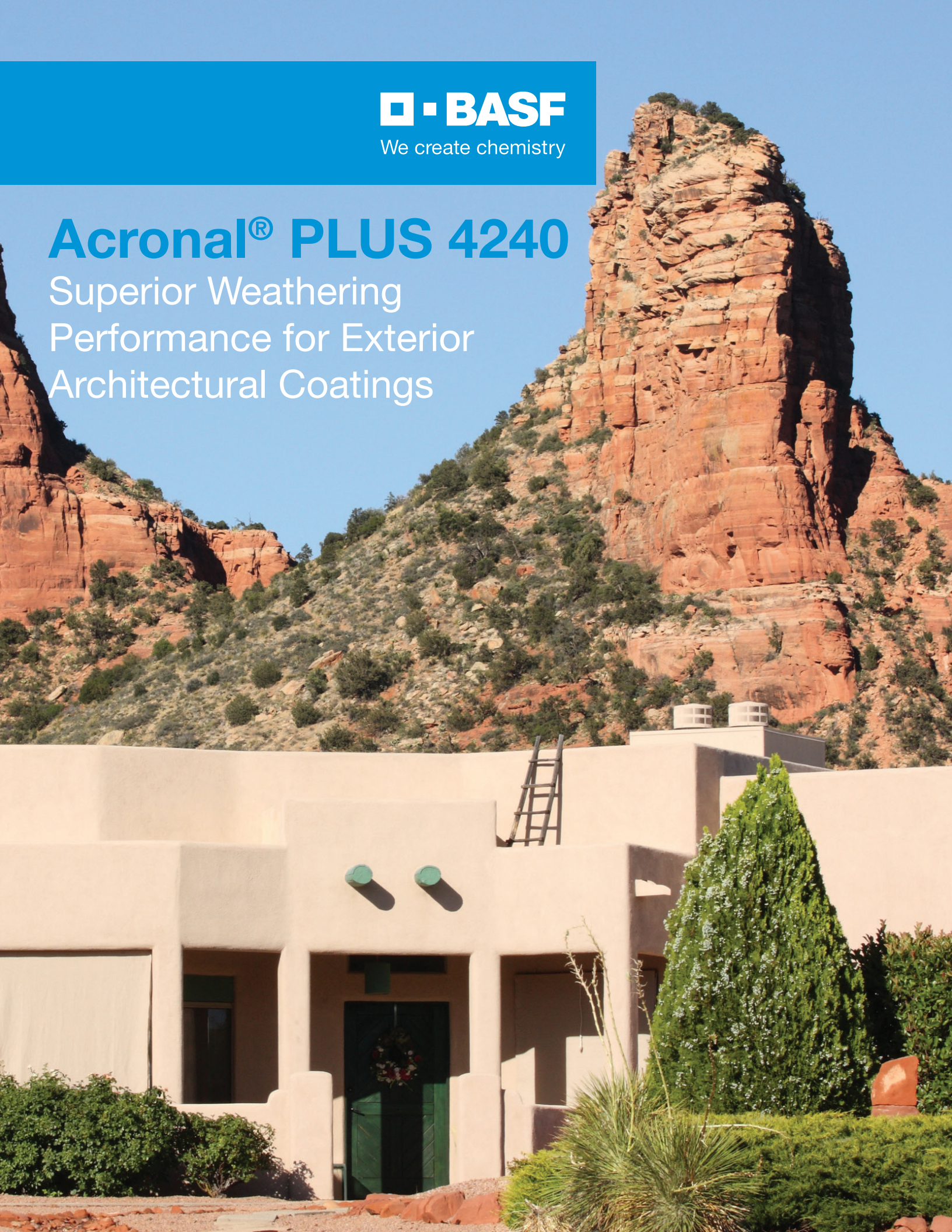




We create chemistry

Acronal[®] PLUS 4240

Superior Weathering
Performance for Exterior
Architectural Coatings



Acronal® PLUS 4240

Superior weathering performance while meeting low-VOC requirements

Acronal PLUS 4240 is an all acrylic resin developed for exterior flat to satin paints. Optimized for high performance at low-VOCs (50 g/l), this product delivers excellent dirt-pick up resistance and dry-film resilience (high scrubs). Acronal PLUS 4240 is a high-solids latex that can be formulated with or without zinc oxide.

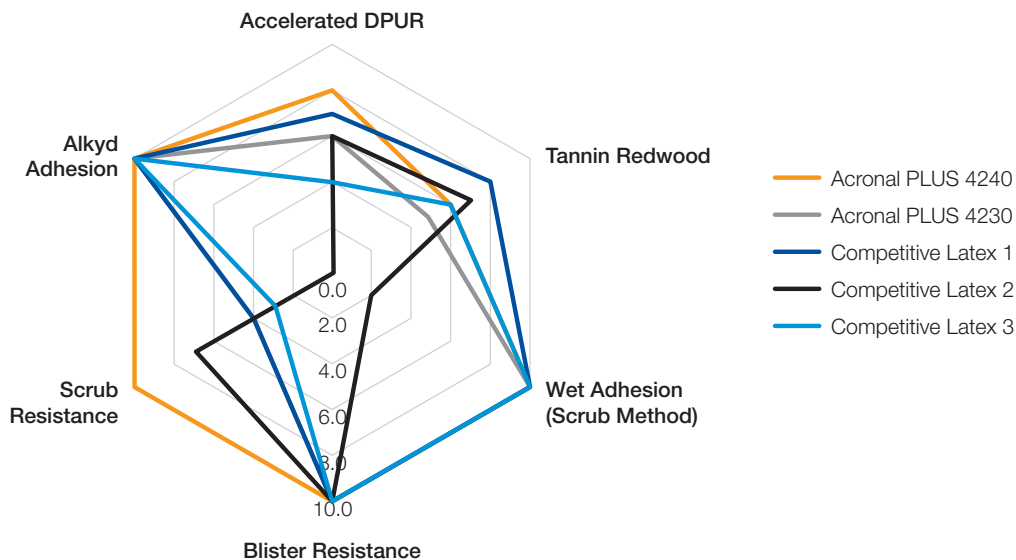
Features

- Excellent dirt pick-up resistance
- Durable dry-film performance (high scrubs)
- Low-VOC capable (50 g/l)
- APEO-free
- Low odor
- 100 % Acrylic

Properties

Solids content, weight %	52.0 – 54.0
Solids content, volume %	49.0 – 51.0
VOC content, weight %	< 0.2
VOC content, volume %	< 0.2
Brookfield Viscosity, cps	< 1000
Particle size, nm	240 approx.

Performance of Acronal PLUS 4240 in exterior flat paint formulation

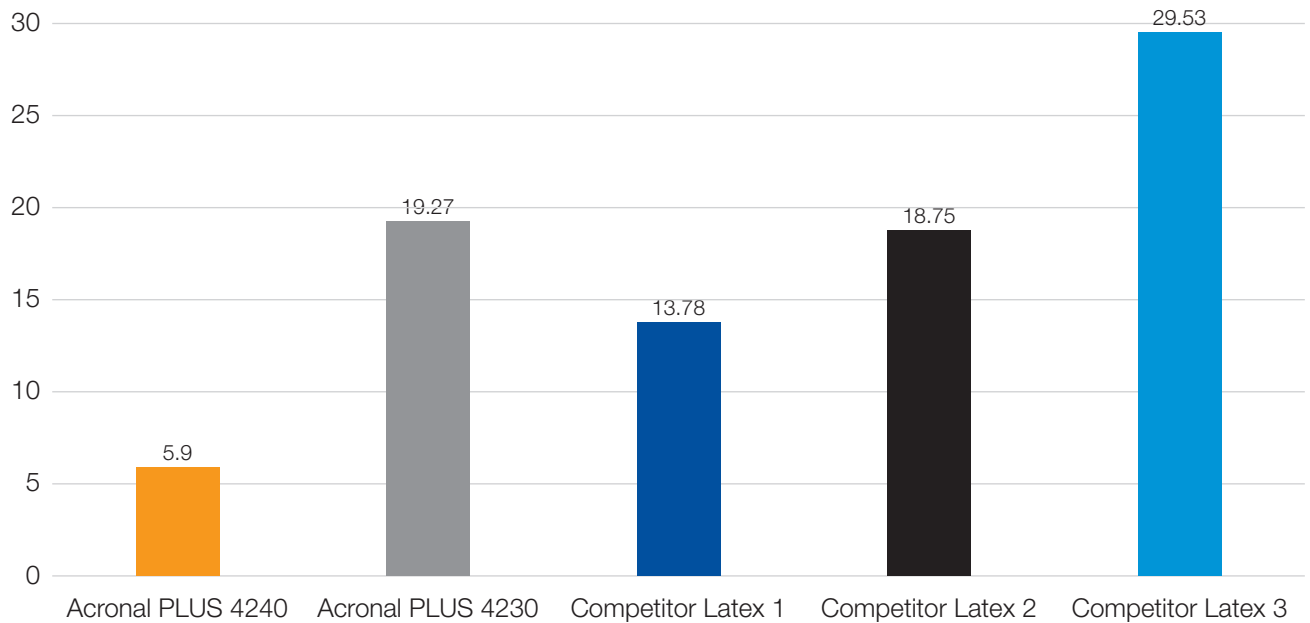


	Acronal PLUS 4240	Acronal PLUS 4230	Competitive Latex 1	Competitive Latex 2	Competitive Latex 3
Accelerated DPUR	8	6	7	6	4
Tannin Redwood	6	5	8	7	8
Wet Adhesion Scrub method	10	10	10	2	10
Blister Resistance	10	10	10	10	10
Scrub Resistance	10	4	4	7	3
Alkyd Adhesion	10	10	10	0	10

Acronal® PLUS 4240

Dirt Pick-up Resistance

Acronal PLUS 4240 has been engineered to deliver excellent dirt pick-up resistance. Data from prolonged exposure and accelerated DPUR testing confirms that Acronal PLUS 4240 consistently outperforms relative to competitive products

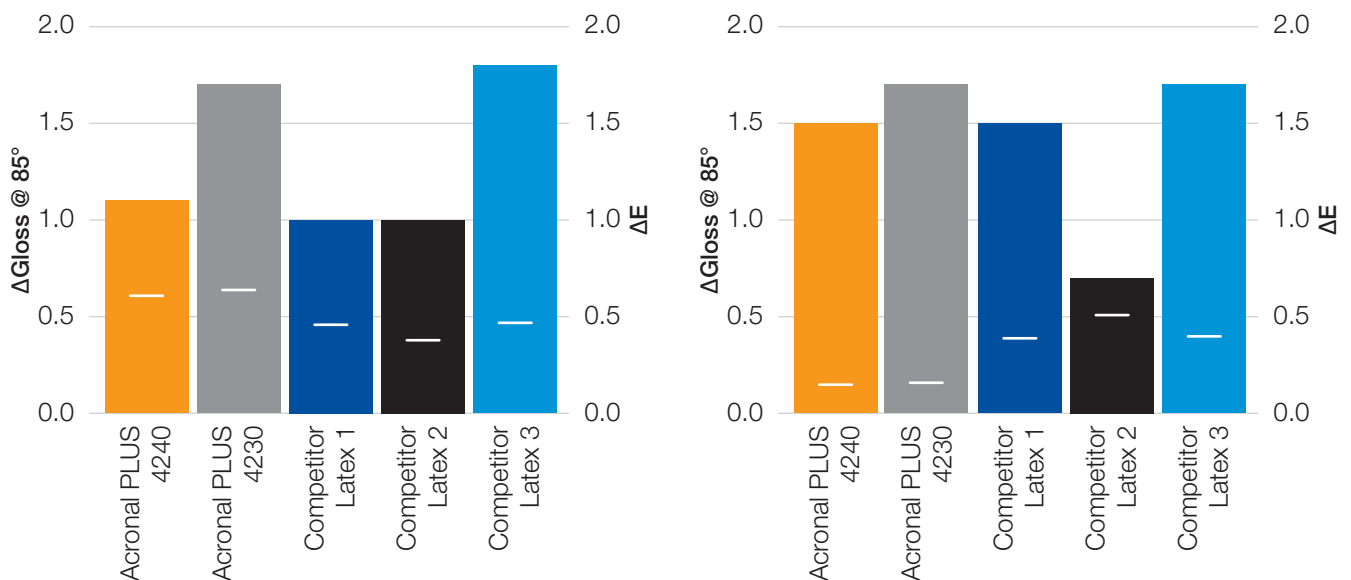


Accelerated Weathering

Acronal PLUS 4240 matches competitor's performance on Xenon Arc and QUV testing after 1000 hrs.

Xenon Arc (WOM)
1000 hours

QUV
1000 hour



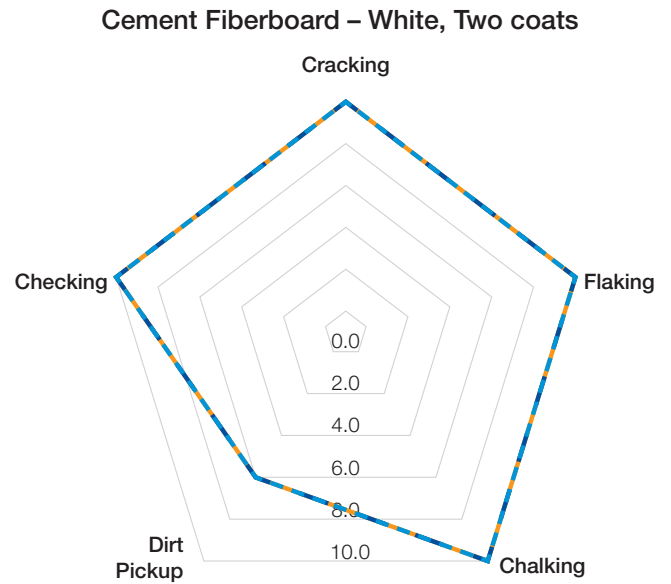
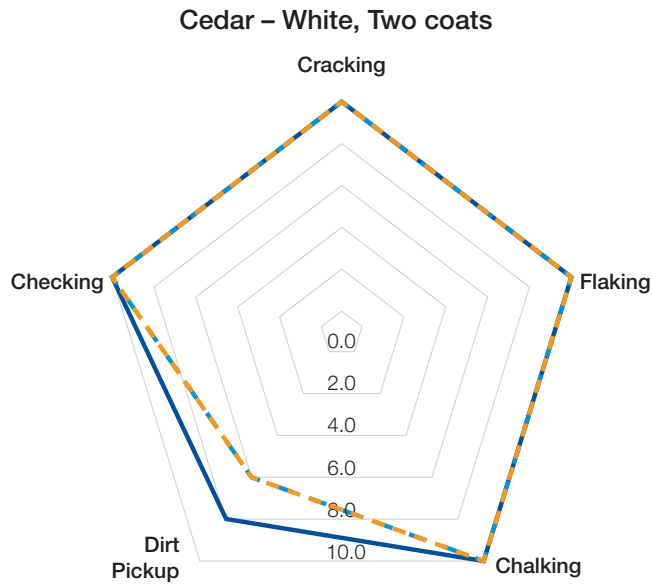
Δ Gloss @ 85° (bars, left axis)

— ΔE (right axis)

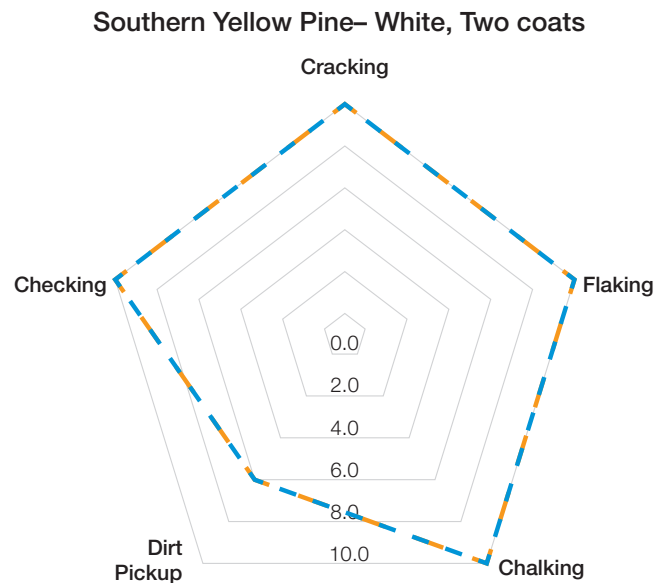
Acronal® PLUS 4240

Natural Weathering

After 36 months of exterior exposure in BASF's Charlotte, NC weathering facility, Acronal PLUS 4240 demonstrates excellent capacity to weather the elements (south facing at 45°).



- Acronal PLUS 4240
- Acronal PLUS 4230
- Competitive Latex 1
- Competitive Latex 2
- Competitive Latex 3





Acronal® PLUS 4240

Formulation Guidelines

Dispersants

The Dispex® line of dispersants are recommended for this product. Hydrophobic dispersants Dispex CX 4320 and Dispex CX 4340 have proven effective, with a good balance of tint strength and performance properties. Tamol® 165 has also been used effectively.

Defoamers

The FoamStar® line of defoamers can be used for Acronal PLUS 4240. Specifically, FoamStar ST 2420 is a well-rounded option for formulating with this dispersion.

Rheology Modifiers

HEUR, HMPE, HASE, and cellulosic rheology modifiers are all compatible with Acronal PLUS 4240. Rheovis® rheology modifiers have resulted in great performance properties at low VOC. Use of Rheovis PE 1331 allows for the formulator to meet required high-shear targets at flat through satin sheens while maintaining balanced low-shear contributions. KU range low-shear targets can be met with the addition of Rheovis PU 1191. Formulations have shown stable viscosities over time using the combination of these two rheology modifiers.

Coalescence

It is recommended for full coalescence, that 5% by weight on polymer solids be used of either low VOC Loxanol® CA 5310 or Loxanol CA 5315.

Acronal® PLUS 4240

Suggested Formulations

Exterior Flat Acronal PLUS 4240

raw materials	lbs	gallons
Water	50.00	15.02
Kronos ⁹ 4311	294.00	6.00
Dispex ² CX 4320	8.00	0.28
FoamStar ² ST 2420	2.00	0.87
Hydropalat ² WE 3320	3.00	0.35
Ammonium Hydroxide (aq.)	1.40	0.19
Proxel ³ BD20	3.00	0.33
Minex ⁴ 4	230.00	10.57
Attagel ² 50	4.00	0.20

Grind for 20 minutes, then add:

Letdown

	lbs	gallons
Water	145.94	17.52
Polyphase ⁷ 663	10.00	1.03
FoamStar ² ST 2420	2.00	0.28
Acronal ² PLUS 4240	365.50	42.14
Velate ⁵ 368	6.00	0.75
Rheovis ² PE 1331	35.00	4.07
Rheovis ² PU 1191	3.50	0.41
Total	1163.34	100

Viscosity (KU)	90-100
Viscosity (ICI)	1.0-1.5
Gloss 85°	<5.0
Weight Solids %	58
Volume Solids %	40.3
PVC %	45.6
VOC g/L	17

Exterior Flat Acronal PLUS 4240 with Zinc Oxide

raw materials	lbs	gallons
Water	50.00	15.02
Kronos ⁹ 4311	294.00	6.00
Dispex ² CX 4320	8.00	0.28
FoamStar ² ST 2420	2.00	0.87
Hydropalat ² WE 3320	3.00	0.35
Ammonium Hydroxide (aq.)	1.40	0.19
Proxel ³ BD20	3.00	0.33
KTPP	1.00	0.05
Minex ⁴ 4	230.00	10.57
ZnO Grade 10110	15.00	0.32
Attagel ² 50	4.00	0.20

Grind for 20 minutes, then add:

	lbs	gallons
Water	141.94	17.04
Polyphase ⁷ 663	10.00	1.03
FoamStar ² ST 2420	2.00	0.28
Acronal ² PLUS 4240	365.50	42.14
Velate ⁵ 368	7.00	0.87
Rheovis ² PE 1331	35.00	4.07
Rheovis ² PU 1191	3.50	0.41
Total	1176.34	100.00

Viscosity (KU)	90-100
Viscosity (ICI)	1.0-1.5
Gloss 85°	<5.0
Weight Solids %	58.7
Volume Solids %	40.6
PVC %	46.1
VOC g/L	20



Acronal® PLUS 4240

Suggested Formulations

Exterior Satin Acronal PLUS 4240

raw materials	lbs	gallons
Water	100.00	12.00
Proxel ³ GXL	2.00	0.21
Ethylene Glycol	8.00	0.86
Ammonium Hydroxide	1.00	0.13
Dispex ² CX 4240	6.00	0.64
FoamStar ² ST 2420	2.00	0.28
Natrosol ¹ 330 Plus	1.00	0.09
Minex ⁴ 7	100.00	4.61
Attagel ² 50	2.00	0.10

Grind for 20 minutes, then add:

Water	88.63	10.64
FoamStar ² ST 2420	2.00	0.28
Texanol ⁵	8.00	1.01
Ti-Pure 6 R 746	330.00	16.99
Acronal ² PLUS 4240	420.00	48.28
Rheovis ² PE 1331	20.00	2.33
Rheovis ² PU 1191	8.00	0.93
Polyphase ⁷ 678	6.00	0.62

Total	1104.63	100.00
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Viscosity (KU)	90 - 95
Viscosity (ICI)	1.5 - 2.0
Gloss 85°	40 - 45
Weight Solids %	53.8
Volume Solids %	37.9
PVC %	33.7
VOC g/L	50



Acronal[®] PLUS 4240

Safety

General

The usual safety precautions when handling chemicals must be observed. These include the measures described in Federal, State and Local health and safety regulations, thorough ventilation of the workplace, good skin care and wearing of protective goggles.

Material Safety Data Sheet

Please refer to the most current version of the Material Safety Data Sheet that can be found on-line at www.basf.us/sds

Storage

Acronal PLUS 4240 should be stored in accordance with the "Handling and Storage of polymer dispersions" brochure. Technical information regarding the storage of BASF polymer dispersion products is available upon request. Product should not be allowed to freeze.

About the Dispersions & Resins Business

The Dispersions & Resins business of BASF develops, produces and markets a range of high-quality resins, additives, colorants and polymer dispersions worldwide. These raw materials are used in formulations for coatings and paints, printing and packaging products, construction chemicals, adhesives, fiberbondings, nonwovens, and paper manufacturing. With a comprehensive product portfolio and extensive knowledge of the industries we serve, our customers benefit from innovative and sustainable solutions to help them advance their formulations through chemistry. For further information about the Dispersions & Resins business in North America, please visit <http://www.basf.us/dpsolutions>

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