EVOQUE™ 1242 Polymer

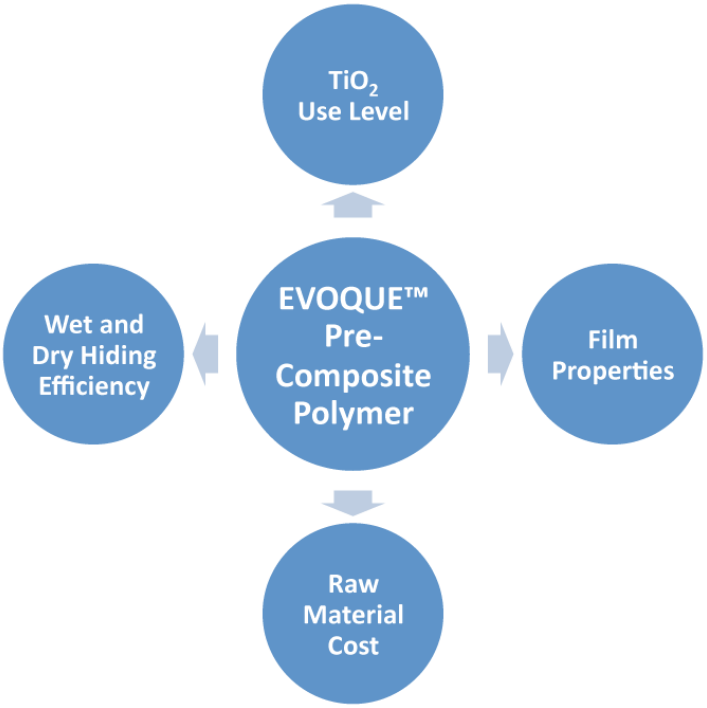
100% Acrylic Polymer based on EVOQUE™ Pre-Composite Polymer Technology
For Interior / Exterior Flat to Gloss Architectural Coatings

Regional Product Availability

- Asia-Pacific

Description

EVOQUE™ Pre-Composite Polymer Technology is a technology that offers improvements in titanium dioxide (TiO_2) hiding efficiency and paint film barrier properties through the development of an engineered polymer-pigment composite. During the paint making process, the pre-composite polymer combines with TiO_2 to form a polymer-pigment composite which improves both the wet and dry hiding efficiency of the pigment. The hiding improvement gives formulators the option of either using less TiO_2 or increasing the hiding in their formulations. In addition, barrier performance properties of the film are maintained or improved. Formulations can be developed which emphasize the performance improvements at similar cost or maintain performance at reduced cost while taking advantage of the increase in TiO_2 hiding efficiency.



EVOQUE Pre-Composite Polymer Technology works with most TiO_2 slurry and dry grades and is compatible with other binder technologies. In addition, this technology works well with ROPAQUE™ Opaque Polymers, offering an additive effect for improved hiding efficiency and reduced dependence on TiO_2.

EVOQUE™ 1242 Polymer is a 100% acrylic pre-composite polymer emulsion, offering the benefit of pre-composite polymer technology. EVOQUE 1242 Polymer has proprietary cross-linking designed for premium exterior paints with a high level of dirt pick-up resistance. Based on a 100% acrylic polymer backbone, EVOQUE 1242 Polymer offers excellent exterior durability. It is well suited for tropical climates.

Representing a major improvement over conventional thermoplastic acrylic technology, EVOQUE 1242 Polymer exhibits outstanding exterior dirt pick-up resistance, excellent mechanical stability and is most suitable for gloss, semi-gloss, sheen and below-CPVC (Critical Pigment Volume Concentration) flat exterior masonry paints.

EVOQUE 1242 was developed without the introduction of Alkyl Phenyl Ethoxylate (APEO)(1) surfactants and without formaldehyde or formaldehyde generators(2) to address stringent environmental standards.

Key Features

- Improved TiO_2 dispersion in the paint film
- Excellent binding capability to pigment
- Enhanced film formation property
- Excellent dirt pick-up resistance
- Wide formulation latitude
- APEO-free(1)
- No added Formaldehyde or Formaldehyde generators(2)

Benefits

EVOQUE™ 1242 Polymer offers many performance attributes. Below is a list of some of the improvements seen in our laboratory testing over a wide range of formulations encompassing whites and pastels with various binder chemistries.

- **Improved Hiding Efficiency**

1) Improved TiO_2 efficiency for both wet and dry hiding
2) Reduced raw material cost by decreasing TiO_2 use at equal hiding

- **Improved Barrier Properties**

1) Stain resistance and removal
2) Tannin block
3) Corrosion resistance
4) Efflorescence resistance
5) Dirt pick-up resistance

(1) Manufactured without the use of Alkyl Phenyl Ethoxylate surfactants.
(2) Formaldehyde is a ubiquitous material in our environment. Currently there is no accepted regulatory or industry definition of "Formaldehyde-Free." Therefore, we purposely refrain from using the term "Formaldehyde-Free." However, for EVOQUE™ 1242 Polymer, we do not intentionally add Formaldehyde or Formaldehyde generators.

Typical Properties

(These properties are typical but do not constitute specifications).

Property	Typical Values
Appearance	Opaque, white to off-white liquid
Solids, by weight, %	45.5
Density, wet, (g/ml)	1.07
pH	7.8
Minimum Film Forming Temperature (± 2°C)	14
Glass Transition Temperature, Tg (± 2°C)	23
Viscosity (Brookfield LV #2, 60 rpm, 25 °C), cps	< 500

How the Technology Works

EVOQUE™ Pre-Composite Polymer Technology introduces a new class of material in paint formulating. To fully understand this technology, some terminology is needed.

- **Pre-Composite Polymer:**
  A film forming polymer, which is specifically designed to strongly interact with the TiO_2 surface, allowing the particles to remain attached forming a composite structure.
- **Polymer-Pigment Composite:**
  A combination of TiO_2 and pre-composite polymer, which enhances the hiding performance of TiO_2 and the barrier properties of the binder
- **Let Down Binder:**
  The binder used in the final let down. Usually it is the binder from original formulation, or the pre-composite polymer can also be used in the let down.

As seen in Figure 1, the resulting polymer-pigment composite consists of the TiO_2 pigment particle surrounded by pre-composite particles. This particle morphology offers two valuable improvements in performance.

- Improved wet and dry hiding by better distribution of TiO_2
- Improved film barrier properties by isolating the TiO_2 surface and minimizing the interaction between TiO_2 particles. See Figure 2

The increase in TiO_2 hiding efficiency can be used in three ways.

- Reduce TiO_2 use levels at equal hiding
- Provide improved hiding at equal TiO_2 use level
- Provide greater hiding at a given level of TiO_2

The composite is best prepared by adding the TiO_2 dispersion or slurry to the pre-composite polymer with good agitation. Within a few minutes, the strong interaction between pigment and polymer particles begins to form the desired composite particles.

Figure 1. Simulation of Composite and CRYO-SEM Micrograph of Composite:

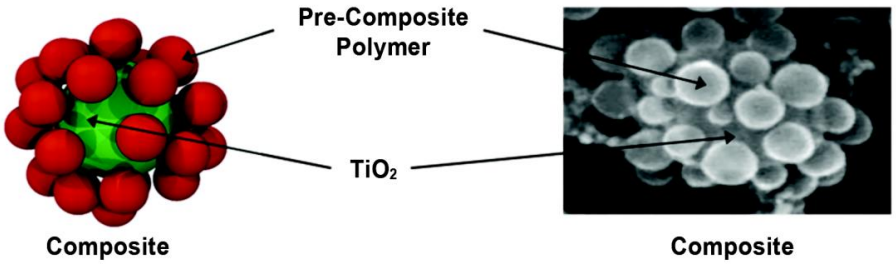
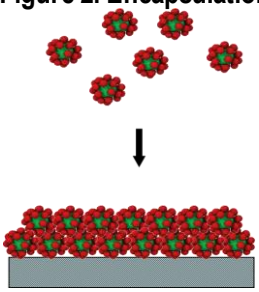


Figure 2. Encapsulation of TiO_2 within the latex particle matrix.



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

Dispose in accordance with all local, state (provincial) and federal 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, state (provincial) and federal regulations. Contact your Dow Coating Materials Technical Representative for more information.

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Note on Asia-Pacific Product Line

Product availability and grades vary throughout the countries in Asia-Pacific. 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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