein solubility and increasing the number of proteins observed in molecular profiling experiments. Upon its commercial introduction as PPS Silent Surfactant, it was also found to increase the number of proteins identified by ESI/MS/MS in shotgun proteomics experiments.²

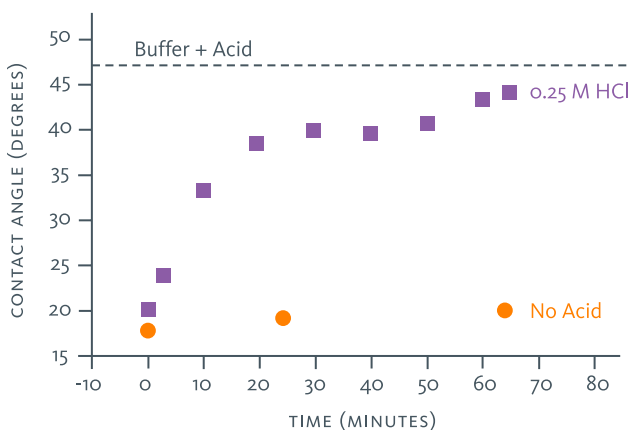
PPS Silent Surfactant is unique among specialty surfactants for protein solubilization in that it produces no oily film and leaves no cloudy pellet in the protein sample solution.

PPS SILENT SURFACTANT CLEAVES RAPIDLY IN ACID

PPS Silent Surfactant is supplied as a white crystalline powder in 10 mg vials. Its structural formula is 3-[3-(1,1-bisalkoxyethyl)pyridin-1-yl]propane-1-sulfonate. PPS cleaves rapidly in acid.



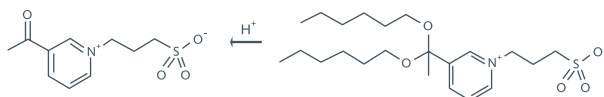
Hydrolytic cleavage of PPS Silent® Surfactant
(3-[3-(1,1-bisalkoxyethyl)pyridin-1-yl]propane-1-sulfonate)



Loss of surfactant property upon hydrolytic cleavage. PPS cleavage occurs within 30 minutes in 0.25 M HCl.

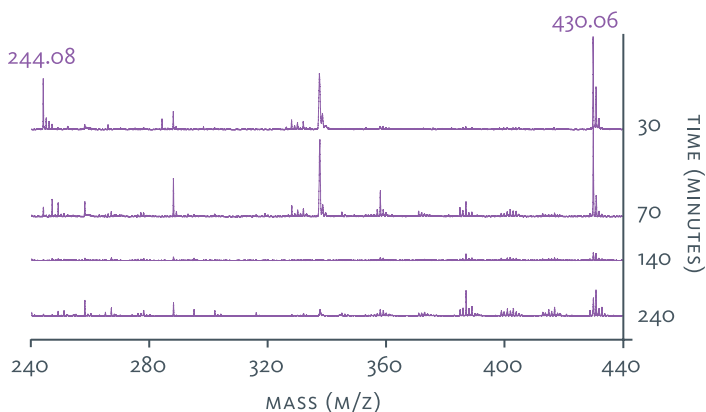
HYDROLYTIC CLEAVAGE SILENCES DETERGENT INTERFERENCE

A major limitation of conventional protein solubilization protocols is detergent interference with mass spectrometry readings of low abundance, low molecular weight peptide fragments resulting from trypsin digestion of complex protein mixtures. PPS Silent Surfactant solves this problem. The residual products of hydrolytic cleavage of PPS do not interfere with mass spectrometry analysis of peptides.



Acid hydrolysis of PPS Silent Surfactant clears detergent interference, enabling mass spectrometry analysis of peptides resulting from trypsin digestion of complex protein mixtures.

Figure adapted from Vanderbilt University doctoral thesis dissertation *Design and Synthesis of Novel Cleavable Detergents from Protein and Peptide Analysis by Mass Spectrometry* (Jeremy Norris, PhD).



ORDERING INFORMATION

PPS Silent Surfactant is available in 1 mg and 10 mg vials. To place an order for PPS Silent Surfactant, please contact Protein Discovery by phone, fax, or e-mail.

Tel: (865) 521-7400

Fax: (865) 521-3548

E-mail: sales@proteindiscovery.com

DESCRIPTION	PART NUMBER
10 mg vial, 1 vial per pack	21010
1 mg vial, 5 vials per pack	21011

REFERENCES

1. Mass Spectrometry of Intracellular and Membrane Proteins Using Cleavable Detergents
Jeremy L. Norris, Ned A. Porter, and Richard M. Caprioli
Analytical Chemistry 2003; 75(23) pp 6642 - 6647; DOI: 10.1021/aco34802z.
2. Michael MacCoss, PhD. University of Washington, Seattle, Washington. Personal communication, 2006.



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