



HALOX[®]

Tannin Stain Inhibitors

ICL Phosphate
Specialty



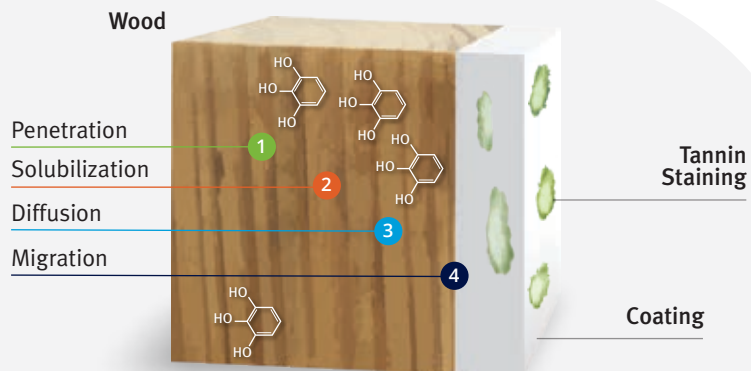


Tannin Stain Inhibitors

WHAT ARE TANNINS & HOW DO THEY MANIFEST?

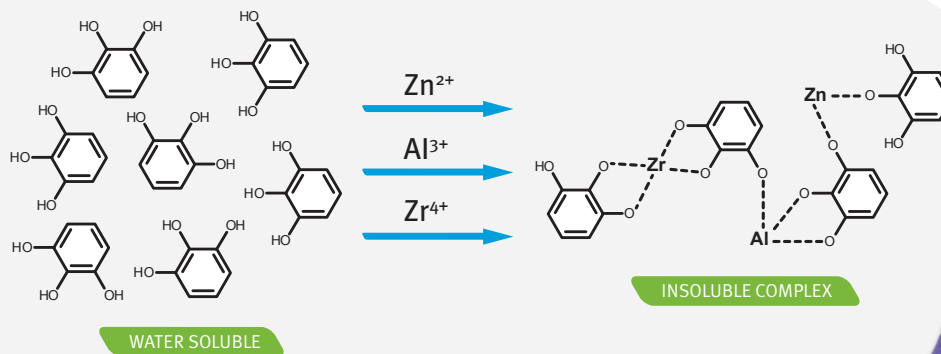
Tannins are high molecular weight, water soluble, poly-phenolic molecules found in many types of wood around the world, including:

- Western Red Cedar
- Birch
- Redwood
- Willow
- Oak
- Merbau
- Fir
- White and Yellow Pine



HOW DO HALOX® TANNIN STAIN INHIBITORS WORK?

HALOX® has developed several technologies that rely on chelation to combat tannin staining. The chelation process is the reaction of soluble metal cations from tannin stain inhibitive pigments with anionic groups on the phenolic rings present in tannins.



CLASSIFICATION

	HALOX® BW-100 Calcium Barium Phosphosilicate	HALOX® XTAIN® A Aluminum Zirconium Phosphosilicate	HALOX® XTAIN® L-44 Stabilized Ammonium Zirconium Complex	HALOX® CZ-170 Zinc Ortho Phosphate Complex
pH	7.5	10.0	9.0	8.1
Oil Absorption	37.1	33.1	N/A	43.5
% Water Solubility	0.17	0.12	100	0.02
Density g/ml	2.8	3.1	1.26	3.6
Mean Particle Size (microns)	5.1	5.8	N/A	4.3
Appearance	White Powder	White Powder	Clear Liquid	White Powder
Recommended Loading Levels	5-10% TFW	1-3% TFW	1-3% TFW	2-5% TFW
Water Based	●	●	●	●
Solvent Based	●	●	●	●
Product Benefits	<ul style="list-style-type: none"> Effective in High PVC Alkyd Primers Demonstrates excellent performance 	<ul style="list-style-type: none"> Effective at very low loading levels Barium & Antimony-Free Contains Multivalent Cations 	<ul style="list-style-type: none"> Provides superior performance and good compatibility in water based coatings systems Barium & Antimony-Free Zinc Oxide Replacement Easy to post-add to a coating (1:1 with water) 	<ul style="list-style-type: none"> Contains high levels of zinc compounds that provide dual tannin blocking and corrosion resistance Barium & Antimony-Free Zinc Oxide Replacement

ICL PHOSPHATE SPECIALTY TEST METHOD (TANNIN STAIN CHARACTERIZATION)

- Post-add or High Speed Disperse into Latex Paint
 - 2% TFW Liquid Tannin Stain Inhibitor
 - 5% TFW Tannin Stain Reactive Pigment
- Apply 1st Coat to Board at Desired Spread Rate (ft²/gal or m²/L)
 - Air Dry for 24 Hours
- Apply 2nd Coat to Half of the Board at Desired Spread Rate (ft²/gal or m²/L)
 - Air Dry for 24 Hours
 - Colorimetry: Measure CIE L a*b* Values (Before Testing)
 - Expose Boards to 90-100% RH, 100°F (38°C) for 16-24 Hours to Accelerate Tannin or Stain Bleeding through the Coating
 - Air Dry for 2 Hours
 - Colorimetry: Measure CIE L a*b* Values (After Testing)
 - Quantify Degree of Staining

Colorimetry Key L = lightness a* = red/green b* = yellow/blue

FORMULATION TIPS

Pay Attention to the Following:

EXTENDER PIGMENT(S) USED

Certain pigment morphologies can improve the barrier properties of the coating (e.g. platy talc). The alkaline nature of certain pigments can help to buffer the paint (e.g. calcium carbonate).

COALESCENT SOLVENT USED

Ester alcohols and glycols are preferred. Glycol ethers can adversely affect the chelation mechanism.

For more information on HALOX® Tannin Stain Inhibitors visit halox.com.



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REACH

