



# Formulation

## Water Reducible Alkyd Primer using HALOX SZP-391 & HALOX 570

		<u>LBS</u>	<u>GALS</u>
KELSOL 3961-B2G-75	[1]	267.40	30.40
Ammonia Hydroxide (28%)		6.32	0.84
Triethylamine	[2]	6.32	1.05
AMP-95	[3]	1.05	0.13
Butyl Cellosolve	[4]	24.21	3.22
Additol VXW 6206	[5]	4.00	0.44
Troymax Antiskin B	[6]	0.84	0.11
KRONOS 2101	[7]	89.49	2.68
Raven 1255 Powder	[8]	10.53	0.70
HALOX SZP-391	[9]	62.64	2.32
Nyral 400	[10]	78.96	3.32
<i>High speed disperse to 5+ NS Hegman grind.</i>			
n-Butyl Alcohol	[11]	15.79	2.33
Patcote 577	[12]	0.63	0.09
<i>Add slowly while mixing.</i>			
HALOX 570 (30% solution)	[9]	19.79	1.91
Water		421.11	50.46
<b>TOTAL</b>		<b>1,009.07</b>	<b>100.00</b>

### Formula Constants

Density (lb/gal)	10.09
Weight Pigment (%)	23.94
Volume Pigment (%)	9.02
Weight Solids (%)	44.68
Volume Solids (%)	30.79
PVC (%)	30.01
VOC (lb/gal)	2.48

### Formula Properties

pH @ 25°C	8.7 - 9.0
Viscosity - Stormer (KU) @ 25°C	90 - 95

*Stability @ 50 °C > 3 weeks*

### Supplier Key

- [1] Reichhold Chemicals, Inc.
- [2] Union Carbide Corporation
- [3] ANGUS Chemical Company
- [4] The Dow Chemical Company
- [5] CYTEC
- [6] Troy Corporation
- [7] KRONOS, Inc.
- [8] Columbian Chemicals Company
- [9] HALOX
- [10] R.T. Vanderbilt Company, Inc.
- [11] Eastmann Chemical Company
- [12] American Ingredients Company

*The information contained herein is correct to the best of our knowledge, but is intended only as a source of information. The recommendations or suggestions herein are made without guarantee of representation as to results, and we suggest that you evaluate the recommendations contained in this formulation in your own laboratory prior to use.*



## HALOX FORMULATING GUIDELINES WITH ANTI-CORROSIVE PIGMENTS IN WATER REDUCIBLE ALKYDS AND MODIFIED ALKYDS

The key to formulating with Water Reducible Alkyds using anti-corrosive pigments is the amine package for neutralizing the acid groups on the backbone of the resin.

### Tips for air-dry systems:

- Once the resin is added, immediately follow with the amine package to neutralize the pendant acid groups. Do **not** add water until the resin is neutralized, it will not be compatible.
- Neutralize using 100% of a strong amine like Triethylamine (TEA) or a 75:25 to 50:50 blend of TEA and Ammonium Hydroxide. Higher levels of TEA works well for long-term stability, but may impart water sensitivity to the film. To reduce water sensitivity, while maintaining stability, try using the 75:25 or 50:50 blend listed above. Check stability first, then performance.
- The final pH of the paint should be adjusted between 8.7-9.0
- Do not allow grind to exceed 120°F (49°C) to minimize solvent and amine loss.
- Water can be added to grind, if necessary, as long as the resin has been completely neutralized. Add slowly under good agitation.
- Add pigments to grind in the following order – Prime, Anti-Corrosive, Extenders in order of declining oil absorption value / highest to lowest.

### Additional trouble shooting tips:

<b><u>COMPLAINT</u></b>	<b><u>PROBLEM</u></b>	<b><u>SOLUTION</u></b>
Separation/Syneresis	Not neutralized properly or pH drift	Increase TEA level
	Need water-miscible solvent	Add coupling solvent –alcohol, glycol ethers
	Pigments settled to bottom	Anti-settling agent – Attagel, Aerosil etc.
Seeding/Gelling	Not neutralized properly or pH drift	Increase TEA level
	AC pigment too reactive	Use a dispersant – Tamol 681, W-33, BYK 190 etc.  Use a less reactive inhibitor (zinc free) – HALOX 430, CW-491
Early field blistering	Too much TEA or amine	Blend TEA with more fugitive ammonium hydroxide
	Need to increase water resistance in film	Add organic corrosion inhibitor – HALOX 570, HALOX 515



# ***HALOX® SZP-391 & HALOX 570***

**Water Reducible Alkyd based on Kelsol 3961-B2G-75**

Salt Spray - 500 hours - Matte CRS - 25 microns (1.0 mil) - 6 % tfw

***SYNERGY***



**Blank Control**



**HALOX® SZP-391 @ 6%**



**HALOX® SZP-391 @ 6% &  
HALOX® 570 (30% soln) @ 2%**



**Mod. Zinc Aluminum  
Phosphate @ 6%**