



The Chemical Company

Acronal[®] PLUS 4510

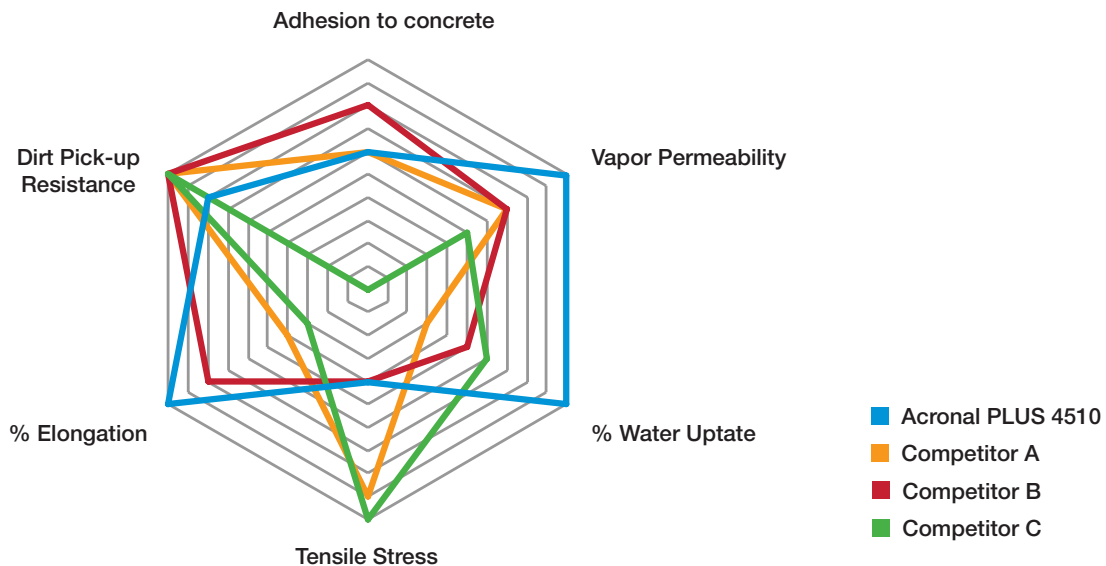
Withstanding harsh environmental conditions for the commercial market

Acronal® PLUS 4510

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Acronal PLUS 4510 is a flexible, 100% acrylic latex polymer for high performance elastomeric wall coatings. An attractive option for the commercial market, Acronal PLUS 4510 demonstrates excellent adhesion to masonry and metal substrates. It offers outstanding dirt pick-up resistance and low temperature flexibility, allowing coatings to withstand environmental effects. Acronal PLUS 4510's intrinsic properties—including high water vapor permeability and low water absorption, gives coatings excellent long-term performance that maintains an attractive appearance on exterior surfaces.

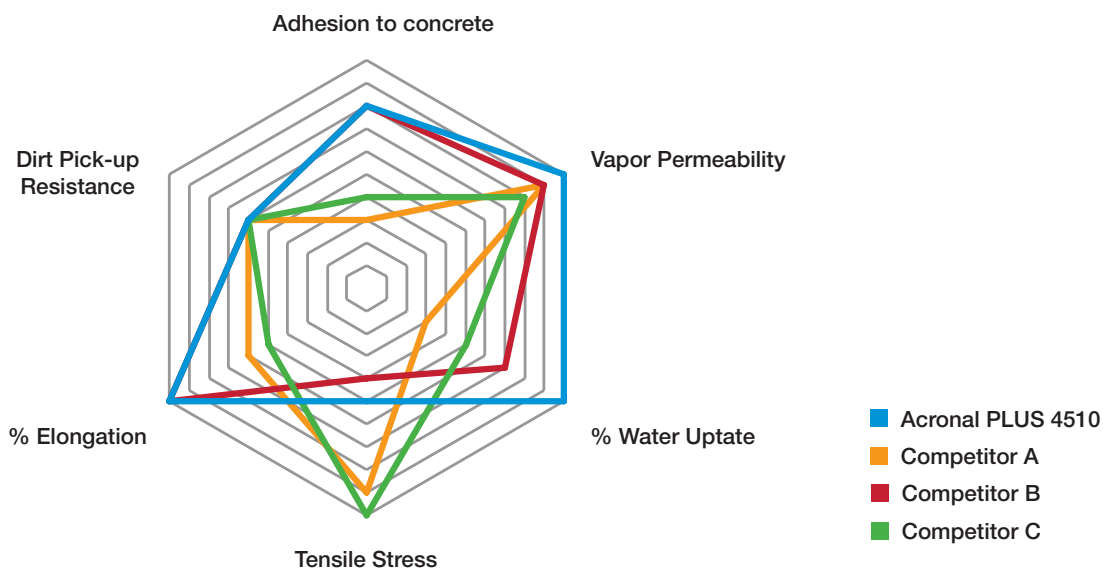
Performance of Acronal PLUS 4510 in an elastomeric formulation with calcium carbonate



	Acronal PLUS 4510	Competitor A	Competitor B	Competitor C
Adhesion to Concrete	4.2	4.2	4.4	0.0
Vapor Permeability	9.4	6.1	6.2	4.8
% Water Uptake	9.5%	15.2%	13.5%	12.29%
Tensile Stress (72°F, 50% RH)	42.174	103.385	49.371	111.579
% Elongation	279.801	112.649	222.739	86.181
Dirt Pick-up Resistance	4	5	5	5

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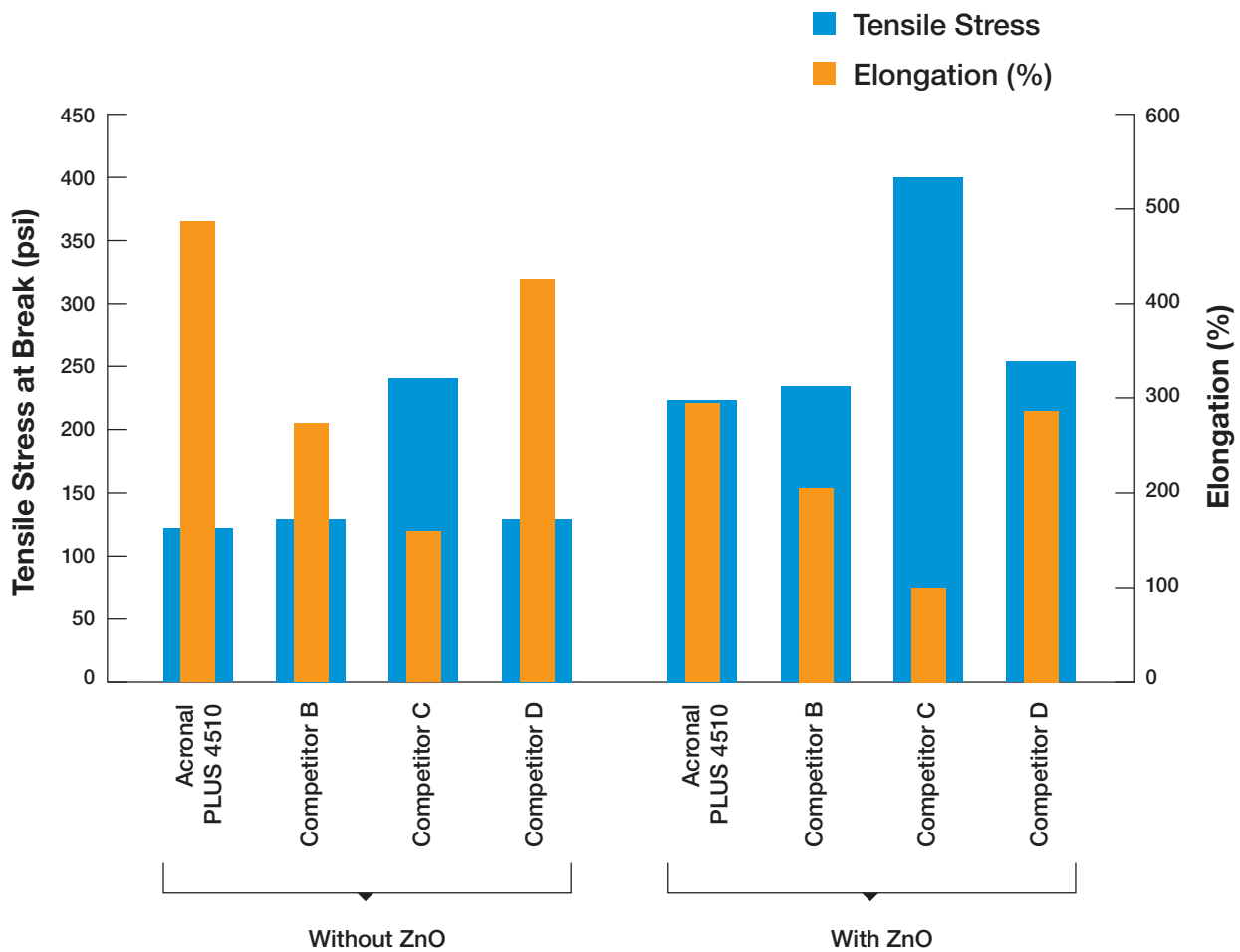
Performance of Acronal PLUS 4510 in an elastomeric formulation with Minex®



	Acronal PLUS 4510	Competitor A	Competitor B	Competitor C
Adhesion to Concrete	4.4	3.0	4.4	2.2
Vapor Permeability	12.1	11.4	11.3	10.0
% Water Uptake	10.54%	14.76%	12.78%	13.60%
Tensile Stress (72°F, 50% RH)	59	106	52	127
% Elongation	136	81	134	75
Dirt Pick-up Resistance	3	3	3	3

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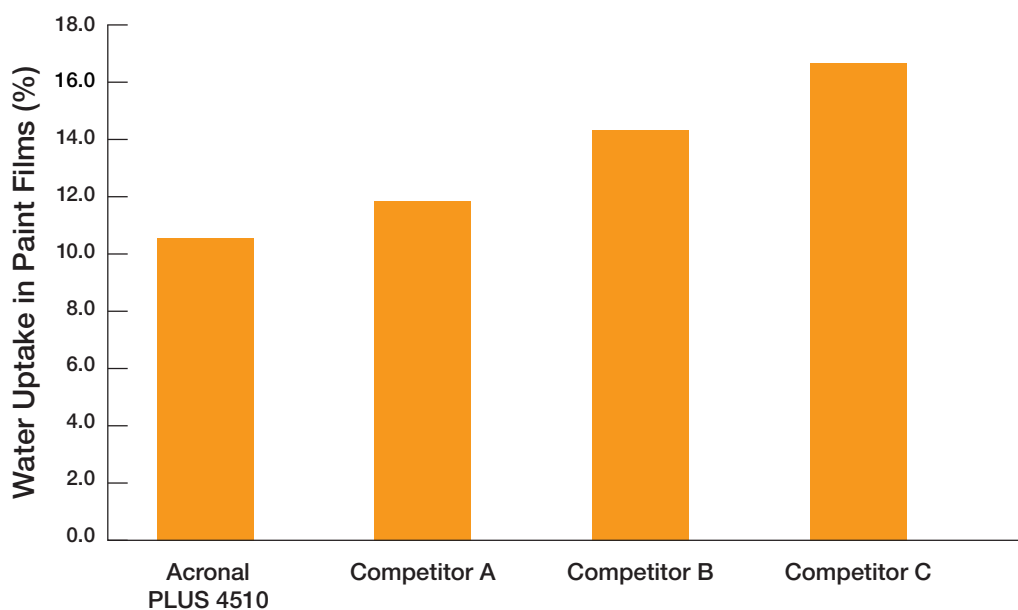
Acronal PLUS 4510 Tensile and Elongation Performance



Acronal 4510 offers a competitive tensile stress profile, while achieving an increased elongation. With ZnO in the formulation, tensile stress improves and remains competitive, while the elongation also remains top of the line.

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% Water Uptake of Paints



Comparisons shown in the figure are non ZnO containing formulations

Testing has verified that Acronal PLUS 4510 has one of the lowest water uptake percentages in paint films compared to competitive resins in the same formulation, while still allowing for vapor permeability.

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Formulation Guidelines

Acronal PLUS 4510 is an anionic all-acrylic latex for elastomeric wall coatings with built in self-crosslinking functionality for great flexibility and recovery properties, efflorescent resistance, and low water uptake. Good vapor permeability of Acronal PLUS 4510 allows moisture to escape from masonry, preventing blisters of elastomeric paints made with Acronal PLUS 4510. Note: If designing an elastomeric system for flexible roof coatings or for adhesion to urethane foams, Acronal NX 3250 M should be used.

Latex Properties

Acronal PLUS 4510 Acrylic Latex Resin

Solids Content, Weight %	59.0 – 61.0
pH	6.8 – 7.8
Viscosity at 23°C, cps	<1000
Specific Gravity, g/cm ³	ca. 1.04
Density, lbs/gal	ca. 8.68
Glass Transition Temperature, T _g (DSC), °C	ca. -29

Dispersants

Formulations with the Dispex® line of dispersants have provided great results. Specifically, high molecular weight dispersant, Dispex® CX 4235 is effective.

Rheology Modifiers

Cellulosic thickeners such as Natrosol™ 250 MBR have shown promise in maintaining balanced rheological and performance properties. HMPE thickeners such as Rheovis® PE 1331 can also be used when high-shear thickening is required.

Coalescents

Due to the low glass transition temperature of the polymer, formulations with Acronal PLUS 4510 can be made coalescent free.

Defoamers

It is suggested that formulators use mineral oil based defoamers such as Foamaster® MO 2133 during the grind and FoamStar® ST 2436 for let-down defoaming.

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Suggested Formulations

Low VOC Elastomeric Coating Formulation

raw materials	lbs	gallons
Water	150.0	18.01
Ethylene Glycol	15.0	1.62
Dispex® CX 4325	5.0	0.50
Proxel™ GXL	2.0	0.21
Foamaster® MO 2133	3.0	0.42
Ti-Pure® R 960	100.0	3.19
Minex® 10	200.0	9.22
Minex® 4	150.0	6.90
XX 503	25.0	0.54
Grind for 20 minutes, then add:		
Foamaster® MO 2133	3.0	0.42
Premix the following before adding:		
Natrosol™ 250 MBR	3.0	0.56
Water	83.6	10.05
Acronal PLUS 4510	410.0	47.24
Polyphase® 678	6.0	0.56
Rheovis® PE 1331	3.0	0.35
FoamStar® ST 2436	1.0	0.12
Total	1163.6	100.00
Viscosity (KU)	110 – 120	
Viscosity (ICI)	0.8 – 1.1	
Weight Solids %	63.7	
Volume Solids %	48.9	
PVC %	42.4	
VOC g/L	38	

Elastomeric Coating with Calcium Carbonate Formulation

raw materials	lbs	gallons
Water	150.0	18.01
Ethylene Glycol	15.0	1.62
Dispex® CX 4325	5.0	0.50
Proxel™ GXL	2.0	0.21
KTPP	1.0	0.05
Foamaster® MO 2133	3.0	0.42
Ti-Pure® R 960	65.0	2.08
Atomite® GCC	80.0	3.56
Duramite® GCC	320.0	14.21
Kadox® 915	25.0	0.54
Grind for 20 minutes, then add:		
Foamaster® MO 2133	3.0	0.42
Premix the following before adding:		
Natrosol™ 250 MBR	6.0	0.56
Water	82.1	9.86
Acronal PLUS 4510	410.0	47.24
Polyphase® 678	6.0	0.62
FoamStar® ST 2436	1.0	0.13
Total	1174.1	100.00
Viscosity (KU)	110 – 120	
Viscosity (ICI)	0.8 – 1.1	
Weight Solids %	64.3	
Volume Solids %	49.2	
PVC %	43.2	
VOC g/L	37	

About the Dispersions & Pigments Division

The Dispersions & Pigments Division in North America offers a comprehensive portfolio of resins, binders, latex, pigments and effect pigments, colorants, and systems to meet specific application needs for the coatings, construction, printing and packaging and plastics markets. Our innovative products also help manufacturers in the adhesives, nonwovens and fiber bonding industries meet functional and performance demands. Our formulation additives, rheology modifiers, light stabilizers, photoinitiators, and antioxidants significantly enhances the existing BASF product portfolio for these markets. For more information about BASF's Dispersions & Pigments Division, visit www.basf.us/dpsolutions.

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