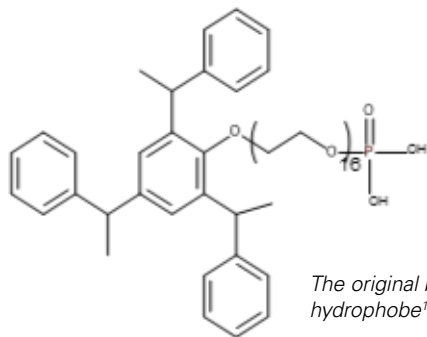


POLYSTEP® TSP-16PE30

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

Contact Angle of Water on Coating

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

Improved Water Resistance & Adhesion

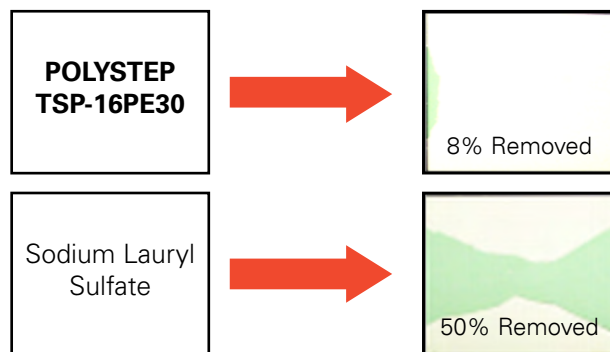
Surfactants can migrate to interfaces causing coating defects. Changing the hydrophilic/hydrophobic nature of the surfactant can influence migration.

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.

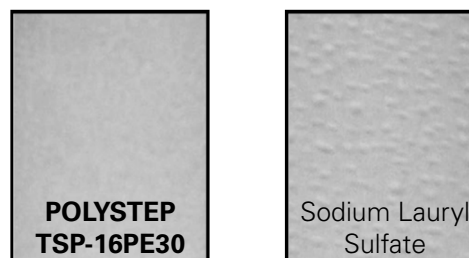
Improved Wet Scrub Resistance

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



¹ As presented at the Waterborne Coating Show, 2007.

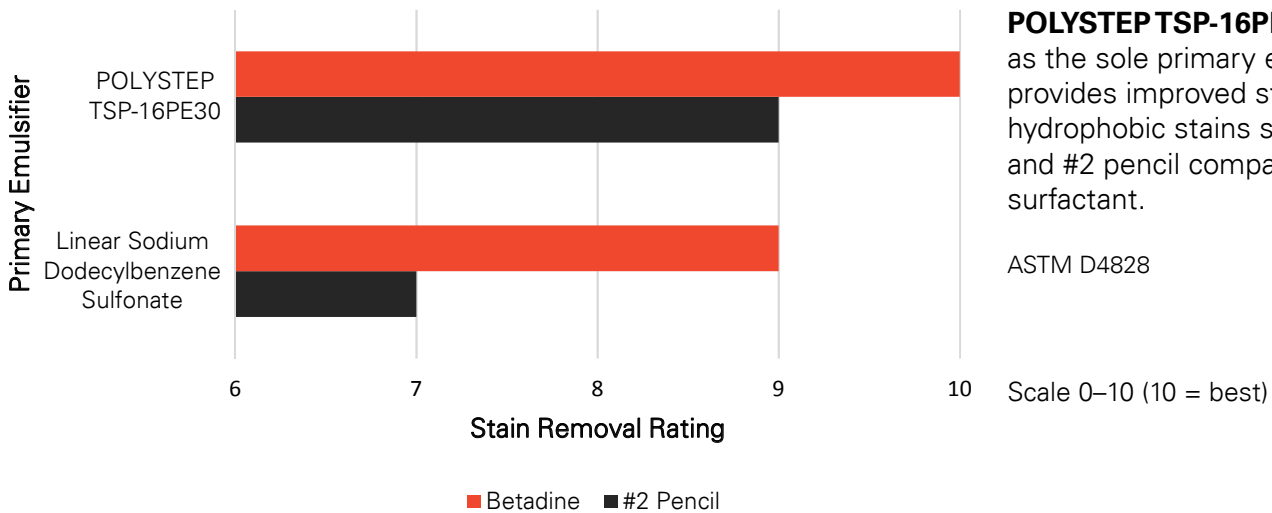
Improved Corrosion Resistance

Primary Emulsifier	POLYSTEP TSP-16PE30	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

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February 2018

