Technical Data Sheet

PRIMAL™ EP-2596 Acrylic Polymer

For gloss to semi-gloss paints with thixotropic capability

Regional Product Availability

EMEAI

Product Description

PRIMAL™ EP-2596 is a pure acrylic binder designed for gloss and semi-gloss paints, with thixotropic capability. This capability permits product differentiation on the basis of in-can structure, high brush loading and non-drip rheology, combined with a good balance of flow, film build and sag resistance.

Application

PRIMAL™ EP-2596 is suitable for interior and exterior trim paints and general façade applications. Its exterior durability has been proven over many years, based on a large number of panel exposures and practical site trials.

Key Features

- APEO free*
- Low VOC content formulations*
- Can be formulated for thixotropic rheology
- Good application properties
- Very good gloss potential

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

Benefits

- Very good exterior durability on wood substrate
- Good block resistance
- Good adhesion on alkyds

Typical Properties

These are typical properties, not to be construed as specifications

Property	Typical Values
Appearance	Milky white liquid
Solids	45.5 – 46.5%
pH	8.0 – 8.5
Brookfield LV Viscosity (spindle 3,60 rpm)	< 1500 mPa.s
Minimum Film Formation Temperature	~ 18 °C
Specific gravity (wet polymer)	1.06 g/cm^3
Specific gravity (dry polymer)	1.13 g/cm^3

Formulation Guidelines

PRIMAL™ EP-2596 Acrylic Polymer can be formulated with thixotropic properties to give in-can structure, high brush loading and non-drip rheology.

Below are some guidelines to help formulators:

Dispersants
OROTAN™ 681 Dispersant was found to give the best balance of gloss development, flow, re-coat-ability, open time and block resistance. OROTAN™ 1124 is also suitable for gloss and semi-gloss formulations.

Defoamers
Good results have been obtained with BYK-022 or Tego Foamex 1488 demonstrating high gloss and good compatibility.

Rheology Modifiers & Thickeners
In order to achieve optimum flow without compromising other properties, we suggest the use of non-ionic associative rheology modifiers, such as ACRYSOL™ RM-8W, ACRYSOL™ RM-2020E and ACRYSOL™ RM-5000.
The use of anionic associative rheology modifiers in combination with PRIMAL™ EP-2596 may give reduced flow, re-coat-ability and alkali resistance.
If a degree of gel structure and thixotropy is required, the use of chelating agents such as Tytan CX-100 is suggested. Depending on the quantity added, the gel structure can vary. We suggest an upper level of 0.3% on total formulation.
When chelating agents are used, the suggested volume solids of paint formulations based on PRIMAL™ EP-2596 should be in the range of 33–35%. At higher volume solids the build-up of gel structure on ageing might not be acceptable.

Coalescents and co-solvents
DOWANOL™ DPnB glycol ether at a level of 9-11% on polymer solids is highly suggested ensuring good film formation. Texanol or UCAR™ Filmer IBT can also be used at similar level with PRIMAL™ EP-2596. Propylene glycol addition is suggested to obtain the best balance of flow and open time

Extenders and opaque polymer
PRIMAL™ EP-2596 has been developed for the formulation of gloss and semi-gloss paints. In semi-gloss formulations, any standard extenders, e.g. calcium carbonate, clays, can be used.
The use of DOW organic opacifier ROPAQUE™ Ultra E polymer can help reducing the amount of titanium dioxide, thus formulation cost without affecting dry film appearance and resistance characteristics.
Like with conventional binders, the advantages of ROPAQUE™ Ultra E in terms of durability and dirt pick up resistance are noticeable.

Biocides
As in can preservative we suggest the use of ROCIMA 564 Biocide.
For the film protection of exterior coatings, we suggest the use of ROCIMA 350.

Interior/Exterior Gloss Formulation with Thixotropic Properties. Based on PRIMAL™ EP-2596 Acrylic Polymer (PVC 19%)

Material Name	Kilograms	Liters	PVC
Grind			
Water	10.0	10.0	
Propylene Glycol	50.0	48.3	
OROTAN™ 681 Dispersant (35%)	12.0	11.0	
BYK-022[1]	2.5	2.5	
Ti-Pure R-706[1]	212.0	53.0	18.7%
Grind Sub-total	**286.5**	**124.8**	
Premix			
Ethyl Carbitol	20.0	20.2	
DOWANOL™ DPNB glycol ether	13.0	14.2	
Let Down			
PRIMAL™ EP-2596 (46%)	560.0	528.3	
ACRYSOL™ RM-2020E (20%)	44.0	42.2	
ACRYSOL™ RM-8W	8.0	7.7	
TRITON™ GR-7M[3] Surfactant	1.0	1.0	
Water	65.0	65.0	
Tytan CX-100[4]	2.5	2.7	
Totals	**1,000.0**	**806.1**	**18.7%**

Paint Properties	
Volume Solids	35%
Weight Solids	47%
Density	1.242
pH	~ 8.7
Dispersant (active based on total powders)	2,0%
Coalescent (based on polymer solids)	5,0%
Calculated VOC* content (g/L of wet paint)	107
Viscosities	
Krebs Stormer (KU)	110 – 120
ICI (Poise)	1.6 – 1.8
ICI Gel strength after 1 day (g/cm)	95 – 105

Film Properties	
Gloss , % (100 µm, on glass)	
Gloss 20°	55 – 57
Gloss 60°	81 – 83
Sheen 85°	96 – 98

Suppliers
1 Altana/BYK Chemie GmbH, Wesel, Germany
2 Chemours, Geneva, Switzerland
4 Borica Specialty Chemicals, UK

(*) 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.

Interior/Exterior Gloss Formulation with Thixotropic Properties.

Based on PRIMAL™ EP-2596 Acrylic Polymer (PVC 37%)

Material Name	Kilograms	Liters	PVC
Grind			
Water	55.9	55.9	
Propylene Glycol	47.8	46.1	
OROTAN™ 1124 (50%) Dispersant	5.3	4.5	
BYK-022[1]	3.8	3.8	
Tioxide RCT90[2]	165.8	40.4	15.4%
Finntalc M-15[3]	28.7	10.6	4.0%
Durcal 2[3]	38.2	13.9	5.3%
Grind Sub-total	**345.5**	**175.2**	
Premix			
Water	28.7	28.7	
DOWANOL™ DPnB glycol ether	11.5	12.6	
Let Down			
PRIMAL™ EP-2596 (46%)	406.4	383.4	
ROPAQUE™ Ultra-E (30%) Polymer	63.1	61.6	12.3%
ACRYSOL™ RM-2020E (20%)	38.2	36.6	
ACRYSOL™ RM-8W (21.5%)	8.1	7.8	
TRITON™ GR-7M[4] surfactant	1.0	1.0	
Water	95.0	95.0	
Tytan CX-100[5]	2.5	2.7	
Totals	**1.000.0**	**804.6**	**37.0%**

Paint Properties	
Volume Solids	33%
Weight Solids	44%
Density	1.241
pH	~ 8.7
Dispersant (active based on total powders)	1,0%
Coalescent (based on polymer solids)	5,5%
Calculated VOC* content (g/L of wet paint)	74
Viscosities	
Krebs Stormer (KU)	100 – 120
ICI (Poise)	1.3 – 1.8
ICI Gel strength after 1 day (g/cm)	80 – 90

Suppliers
1 Altana/BYK Chemie GmbH, Wesel, Germany
2 Huntsman Tioxide, London, UK
3 Omya UK Ltd, Dorking, UK
5 Borica Specialty Chemicals, UK

(*) 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.

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 EMEAI 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 EMEAI Product Line

Product availability and grades vary throughout the countries in the EMEAI 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.

Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

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