

**PRIMAL™ PR-45 ER Acrylic Binder**

For Primer and Top Coat (2-in-1 paint applications)

Regional Product Availability

EMEAI

Product Description

PRIMAL™ PR-45 ER Acrylic Binder is an acrylic binder containing advanced stain blocking technology (e.g. resistance to stains coming from wood tannin or household stains like ink, coffee, etc.), combining excellent priming capability without using ZnO, while maintaining exceptional topcoat properties in mat to semi-gloss formulations. It allows the formulation of solvent free paints.

Characteristics and Benefits

- APEO free*
- All-acrylic, ambient crosslinking polymer
- Exceptional stain blocking performance without using ZnO
- Very good topcoat properties
- Capable of addressing low VOC** regulation
- Formulation latitude from mat to semi-gloss

* APEO and Solvent are not intentionally added and are not knowingly introduced from another raw material

**VOC: Amount in g/L of organic compounds having an initial boiling point less than or equal to 250°C measured at a standard pressure of 101.3 kPa.

Typical Properties

These are typical properties, not to be construed as specifications

Property	Typical Values
Appearance	Milky white liquid
Solids content	48-49%
pH	8.5-9.5
Brookfield LV Viscosity (spindle 3,60 rpm)	< 1000 mPa.s
Minimum Film Formation Temperature	~5 °C
Specific Gravity (wet polymer)	1.06 g/cm ³
Specific Gravity (dry polymer)	1.14 g/cm ³

Formulation Guidelines

Ambient temperature cross-linking technology

PRIMAL™ PR-45 ER Acrylic Binder uses ambient temperature cross-linking chemistry in a one-pack system. Paints formulated with PRIMAL™ PR-45 ER Acrylic Binder will oxidatively cure during and after the latex particles have coalesced to form a film with improved toughness and resistance properties. The binder develops good early film properties which improve during the curing process. Formaldehyde or aldehyde releasing additives will adversely affect the performance of paints based on PRIMAL™ PR-45 ER Acrylic Binder and are not recommended.

Below are some guidelines to help formulators:

Dispersants

Hydrophobic copolymers like OROTAN™ 731A ER Dispersant are suggested for optimal film performance. Polycarboxylic acid pigment dispersants like OROTAN™ N-4045 are also well suited for paints based on PRIMAL™ PR-45 ER Acrylic Binder.

Defoamers

Byk-024 Defoamer was found to give good performance in semi-gloss formulations based on PRIMAL™ PR-45 ER Acrylic Binder.

Rheology Modifiers and Thickeners

Paints based on PRIMAL™ PR-45 ER Acrylic Binder can be thickened with commonly used cellulosic thickeners or associative rheology modifiers. For best film performance with optimal water resistance, HEUR thickeners are recommended. Mid shear viscosity builders like ACRY SOL™ RM-8W or ACRY SOL™ RM-845 Rheology Modifiers combined with high shear viscosity builders like ACRY SOL™ RM-2020E or ACRY SOL™ RM-5000 offer the possibility to develop primers and top coats with good application properties and dry film performance.

Coalescents and co-solvents

PRIMAL™ PR-45 ER has a low minimum film forming temperature so it does not require addition of coalescing agent. However if the paint based on PRIMAL™ PR-45 ER Acrylic Binder is applied in exterior, it is recommended to add about 3 % UCAR™ Filmer IBT or Texanol ester alcohol on polymer solids to ensure optimal film formation in adverse climatic conditions (cold temperatures, humidity).

Extenders and opaque polymer

Any standard extenders, e.g. calcium carbonate, clays, can be used in paints based on PRIMAL™ PR-45 ER Acrylic Binder. The use of ROPAQUE™ Ultra E Organic Opacifier can help reduce the amount of titanium dioxide, thus formulation cost without affecting dry film appearance and resistance characteristics.

Biocides

Although standard in-can preservatives could be used in paint formulations, it is always suggested to test them for compatibility and efficacy. If PRIMAL™ PR-45 ER Acrylic Binder is used in wet rooms, or for exterior coatings it is suggested to use a film preservative.

Formaldehyde or aldehyde releasing additives are not suggested when formulating paints with PRIMAL™ PR-45 ER Acrylic Binder. They can interact with the self cross-linking mechanism present in the binder and adversely affect the performance of paints.

Interior Low VOC Semi-Gloss Formulation

based on PRIMAL™ PR-45 ER Acrylic Binder (PVC 35%) SG-45-35-01

Materials	Kilograms	Liters	PVC
Grind			
Water	65.94	65.94	
OROTAN™ 731A-ER Dispersant	10.71	9.70	
Byk-024 Defoamer	2.00	1.98	
Ti-Pure R-706 Titanium Dioxide	173.20	43.30	15%
Finntalc M-15 Talc	46.76	17.32	6%
Durcal 2 Calcium Carbonate	47.67	17.32	6%
Grind Sub-Total	346.27	155.55	
Let Down			
Added the grind to			
PRIMAL™ PR-45 ER Acrylic Binder	410.08	362.90	
ROPAQUE™ Ultra E Opacifier	46.57	45.44	8%
ACRYSOL™ RM-5000 Thickener	26.82	25.73	
ACRYSOL™ RM-8WE	6.25	6.01	
Water	164	164	
Totals	1000.0	759.64	35%

Paint Properties

Volume Solids	38%
Weight Solids	48%
Density	1.230
pH	~8.9
Dispersant (active based on total Powders)	1.0%

Viscosities

Krebs Stormer (KU)	~118
ICI Cone & Plate (Poise)	~1.4

Handling Precautions

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

Storage

Store products in tightly closed original containers at temperatures recommended on the product label.

Disposal Considerations

Dispose in accordance with all, local or national regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local or national regulations. Contact your Dow Coating Materials Technical Representative for more information.

Chemical Registration

Many countries within EMEA require the registration of chemicals, either imported or produced locally, prior to their commercial use. Violation of these regulations may lead to substantial penalties imposed upon the user, the importer or manufacturer, and/or cessation of supply. It is in your interests to ensure that all chemicals used by you are registered. Dow does not supply unregistered products unless permitted under limited sampling procedures as a precursor to registration.

Note on EMEA Product Line

Product availability and grades vary throughout the countries in the EMEA area. Please contact your local Dow Coating Materials representative for further information and samples.

Product Stewardship

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