Empowered by Dow

FasTrack™

Road Marking Technology

Waterborne Traffic Paint Toolbox Pocket Reference Guide

Best practices for applying all types of waterborne traffic paint containing Dow acrylic binders.

- High-build, high-durable waterborne applications
- Low temperature waterborne applications
Leading the way since 1897, Dow is a global pioneer in the creation and development of innovative and sustainable technologies for the specialty materials industry. The company’s line of FASTRACK™ waterborne acrylic binders are used by paint manufacturers to produce rapid-drying traffic paints that meet a broad range of highway applications. Today, FASTRACK™ acrylic binders are used to produce fast-drying waterborne traffic paints for cold weather application and high-performance, high-build highway paints.

Visit www.dowcoatingmaterials.com for more information
Technological innovation and a long history of sustainable solutions have made Dow one of the world’s largest suppliers to the paint and coatings industry. And that innovative spirit is particularly evident in the highway striping market where Dow Firsts have set the standard for today’s acrylic waterborne traffic markings:

1985  The first specially designed waterborne resin for traffic paint.

1990  FASTRACK™ 2706 Binder: The first generation of fast-drying waterborne technology.


2006  FASTRACK™ XSR Binder: The first waterborne binder for low-temperature application conditions.
Traffic Paint Toolbox

FASTRACK™ Product Line... waterborne acrylic binders for all traffic paint applications.

**FASTRACK™ HD-21A Binder**
High-Build, Durable Paints
- 100% crosslinking acrylic
- Applied at higher film build
- Patented crosslinking technology for durability
- Long service life - ~ double the life of standard, maintenance paint
- Meets Federal Specification TTP-1952E, Type III

**FASTRACK™ XSR Binder**
Low-Temperature Paints
- For low-temperature applications (35° F and rising)
- Good dry speed
- Lasting performance
- Good flexibility over a variety of surfaces

**FASTRACK™ 2706 and FASTRACK™ 3427 Binders**
Reliable Maintenance Paints
- 100% acrylic
- Fast Dry Speed
- Good Cost/Performance Balance
Proper paint film thickness and good glass bead embedment is crucial to ensuring maximum performance.

**New construction:** If the paint will be protected from traffic for a prolonged period of time, a 25 mil wet film thickness is recommended for optimum performance.

**Mobile applications:** If the paint will be protected from traffic for only 2 to 3 minutes, adjust the film thickness to compensate for drying conditions using the chart at right.

**To Improve Drying Speed:**
- Use 16 to 18 mesh glass beads at the recommended dosages.
  (IMPORTANT: Flooding the line with beads increases drying time by slowing evaporation)
- Heat the paint to a maximum of 110° F.
- Consider using 2 spray guns in tandem, each applying approximately half of the total desired film thickness.
Guidelines for No Track Times of High-Build, Durable Paints based on FASTRACK™ HD-21A Binder

(Values based on application of 25 wet mils of paint and large glass beads)

For optimum performance: Dow recommends application at air temperatures between 55° F and 100° F, with relative humidity between 10% and 75%, and to a dry road surface.

Glass Beads: Large glass beads or a combination of large and small beads will provide slightly better no-track time than standard glass beads (>30 mesh) alone. The difference can be ~ one minute shorter with large glass beads.

Notes: These values are only guidelines. No-track times will be affected by additional variables, including wind speed, pavement temperature, and the condition of the road surface.

*add 1 minute for >30 mesh glass beads (standard glass)
FASTRACK™ XSR (X-tended Seasonal Range) binder is a unique, new waterborne paint binder designed specifically to be applied at low temperatures down to 35°F (1°C) and rising. Recommended application is 15 wet mils (380 microns) with standard size glass beads on dry pavement. If weather and traffic conditions are particularly harsh, a slightly lower film thickness (12 wet mils) may be needed to reduce tracking.

Guidelines on drying times
As measured by roadway no-track testing when applied to dry pavement:

At ambient temperatures above 50°F, a reflectorized line shall be dry to no pick-up in 2 minutes or less.

At low temperatures of 35°F to 50°F, a reflectorized line shall be dry to no pick-up in no more than 12 minutes.

Application: The paint can be applied at ambient temperatures or with equipment capable of heating the paint. Do not heat the paint above 110°F at the spray gun.

Paint Storage: Paint should be stored at ambient temperatures. Cold paint will be higher in viscosity and will benefit from external heating to ensure a good spray pattern.

UV Marker Test: FASTRACK™ XSR resin is tagged with a fluorescent marker that will glow blue when subjected to a base solution and long wavelength UV light. This test method is called “X Marks the Spot”.
1.) Bring paint pressure up on the truck and allow it to equalize (about 5 minutes).
2.) Cycle paint gun several times to ensure it is spraying properly.
3.) Place a flat metal panel or any non-porous material that is flat and smooth in the path of the spray gun about 30 to 50 yards ahead of the truck.
4.) IMPORTANT: Turn the glass bead applicator OFF.
5.) Maintaining the speed to be used while striping, start spraying about 3 meters before coming to the panel to avoid any initial paint surge. Traveling at the correct speed is important.
6.) Immediately use a wet film thickness gauge to measure the depth of the application. Press into the wet film.
7.) Withdraw the gauge and note the deepest tooth that has paint on it and the next highest tooth that is not coated.
8.) The wet film thickness lies between those two measurements.
9.) Change spray tip or adjust paint pressure until you get the correct wet film thickness.
Guide for Calibrating Glass Bead Flow Rate

After determining the truck speed needed to apply the film at the desired thickness, calibrate the glass bead flow rate using these simple steps:

1.) Using a stopwatch or watch with a second hand, dispense beads from the bead gun into a beaker or bucket for exactly 10 seconds. This bucket should be marked in milliliters or the beads should be poured from the catch bucket into a container that can measure the milliliters.
2.) Shake the marked bucket gently to level the beads and note how many milliliters of beads were dispensed into the container in 10 seconds.
3.) Use the chart at left to adjust the bead flow rate to achieve desired dose.

*Important: The convention of 6 pounds of beads per gallon of standard (15 mil) waterborne paint does not apply to high-build, durable waterborne markings. Because these markings are applied at 18 mils to 25 mils, a gallon of paint covers a smaller area. For high-build, durable waterbornes, it is preferable to think of bead coverage in terms of weight per unit of area rather than per volume.

<table>
<thead>
<tr>
<th>Lbs/100 sq ft*</th>
<th>Truck Speed</th>
<th>10</th>
<th>12</th>
<th>10</th>
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<td>6 mph</td>
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<td>1000</td>
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<td>8 mph</td>
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<td>2000</td>
<td>2400</td>
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<td>3600</td>
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For a double drop of large and standard glass, apply ½ the dosage for each
The combination of a quality paint and proper glass bead embedment will provide optimum visibility and long service life for the waterborne marking. Note: There will be some capillary action (wicking) on the sides of the bead.

The recommended embedment level for a glass bead of any size is 60% of the diameter of the glass bead embedded in the paint. This provides optimum night visibility (retroreflectivity). See Figure 1.

When glass beads are minimally embedded in paint (less than 40%), traffic can easily remove the glass beads from the paint. This shortens the life of the marking and reduces its visibility. See Figure 2.

When glass beads are over embedded (greater than 60%) night time visibility of the marking is reduced (retroreflectivity). See Figure 3.

Retroreflectivity may actually increase as traffic wears some of the paint off the top of the beads.

Reduce truck speed if glass beads are rolling in the paint. The rolling will result in paint pickup on the bead and lower retroreflectivity.

To summarize: the depth of the bead embedment has a dual importance:

1.) It determines how securely the glass bead is held in place and resists traffic wear.
2.) It affects the reflectivity of the line, both initially and over time.
The embedment of the bead is also affected by the coating on the bead.

Floatation-treated beads that have a moisture-proof coating will not sink into the paint and will not “clump” during storage and use. Too much of this coating on the beads, however, will cause them to float on the surface of the paint and will reduce embedment, resulting in poor retroreflectivity and a short service life for the marking.

An adhesion coating is another type of bead coating. As the name implies, it helps the bead adhere to the paint. Again, too much can result in beads that sink too far into the paint film, reducing retroreflectivity (night visibility).

A dual coated glass bead can provide a good balance of these properties. Different bead sizes require different coatings.

Other factors that affect the level of retroreflectivity provided by a glass bead are:
- The clarity of the beads
- The index of refraction (1.5 versus 1.9)
- The roundness of the beads
- The size of the beads

Note: In addition to glass beads, there are new products on the market that can be used with waterborne paint that provide high visibility under wet night conditions.
If you have technical questions or other inquiries about FASTRACK™ XSR acrylic binder for low temperature application conditions or about high build, high durable waterborne traffic paint based on FASTRACK™ HD-21A acrylic binder, Dow is ready to help you find the answer. If we can be of assistance, call toll 1.800.447.4369

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