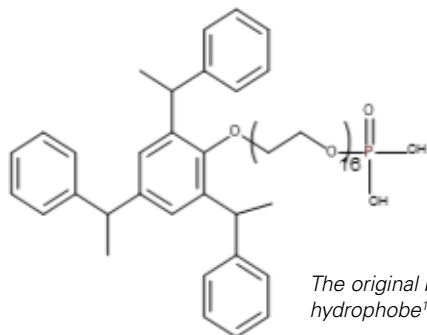


# POLYSTEP® TSP-16PE30

a primary emulsifier for use in emulsion polymerization systems

**POLYSTEP TSP-16PE30** is an arylphenol alkoxy phosphate ester, free acid surfactant for use in emulsion polymerization. Due to the bulky nature of the surfactant, which minimizes surfactant migration to interfaces, **POLYSTEP TSP-16PE30** improves coating properties in architectural DTM applications.



Key Attributes:

- ✓ Water resistance
- ✓ Adhesion
- ✓ Latex and pigment stabilization
- ✓ Washability

## Improved Water Resistance & Adhesion

Surfactants can migrate to interfaces causing coating defects. Changing the hydrophilic/hydrophobic nature of the surfactant can influence migration.

Contact angle is a measurement of hydrophilicity/hydrophobicity. As the hydrophilic character of the coating increases, water spreads onto the surface decreasing the contact angle. Conversely, a more hydrophobic surface results in a higher contact angle.

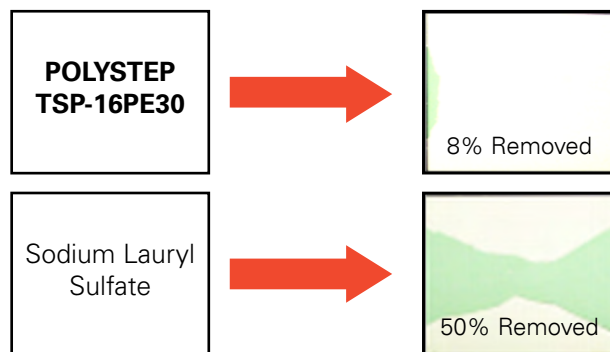
The data shows the contact angle for a coating containing sodium lauryl sulfate compared to a coating containing **POLYSTEP TSP-16PE30**. The increased hydrophobicity (higher contact angle) of the coating with **POLYSTEP TSP-16PE30** resulted in improved wet scrub resistance on alkyd and improved blister resistance. The bulky structure of the hydrophobe improves compatibility with the latex coating, which minimizes surfactant migration.

## Contact Angle of Water on Coating

Latex Primary Emulsifier	Contact Angle (°)
<b>POLYSTEP TSP-16PE30</b>	74
Sodium Lauryl Sulfate	62.7

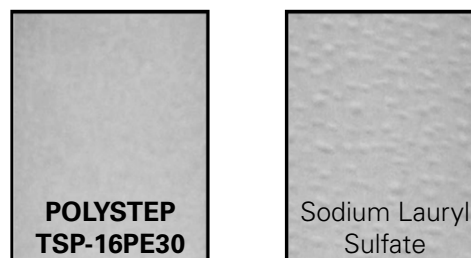
## Improved Wet Scrub Resistance

Styrene-acrylic coating wet scrub resistance on alkyd after 400 cycles





## Improved Blister Resistance

Styrene-acrylic coating blister resistance - 90 min at 60°C in water



<sup>1</sup> As presented at the Waterborne Coating Show, 2007.

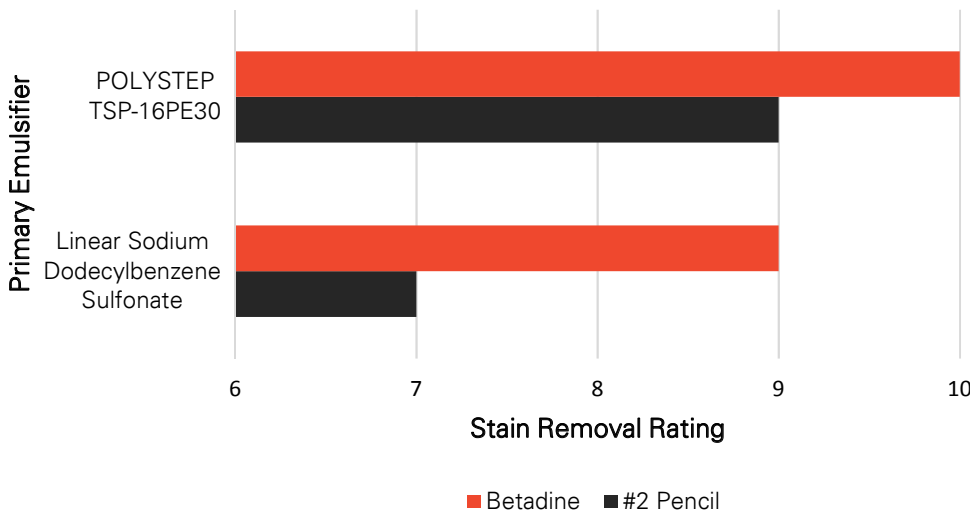
## Improved Corrosion Resistance

Primary Emulsifier	<b>POLYSTEP TSP-16PE30</b>	Linear Sodium Dodecylbenzene Sulfonate
Polymer Type	Acrylic	Acrylic
Cold-Rolled Steel Panel		

Phosphate esters are known to provide corrosion protection to metals. **POLYSTEP TSP-16PE30** improved corrosion resistance to cold-rolled steel compared to a sulfonate surfactant. The coating examples include a phosphated functional monomer, **POLYSTEP HPE**, incorporated in the latex polymer.

ASTM B117, 500 Hours Exposure, 3.1 Mils DFT

## Improved Washability



**POLYSTEP TSP-16PE30** used as the sole primary emulsifier provides improved stain removal of hydrophobic stains such as betadine and #2 pencil compared to a sulfonate surfactant.

ASTM D4828

Scale 0–10 (10 = best)

2018 © Stepan Company. All Rights Reserved.

POLYSTEP® is a registered trademarks of Stepan Company.

The information contained herein is based on the manufacturer's own study and the works of others and is subject to change without prior notice. The information is not intended to be all-inclusive, including as to the manner and conditions of use, handling, storage or disposal or other factors that may involve additional legal, environmental, safety or performance considerations. Nothing contained herein grants or extends a license, express or implied, in connection with any patents issued or pending of the manufacturer or others, or shall be construed as a recommendation to infringe any patents. STEPAN COMPANY MAKES NO PRODUCT WARRANTY OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR USE, EXPRESS OR IMPLIED, AND NO OTHER WARRANTY OR GUARANTY, EXPRESS OR IMPLIED, IS MADE, INCLUDING AS TO INFORMATION REGARDING PERFORMANCE, SAFETY, SUITABILITY, STABILITY, ACCURACY, COMPLETENESS, OR ADEQUACY. Stepan Company (and its employees, subsidiaries and affiliates) shall not be liable (regardless of fault) to the vendee, its employees, or any other party for any direct, indirect, special or consequential damages arising out of or in connection with the accuracy, completeness, adequacy, furnishing, use, or reliance upon information provided herein. The vendee assumes and releases Stepan Company (and its employees, subsidiaries and affiliates) from all liability, whether in tort, contract or otherwise to the fullest extent possible under the relevant law.

February 2018

**Stepan** 