



FASTRACK™ HD-21A Polymer Emulsion

For Durable Waterborne Traffic Marking Paints

Regional Product Availability

EMEA

Product Description

FASTRACK™ HD-21A Polymer Emulsion is an all-acrylic emulsion binder for high-durability traffic markings. Using a patented crosslinking technology, FASTRACK™ HD-21A Polymer Emulsion combines exceptional durability and glass bead retention with the ease of handling and application typically associated with water-based technology.

Designed to formulate true waterborne durable traffic paints, FASTRACK HD-21A Polymer Emulsion is suitable for situations where existing waterborne paint equipment is available, and where the additional benefits of rapid drying and excellent durability of visibility are critical.

Application

FASTRACK™ HD-21A Polymer Emulsion is particularly recommended to formulate traffic paints for use in situations where markings are submitted to heavy wear or when longer maintenance intervals are required such as highways, high traffic roads or airports.

FASTRACK™ HD-21A Polymer Emulsion is particularly suitable for waterborne paints in Type 2 systems applied at a spreading rate between 700 and 950 g/m² and with beads size 400-1200µm for example in order to achieve excellent wet night visibility.

Main Benefits

- High Durability, Toughness – Expect improved adhesion over various road surfaces for longer life applications
- Fast drying water-borne paint even at low temperature (down to 10 °C) and high air humidity (up to 80%)
- Excellent Retention of Glass Beads–Paints maintain their flexibility and retain glass beads longer than traditional pavement marking materials
- Reduced Annualized Cost – Expect three years performance under most conditions with 625-700 µm wet film thickness
- User exposure to and release of volatile organic compounds is minimized. Paints are non-flammable, and afford increased worker safety

Formulation Guidelines

Formulating waterborne traffic paints based on FASTRACK™ HD-21A Polymer Emulsion is similar to formulating other common types of latex paints. No unusual techniques or equipment are required. However, as a result of the typical chemistry of FASTRACK™ HD-21A Polymer Emulsion, traffic paint manufacturers must adopt the following guidelines when formulating paints:

1. pH

Maintain a pH of 10.0 or above at all times during the manufacture and storage of paints based on FASTRACK™ HD-21A Polymer Emulsion.

2. Neutralizing Agent

Use only ammonia to adjust the pH of the paint. Do not use less volatile amines or non-volatile base.

3. Grinding

Avoid excessive heating of the paint during manufacture. It is strongly suggested not to “grind” (disperse) at high speed (<1000 min⁻¹ is suggested) to adequately incorporate the pigment into FASTRACK™ HD-21A Polymer Emulsion. Over-grinding may cause skin and gel formation and foaming in the dispersing process.

4. Volume Solids

It is vital to formulate at maximum volume solids, with the constraints of viscosity and paint stability in order to minimize “dry-to-no-pick-up” times. Our starting point formulations are formulated between 57 to 60% volume solids and can be applied without heating the paint.

5. Pigment Volume Concentration (PVC)

High pigment/extender loads are necessary in traffic marking paints in order to achieve high solids and high durability on the road. Our road tests demonstrate that paints based on FASTRACK™ HD-21A Polymer Emulsion formulated at 56 to 60% PVC offer a good balance of cost and dry speed, road adhesion, dirt pick-up resistance and glass bead retention.

6. Pigment

All pigments used for traffic paints based on FASTRACK™ HD-21A Polymer Emulsion must be suitable to disperse easily in waterborne paints. We suggest TR-92 (Tioxide®) as an easy to disperse Titanium dioxide.

7. Extenders

We suggest to use an average of 5 µm particle size calcium carbonate. For a better packing of the mineral (pigment and extenders), a mix of 1/3 of 2 µm particle and 2/3 of 10 µm particle size gives improvement of settling resistance. Using average particle size higher than 20 µm may affect durability on the road.

We do not recommend incorporating of fine silica into the formulation because of destabilization risk.

8. Dispersants:

Dispersants based on ammonium salt of a polyelectrolyte like OROTAN™ 963 are suitable to give good stability without affecting the early water resistance. The optimum level of dispersant depends on the choice of pigments and extenders.

Phosphonate dispersants, such as AS-238², are also suitable to give good paint stability.

9. Wetting Agent

A surfactant is needed to facilitate wetting of the pigment particle surfaces. TERGITOL™ 15-S-40 or Surfynol³ CT-136 have been found to be especially effective in reducing “puffiness” and high viscosity.

10. Defoamer

Excessive foam in the paint will increase the apparent viscosity and lead to problems with gel formation. Both Tegofoamex⁴ 825 and Foamaster⁵ MO-2134 are examples of effective defoamers. Alternatives should be evaluated for specific paint applications. It is important to avoid silicone based defoamers, since they may adversely affect the adhesion of the paint to the reflective glass beads.

11. Rheology Modifiers

Although traffic marking paints based on FASTRACK™ HD-21A Polymer Emulsion are less prone to pigment settling than conventional latex paints, a low level of rheology modifier can help to reduce pigment settling. ACRY SOL™ RM-12W, a highly pseudo-plastic nonionic urethane rheology modifier, is suggested as it gives some structure to the paint, without negative effect on spray ability.

12. Alcohol

Ethanol may be added to paints based on FASTRACK™ HD-21A Polymer Emulsion to impart freeze-thaw stability, but also to optimize “dry-to-no-pick-up” times.

13. Coalescents

Waterborne traffic paints based on FASTRACK™ HD-21A Polymer Emulsion require the addition of coalescing solvents to obtain good film formation, particularly at lower application temperatures.

We suggest 10 % Texanol⁶, calculated on polymer solids, to coalesce traffic marking paints based on FASTRACK™ HD-21A Polymer Emulsion lower than 5°C. Lower levels may compromise performance and durability, especially if the paints are applied at low road surface temperatures. Higher levels may compromise paint stability. The use of more water miscible solvents (like Butyl CARBITOL™ Coalescent) is not suggested.

1 Huntsman Tioxide, London, UK

2 Lefrant Rubco, France

3 Air Products, Dumfries, UK

4 Tego Chemie Service GmbH, Essen, Germany

5 Cognis Saint Fargeau Ponthierry, France

7 Eastman Chemicals Ltd, UK

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Storage	Store products in tightly closed original containers at temperatures recommended on the product label.
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To contact us, call:
Europe, Middle East, Africa & India:
+31 115 672 626

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