ROPAQUE™ ULTRA Opaque Polymer
For The Most Efficient Dry Hiding

Regional Product Availability

- North America

Description

ROPAQUE Ultra Opaque Polymer expands the boundaries of light scattering technology, providing the most efficient dry hiding in interior and exterior coatings. Additionally, this non-film-forming synthetic pigment is specially engineered to improve the economics of waterborne coatings while maintaining coating performance.

Like its predecessors, ROPAQUE Ultra Opaque Polymer is a hollow-sphere polymeric pigment that allows paint manufacturers to reduce the raw material cost of their formulations with no performance penalties. ROPAQUE Ultra and ROPAQUE™ Ultra E are the most efficient products in the ROPAQUE Opaque Polymer product family. The only difference between ROPAQUE Ultra and ROPAQUE Ultra E is the neutralizer. ROPAQUE™ Ultra is neutralized with ammonia, and ROPAQUE Ultra E is neutralized with sodium hydroxide.

In addition to providing the most efficient dry-hiding properties, ROPAQUE Ultra Opaque Polymer offers wide range benefits in interior and exterior paint formulations.

Advantages

- Significantly increased light scattering efficiency while maintaining paint performance
- Greater cost savings while providing equal hiding

Typical Physical Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Unit</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent Solids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wet</td>
<td></td>
<td>30.0</td>
</tr>
<tr>
<td>Volume</td>
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<td>52.1</td>
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<tr>
<td>pH</td>
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<td>8–8.7</td>
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<tr>
<td>Density, lbs/gal</td>
<td>Wet</td>
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<tr>
<td></td>
<td>Dry</td>
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<tr>
<td>Bulking Value, gal/lb</td>
<td>Wet</td>
<td>0.117</td>
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<tr>
<td></td>
<td>Dry</td>
<td>0.203</td>
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<tr>
<td>Viscosity, cP (60 s⁻¹; #2 Spindle)</td>
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<td>&lt;500</td>
</tr>
<tr>
<td>Average Particle Size, Microns</td>
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<td>0.40</td>
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</table>
Introducing ROPAQUE™ Ultra in Conventional Paints below CPVC

The addition of ROPAQUE Ultra Opaque Polymer to conventional paints allows the paint manufacturer to reduce the initial level of TiO₂ and provide significant cost savings with equal properties. Because ROPAQUE Ultra Opaque Polymer has a comparatively low binder demand, the total PVC can be slightly increased without sacrificing paint performance.

The extender levels may need to be rebalanced to adjust gloss by adjusting the ratio of large and small particle size extenders, and the water level and thickener may need to be adjusted to keep volume solids and viscosity constant.

Dow has developed computer programs specifically to make it easy to reformulate paints with ROPAQUE Ultra Opaque Polymer.

Replacing ROPAQUE™ Op-96 with ROPAQUE Ultra

For Equal Hiding and Better Economics
In below CPVC Paints, we recommend substituting ROPAQUE Ultra Opaque Polymer for ROPAQUE OP-96 on a PVC basis using the following protocol:

For every 10 PVC of ROPAQUE™ OP-96 Opaque Polymer, replace the ROPAQUE OP-96 with 10.9 PVC of ROPAQUE Ultra and remove 0.9 PVC of TiO₂.

Example:

\[
PVC \text{ of Ultra} = [PVC \text{ of OP-96} \times 1.09]
\]

New PVC of TiO₂ = Old PVC TiO₂ – (PVC of Ultra – PVC of OP-96)

In above CPVC, we recommend the replacement of ROPAQUE OP-96 Opaque Polymer on an equal PVC basis.

For Improved Hiding
In below CPVC formulations, improved hiding can be achieved by replacing ROPAQUE™ OP-96 Opaque Polymer with an equal PVC of ROPAQUE Ultra. Since all other ingredient levels remain the same, the formulation cost will not be affected, but a higher hiding coating results.

Binders

Exterior and Interior Applications

Exterior Applications
Over the years, Dow chemists have compiled extensive data confirming that the use of ROPAQUE Opaque Polymer has no adverse effect on the durability of latex paints.

In tinted paints, experience has shown that formulations containing ROPAQUE Opaque Polymer exhibit a slight performance advantage in tint retention.

Interior Applications
The lower levels of TiO₂ and extender in paints containing ROPAQUE™ Opaque Polymer provide less loose particles available to abrade the paint film.

The hydrophobicity of ROPAQUE Opaque Polymer may also help make the paint film less water sensitive. The overall effect improves washability.

Interactions with Other Paint Ingredients

The hiding properties of ROPAQUE Ultra Opaque Polymer depend on the integrity of the hollow sphere in the paint film. All ROPAQUE Opaque Polymers can be affected by certain solvents, plasticizers, and surfactants especially those with a significant aromatic content. These materials can soften the polymer shell and cause the collapse of the spheres during film formation. Alcohol-based coalescents and glycols are much less of an issue and can be used up to 75 lbs. per 100 gallons.
Handling and Storage

As with most emulsion polymers, some special storage and handling techniques should be observed for ROPAQUE™ Opaque Polymers.

Surfaces that will be in contact with ROPAQUE® Opaque Polymers
Avoid using mild steel, iron, copper, brass, bronze, aluminum or zinc materials that could contact the ROPAQUE Opaque Polymers upon transfer and in storage. Avoid using surfaces that enable the polymer to wick out, as the wicking process causes the development of nodules of hard materials that grows out from these areas and eventually drop into the polymer. Examples of materials that could result in wicking are old fiberglass tanks with exposed glass fibers, a coated tank with part of the coating broken, and drums with pinholes in the lining.

Contamination
Shared transfer lines and other components should be flushed with water before they are used for ROPAQUE Opaque Polymers. Contact with concentrated glycols, surfactants and acid materials, could cause gelling. Compatibility with all new materials should be checked routinely.

Filtration and Pumping
Exposure of Opaque Polymer to high shear will cause mechanical breakdown and polymer build up. Examples of high shear situations include pumping through small mesh filters at high flow rates and use of pumps with close tolerances. ROPAQUE™ Opaque Polymers are dilatant products and can blind small pore filters. For off loading, a 400 micron filter should be adequate. When filtering with absorbent elements, pre-wetting the element reduces binding. Cartridge filters and bag filters with needle punched filter bags are examples of filters with absorbent elements.

Foam
Free fall during unloading should be avoided since it is a prime cause of foam in emulsion products such as ROPAQUE Opaque Polymers. To prevent foaming, storage tanks should be filled from the bottom or through a dip pipe that extends down into the tank below liquid level.

Bulk Storage
Intermittent agitation during bulk storage (approximately 15 minutes every 12 hours) is recommended for controlling sedimentation. A two-inch recirculating closed loop, using a sliding van design, diaphragm type, or other low-shear pump to transfer material, is preferred to a top-entering agitator. The recirculating loop should discharge below the liquid level of the polymer to avoid foam generation.

Consistent Product Quality

To maintain the unique performance features of ROPAQUE Ultra Opaque Polymer in paint formulations, Dow has established a sophisticated quality management system which minimizes variation in the production process and seeks continuous improvement in the system. The use of global Quality Control Systems (QCS), Statistical Quality Control (SQC), and Product and Process Quality Measurement (PPQM) ensures the consistency of ROPAQUE Ultra’s quality and performance no matter where or when it is produced in our global locations.
**Health and Safety Information**

ROPAQUE™ Opaque Polymer is non-toxic in single acute oral, dermal, and inhalation exposure tests. Without proper safety precautions, it can be a mild skin and eye irritant.

Dow Material Safety Data Sheets (MSDS) contain pertinent information that you may need to protect your employees and customers against any known health or safety hazards associated with our products.

Under the OSHA Hazard Communication Standard, workers must have access to and understand MSDS on all hazardous substances to which they are exposed. Thus, it is important that you provide appropriate training and information to your employees and make sure they have available to them MSDS on any hazardous products in their workplace.

Dow sends MSDS on non-OSHA hazardous as well as OSHA-hazardous products to its customers upon initial shipment (including samples) of all its products (whether or not they are considered OSHA-hazardous). If you do not have access to one of these MSDS, please contact your local Dow representative for an additional copy.

Updated MSDS are sent upon revision to all customers of record. In addition, MSDS are sent annually to all customers receiving products deemed hazardous under the Superfund Amendments and Reauthorization Act.

MSDS should be obtained from your suppliers of other materials recommended in this bulletin.

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**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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