

Acronal[®] PLUS 4641

Offering superior stain control for interior and exterior applications

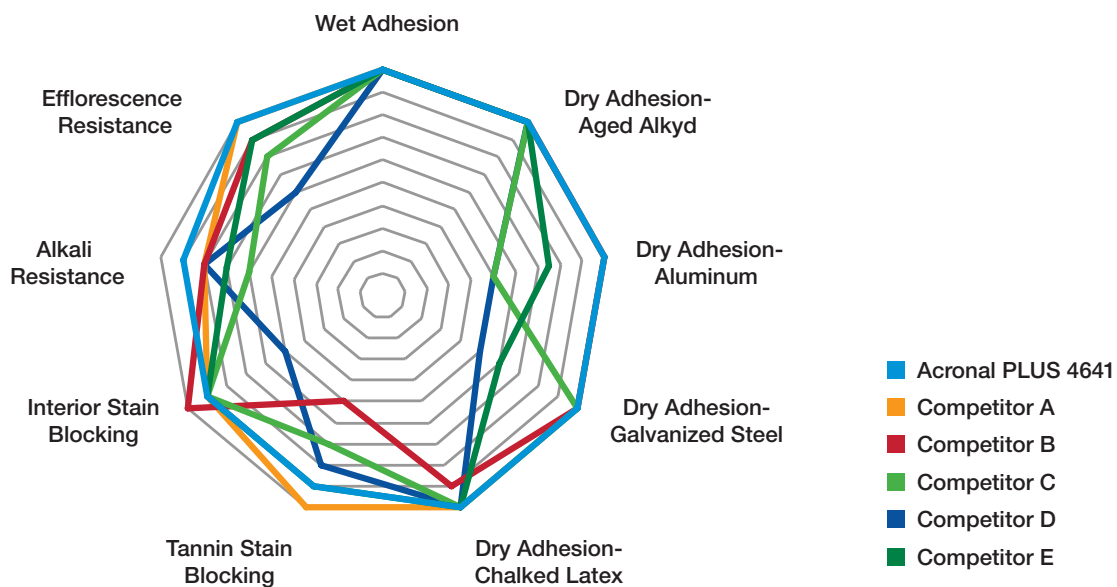


Acronal® PLUS 4641

Formulate an interior or exterior primer that has excellent stain control using Acronal PLUS 4641.

Acronal PLUS 4641 is an all-acrylic latex polymer developed for stain blocking primers. Acronal PLUS 4641 offers outstanding tannin stain control and superior interior stain control. A primer developed with Acronal PLUS 4641 ties the stains into the primer film and keeps them from bleeding into the topcoat. Acronal PLUS 4641 is suitable for the manufacture of latex primers for tannin stain blocking with or without reactive pigments and for interior stain blocking primers.

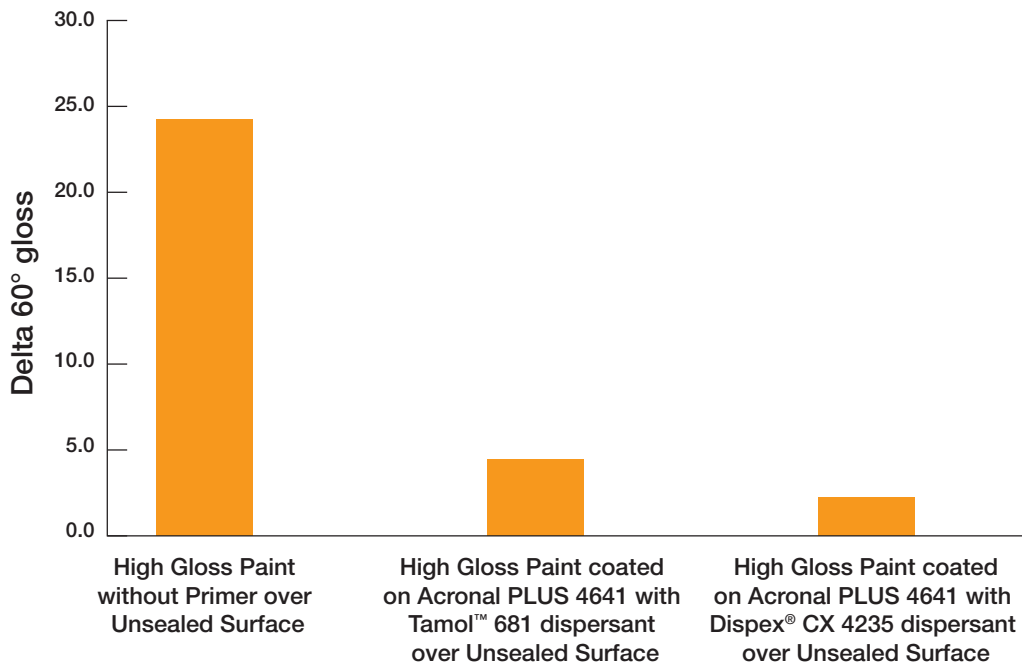
Performance of Acronal PLUS 4641 in an interior/exterior primer formulation



	Acronal PLUS 4641	Competitor A	Competitor B	Competitor C	Competitor D	Competitor E
Wet Adhesion	10	10	10	10	10	10
Dry Adhesion-Aged Alkyd	10	10	10	10	10	10
Dry Adhesion-Aluminum	10	10	10	5	5	7.5
Dry Adhesion-Galvanized Steel	10	10	10	10	5	6
Dry Adhesion-Chalked Latex	10	10	9	10	10	10
Tannin Stain Blocking	9	10	5	7	8	9
Interior Stain Blocking	9	9	10	9	5	9
Alkali Resistance	9	8	8	6	8	7
Efflorescence Resistance	10	10	9	8	6	9

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Enamel Holdout (60° gloss)

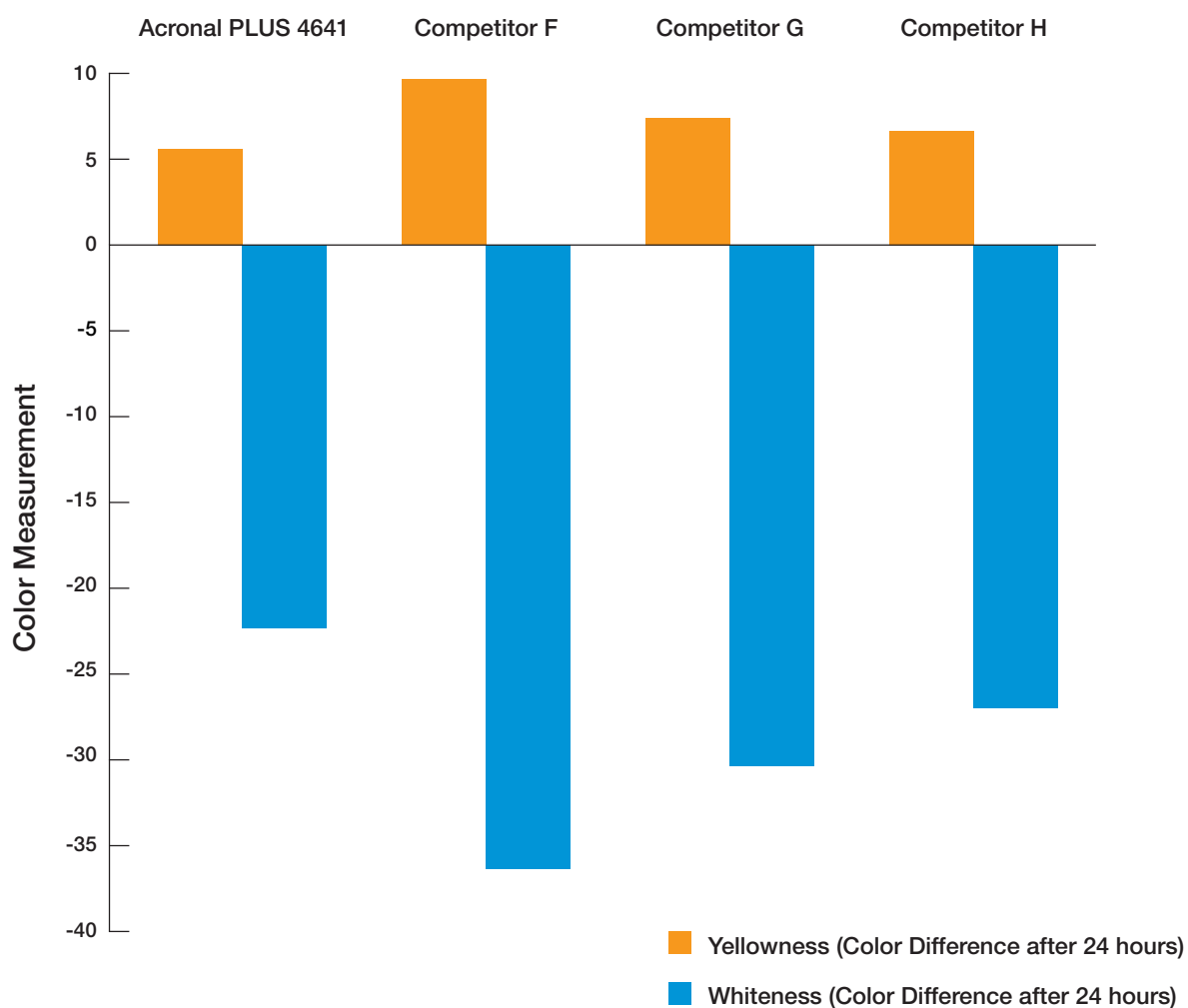


Primer formulations made with Acronal PLUS 4641 latex exhibit great enamel holdout, resulting in the gloss of the topcoat unchanged when coated over the primer. The Dispex[®] CX 4235 dispersant results in an improvement, as compared to Tamol[™] 681, in enamel holdout when used at the same loading.



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Tannin Blocking Ability



Acronal PLUS 4641 provides great tannin blocking when coating on cedar. The graph above shows that Acronal PLUS 4641 primer formulations prevent tannins from bleeding through from the substrate into the topcoat, resulting in the lowest change in whiteness and yellowness upon drying.

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Formulation Guidelines

Acronal PLUS 4641 latex demonstrates excellent adhesion to multiple substrates, efflorescence and alkali resistance, and interior stain blocking and tannin stain blocking when formulated with or without reactive pigments. Freeze/thaw stability can be achieved at 100 g/L VOC, however if freeze/thaw stability is not required, Acronal PLUS 4641 latex can be formulated as low as 0 g/L VOC.

Acronal PLUS 4641 latex should be formulated at 35% PVC and below to achieve maximum stain blocking and adhesion properties. Optimum performance is achieved at 30% PVC.

Latex Properties

Acronal PLUS 4641 Acrylic Latex Resin

Solids Content, Weight %	49.0 – 51.0
pH	7.0 – 8.0
Viscosity, cps	100 – 750
Specific Gravity, g/cm ³	ca. 1.03
Density, lbs/gal	ca. 8.6
MFFT, °C	ca. 6 – 8
Particle size, nm	ca. 110

Rheology Modifiers

HMPE/HEUR/cellulosic thickeners have all shown great compatibility with Acronal PLUS 4641. Specifically, Natrosol™ Plus 330 cellulosic thickener in combination with Rheovis® PE 1331 for high-shear thickening and Rheovis® PU 1191 for low-shear thickening have shown success.

Dispersants

Ammonium and sodium based dispersants are compatible with Acronal PLUS 4641. Ammonium based dispersants have shown to be more effective in achieving the desired properties, specifically Tamol™ 165 and Dispex® CX 4240. Dispex® CX 4230 provides primer formulations with no viscosity change over time. When exterior formulations require using zinc oxide, Dispex® Ultra FA 4404 dispersant is suggested.

Defoamers

The FoamStar® line of defoamers are suggested for formulation. Specifically, FoamStar® ST 2420 has shown balanced defoaming action.

Coalescence

It is recommended that Texanol™, or other evaporative solvent be used at a loading level of 2% by weight compared to the amount of Acronal PLUS 4641 resin used. If 0 VOC g/L paints are desired Loxanol® film forming aids are suggested.

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Suggested Formulations

Alkali Resistant Water based Primer Formulation to meet MPI #3

raw materials	lbs	gallons
Water	125.0	15.01
Natrosol™ Plus 330	1.0	0.09
AEPD™ VOX 1000	1.0	0.11
KTPP	1.0	0.05
Dispex® CX 4240	6.0	1.25
FoamStar® ST 2420	2.0	0.29
Proxel™ DB 20	3.0	0.33
Kronos® 2310	165.0	4.90
Duramite®	125.0	5.55
Attagel® 50	4.0	0.20
Grind for 15 to 20 minutes, then add:		
Water	106.9	12.83
FoamStar® ST 2420	2.0	0.29
Texanol™	5.0	0.63
Acronal PLUS 4641	500.0	58.14
Rheovis® PE 1331	5.0	0.58
Rheovis® PE 1191	0.5	0.06
Polyphase® 678	3.0	0.31
Total	1055.4	100.00
Viscosity (KU)	95 – 100	
Viscosity (ICU)	1.0 – 1.5	
Gloss 85°	5 – 10	
Weight Solids %	52.7	
Volume Solids %	40.1	
PVC %	27.3	
VOC g/L	15	

Exterior Stain Blocking Primer Formulation

raw materials	lbs	gallons
Water	125.0	15.01
Natrosol™ Plus 330	0.7	0.06
Sodium Nitrite	0.5	0.07
KTPP	1.5	0.07
Dispex® Ultra FA 4404	11.0	1.06
FoamStar® ST 2420	2.0	0.29
Proxel™ DB 20	3.0	0.33
Kronos® 2310	150.0	4.39
Huberbrite® 3	30.0	0.80
Duramite®	110.0	4.88
Nicron® 402	50.0	2.10
Kadox® 915	15.0	0.32
Attagel® 50	4.0	0.20
Grind for 15 to 20 minutes, then add:		
Water	118.6	14.24
FoamStar® ST 2420	2.0	0.29
Texanol™	9.0	1.14
Acronal PLUS 4641	455.0	52.91
Rheovis® PE 1331	5.0	0.58
Rheovis® PE 1191	0.5	0.06
Polyphase® 678	6.0	0.62
Total	1102.8	100.00
Viscosity (KU)	95 – 100	
Viscosity (ICU)	1.0 – 1.5	
Gloss 85°	10 – 15	
Weight Solids %	54.6	
Volume Solids %	39.9	
PVC %	32.9	
VOC g/L	37	

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