



PRIMAL™ AC-337 DS Emulsion

Versatile Pure Acrylic Binder

Regional Product Availability

Europe

Product Description

PRIMAL™ AC-337 DS Acrylic Emulsion is an APEO-free* pure acrylic emulsion designed for high performance coatings in a variety of exterior and interior applications. The binder composition provides hydrophobic film, leading to excellent water resistance and reduced liquid water permeability. The pure acrylic backbone and optimized balance of flexibility and hardness level of PRIMAL™ AC-337 DS ensure excellent exterior durability with high standard of gloss and tint retention, as well as crack, chalk and alkali resistance.

Application

PRIMAL™ AC-337 DS exhibits excellent adhesion to wood and substrates previously coated with alkyd paints. PRIMAL™ AC-337 DS demonstrates wide formulation latitude for interior and exterior applications. PRIMAL™ AC-337 DS is suggested for wood cladding paints and semi-transparent wood stains and offers very good performance in thin film masonry coatings. PRIMAL™ AC-337 DS is compatible with alkyd emulsions.

PRIMAL™ AC-337 DS allows the formulation of premium interior paints for broad walls or kitchen and bathrooms with excellent film resistance.

Characteristics

- Excellent exterior durability
- Very good wet and dry adhesion
- Excellent rheology modifier response
- Excellent water resistance
- Very good gloss and color retention
- Good dirt pick up resistance
- Very good crack resistance

Typical Properties

These are typical properties, not to be construed as specifications

Property	Typical Values
Appearance	Milky white liquid
Solids content %	45 – 46%
pH	8.5 – 9.5
Brookfield LV viscosity (Spindle 3, 60 rpm)	<1500 mPa.s
Minimum film formation temperature	~14°C
Specific gravity (wet polymer)	1.06 g/cm ³
Specific gravity (dry polymer)	1.13 g/cm ³

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

Formulation Guidelines

PRIMAL™ AC-337 DS Acrylic Emulsion is a very versatile pure acrylic binder that can be used in high quality interior and exterior coatings to be applied on walls or wood.

Below are some guidelines to help formulators:

Dispersants

OROTAN™ 1124 Dispersant was found to give good performance in semi-gloss paint formulations based on PRIMAL™ AC-337 DS Acrylic Emulsion. The versatile and effective OROTAN™ 731A ER is also an excellent choice.

Defoamers

In all systems, the best results were achieved by using DOWSIL™ 108F Additive in the grind and in the let-down. DOWSIL™ 8590 Additive in the grind combined with DOWSIL™ 74 Additive in the let-down was also found to provide efficient defoaming performance.

Rheology Modifiers and Thickeners

PRIMAL™ AC-337 DS Acrylic Emulsion has been designed to give good response to associative thickeners.

HEUR thickeners like ACRY SOL™ RM-5000 or ACRY SOL™ RM-2020E Rheology Modifiers were found to be the most suitable to achieve excellent flow properties. If higher low shear viscosity is required, the addition of low level of ACRY SOL™ RM-8W/ ACRY SOL™ RM-8WE or ACRY SOL™ RM-855 can be done without affecting flow and application performance. When more in-can structure is desired, the rheological profile may be modified by adding small amounts of ACRY SOL™ SCT-275 or ACRY SOL™ RM-725.

PRIMAL™ AC-337 DS in combination with ACRY SOL™ RM-12W/ ACRY SOL™ RM-12WE offers the opportunity to formulate “thixotropic like” coatings, enabling to formulate translucent wood stains with non- drip properties.

PRIMAL™ AC-337 DS can also be formulated with HASE thickeners like ACRY SOL™ RM-55.

Coalescents and Co-solvents

A water immiscible coalescent like UCAR™ Filmer IBT at a level of 9 to 10% on binder solids is highly recommended, ensuring good film formation, acceptable block resistance and excellent exterior durability.

We recommend only low levels of co-solvent like propylene glycol in the formulations, because this is sufficient to provide good flow and open-time

Extenders and Opaque Polymer

The use of ROPAQUE™ Ultra E SLF Organic Opacifier can help reduce the amount of titanium dioxide, thus formulation cost without affecting dry film appearance and resistance characteristics.

PRIMAL™ AC-337 DS Acrylic Emulsion formulated with a combination of Micro Mica and ROPAQUE™ Ultra E SLF gives a very good balance of (low) moisture up-take and (high) water vapour permeability, which contributes to the good protection of exterior wooden constructions. When formulating translucent stains, we recommend the addition of pre-dispersed transparent iron oxide pastes to give the required shade

High Build Wood Stain

Based on PRIMAL™ AC-337 DS Acrylic Emulsion

Material Name	Kilograms	Liters
PRIMAL™ AC-337 DS Acrylic Emulsion	647.25	614.61
DOWSIL™ 108F Additive	2.00	2.00
Water	304.80	304.80
UCAR™ Filmer IBT Coalescent Solvent	26.50	27.90
ACRY SOL™ RM-725 Rheology Modifier	1.77	1.71
ACRY SOL™ RM-12WE Rheology Modifier	6.88	6.59
Rocima MB2X Biocide	2.00	1.77
Bioban 350 Polymer Shielded Technology	8.80	8.00
Totals	1,000.00	967.38

Paint Properties

Weight Solids:	29%
Density:	1.03
pH:	~8.1
Coalescent (based on polymer solids):	9.0%

Viscosities

Krebs Stormer (KU):	60-64
ICI Cone & Plate (Poise):	0.25 – 0.35
Brookfield (spindle 4 / 60 rpm) (mPa.s)	2450-2650

Medium Build Woodstain

Based on PRIMAL™ AC-337 DS Acrylic Emulsion

Material Name	Kilograms	Liters
PRIMAL™ AC-337 DS Acrylic Emulsion	483.19	458.82
DOWSIL™ 108F Additive	2.00	2.00
Water	466.19	466.19
UCAR™ Filmer IBT Coalescent Solvent	19.79	20.83
ACRY SOL™ RM-725 Rheology Modifier	6.88	6.64
ACRY SOL™ RM-12WE Rheology Modifier	11.15	10.69
Rocima MB2X Biocide	2.00	1.77
Bioban 350 Polymer Shielded Technology	8.80	8.00
Totals	1,000.00	974.94

Paint Properties

Weight Solids:	22%
Density:	1.03
pH:	~8.1
Coalescent (based on polymer solids):	9.0%

Viscosities

Krebs Stormer (KU):	69-73
ICI Cone & Plate (Poise):	0.35-0.45
Brookfield (spindle 4 / 60 rpm) (mPa.s)	1750-1950

Low Build Woodstain
Based on PRIMAL™ AC-337 DS Acrylic Emulsion

Material Name	Kilograms	Liters
PRIMAL™ AC-337 DS Acrylic Emulsion	245.00	232.60
DOWSIL™ 108F Additive	2.00	2.00
Water	683.70	683.70
UCAR™ Filmer IBT Coalescent Solvent	9.00	9.50
ACRYSOL™ RM-5000 Rheology Modifier	17.00	16.30
ACRYSOL™ RM-725 Rheology Modifier	32.50	31.16
Rocima MB2X Biocide	2.00	1.77
Bioban 350 Polymer Shielded Technology	8.80	8.00
Totals	1,000.00	985.03

Paint Properties

Weight Solids:	12%
Density:	1.010
pH:	~8.7
Coalescent (based on polymer solids):	8.1%

Viscosities

Krebs Stormer (KU):	55-60
ICI Cone & Plate (Poise):	0.2-0.3
Brookfield (spindle 2 / 30 rpm) (mPa.s)	6400-7800
Brookfield (spindle 2 / 6 rpm) (mPa.s)	8500-10500

Exterior House Paint Formulation
Based on PRIMAL™ AC-337 DS Acrylic Emulsion (PVC 35%)

Material Name	Kilograms	Liters	PVC
Grind			
Water	83.00	83.00	
Propylene glycol	25.00	24.10	
OROTAN™ 731A ER Dispersant	11.20	10.10	
DOWSIL™ 108F Additive	1.00	1.00	
Tioxide TR-92 Titanium pigment	180.00	45.00	15.1%
Micro Mica W1 Extender	100.00	35.50	11.9%
<i>Grind Sub-total</i>	<i>400.20</i>	<i>198.70</i>	
Let Down			
PRIMAL™ AC-337 DS Acrylic Emulsion	480.00	445.80	
ROPAQUE™ Ultra E Opaque Polymer	47.00	45.90	8.0%
UCAR™ Filmer IBT Coalescent Solvent	20.93	22.01	
DOWSIL™ 108F Additive	1.00	1.00	
ACRYSOL™ RM-5000 Rheology Modifier	11.00	10.60	
Water	30.43	30.43	
Rocima MB2X Biocide	1.94	1.72	
Bioban 350 Polymer Shielded Technology	7.50	6.82	
Totals	1000.00	762.98	

Paint Properties

Volume Solids:	39%
Weight Solids:	52%
Density:	1.290
pH:	~8.7
Coalescent (based on polymer solids):	9.0%
Calculated VOC* content (g/L of wet paint):	32.8

Viscosities

Krebs Stormer (KU):	84 – 88
ICI Cone and Plate (Poise):	1.2 – 1.4
Brookfield (spindle 4 / 60 rpm) (mPa.s):	1800 – 2200

Film Properties

Gloss 60°85°:	14 / 35
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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.

Exterior House Paint Formulation
Based on PRIMAL™ AC-337 DS Acrylic Emulsion (PVC 23%)

Material Name	Kilograms	Liters	PVC
Water	71.87	71.87	
OROTAN™ 731A ER Dispersant	9.41	8.46	
DOWSIL™ 108F Additive	1.00	1.00	
Kronos 2360 Titanium pigment	197.38	49.35	18.0%
Finntalc M15 Extender	37.96	13.47	5.0%
<i>Grind Sub-total</i>	<i>317.62</i>	<i>144.15</i>	
Let Down			
PRIMAL™ AC-337 DS	535.92	497.74	
UCAR™ Filmer IBT	21.95	23.08	
DOWSIL™ 108F	1.00	1.00	
ACRY SOL™ RM-2020E	21.20	20.42	
ACRY SOL™ RM-845	2.33	2.24	
Water	90.88	90.88	
Rocima MB2X	1.60	1.42	
Bioban 350	7.50	6.82	
Totals	1,000.00	787.75	23.0%

Paint Properties

Volume Solids:	35%
Weight Solids:	47.8%
Density:	1.269
pH:	~8.7
Coalescent (based on polymer solids):	9.0%
Calculated VOC* content (g/L of wet paint):	0

Viscosities

Krebs Stormer (KU):	118-122
ICI Cone and Plate (Poise):	1.6-1.8
Brookfield (spindle 4 / 60 rpm) (mPa.s):	8500 - 9500
Brookfield (spindle 4 / 6 rpm) (mPa.s):	17500 - 20000

Film Properties

Gloss	
60°/85°:	36/ 62

Red Exterior House Paint Formulation
Based on PRIMAL™ AC-337 DS Acrylic Emulsion (PVC 35%)

Material Name	Kilograms	Liters	PVC
Grind			
Water	122.0	122.00	
Propylene glycol	25.00	24.10	
OROTAN™ 731A ER Dispersant	13.2	12.00	
DOWSIL™ 108F Additive	1.00	1.00	
Bayferrox 130M Pigment	120.0	24.00	8.4%
Micro Mica W1 Extender	150.0	53.20	18.6%
<i>Grind Sub-total</i>	431.2	236.30	
Premix			
Water	11.00	11.00	
DOWSIL™ 108F Additive	1.00	1.00	
UCAR™ Filmer IBT Coalescent Solvent	20.13	21.20	
Let Down			
PRIMAL™ AC-337 DS Acrylic Emulsion	462.0	438.70	
ROPAQUE™ Ultra E Opaque Polymer	45.00	43.90	8.0%
ACRYSOL™ RM-5000 Rheology Modifier	13.00	12.50	
Water	7.57	7.57	
Rocima MB2X Biocide	1.60	1.42	
Bioban 350	7.50	6.82	
Totals	1000.0	780.41	35.0%

Paint Properties

Volume Solids:	38%
Weight Solids:	50%
Density:	1.281
pH:	~8.7
Dispersant (active based on total powders):	1.2%
Coalescent (based on polymer solids):	9.0%
Calculated VOC* content (g/L of wet paint):	32.1

Viscosities

Krebs Stormer (KU):	90 – 100
ICI Cone & Plate (Poise):	1.4 – 1.8

Film Properties

Gloss 60°85°:	4/9
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Interior Wall Paint Formulation

Based on PRIMAL™ AC-337 DS Acrylic Emulsion (PVC 42%)

Material Name	Kilograms	Liters	PVC
Grind			
Water	69.23	69.23	
OROTAN™ 731A ER Dispersant	11.60	10.51	
DOWSIL™ 8590 Additive	1.48	1.48	
Tioxide R-TC-90 Titanium Pigment	195.21	48.80	18.04%
Satintone 5HB Extender	26.07	9.91	3.67%
Durcal 2 Extender	68.81	25.00	9.24%
<i>Grind Sub-total</i>	<i>372.40</i>	<i>164.93</i>	<i>30.95%</i>
Let Down			
PRIMAL™ AC-337 DS Acrylic Emulsion	384.63	365.24	
ROPAQUE™ Ultra E Opaque Polymer	63.35	61.81	11.61%%
UCAR™ Filmer IBT Coalescent Solvent	17.46	18.38	
DOWSIL™ 74 Additive	1.45	1.45	
ACRYSOL™ RM-2020E Rheology	25.71	24.66	
Water	124.70	124.70	
ACRYSOL™ RM-845 Rheology Modifier	1.20	1.15	
Rocima MB2X Biocide	1.60	1.42	
Bioban 350 Polymer Shielded	7.50	6.82	
Totals	1000.00	771.17	42.56%

Paint Properties

Volume Solids:	35.08%
Weight Solids:	48.41%
Density:	1.297
pH:	~8.5

Dispersant (active based on total powders):	1.2%
Coalescent (based on polymer solids):	9.0%
VOC* content (g/L of wet paint):	0

Viscosities

Krebs Stormer (KU):	100 – 110
ICI Cone & Plate (Poise):	1.2 – 1.6

Film Properties

Gloss (100 µm, on glass)	
Gloss 60/85°:	10 / 40
Koenig hardness (100 µm, on glass), sec	
1 day, 7 days	40 / 50

(*) 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.

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 (+1°C to +49°C). Do not store in direct sunlight.

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 EMEA1 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 EMEA1 Product Line

Product availability and grades vary throughout the countries in the EMEA1 area. Please contact your local Dow Coating Materials representative for further information and samples.

Product Stewardship

Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

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