

FASTRACK™

Technology

Increased Durability AND Reflectivity: Higher Performance in Line Marking Around the World

Imagine this. You're driving down a country road. It's pitch dark. No moon. Your hands are gripping the steering wheel tightly because there are no edge lines, so it's hard to see the edge of the roadway and difficult to judge your proper placement on it.

As you turn onto the Interstate, it's as if a magic wand had swept the night. You are now on the Interstate and the world of night driving changes dramatically. Bright lane markings reflect your headlight beams back with striking clarity. Easy-to-see lane markings are comforting as you settle down in your driver's seat, relax your grip on the wheel, and drive comfortably without apprehension.>>



According to the National Highway Traffic Safety Administration (NHTSA), unlighted rural roads are among the most dangerous in the nation. Many years of research have demonstrated improved and more visible centerlines and edge line markings help reduce accidents and fatalities.

While there are several commonly used materials for putting those white and yellow lines on roads, waterborne traffic marking paints have gained increasing

U.S. roadways under NHTSA oversight.

Dow, a specialty materials company, has pioneered the use of waterborne resins in the manufacture of road marking paints. Sold under the FASTRACK™ brand, these resins allow paints to dry, to stick to the glass beads used to reflect light back to the driver, and to adhere well to difficult road surfaces.

“Improved visibility is just one of the benefits offered by our newest resin for traffic

“FASTRACK XSR uses a patented, quick-set technology that speeds drying time to just a few minutes after traffic markings are laid down,” explains Randazzo. “There is a wider range of lower temperatures at which FASTRACK XSR can be applied,” she says. “Previous waterborne paints could not be used below 50 degrees Fahrenheit. That seasonal range has been extended down to 35 degrees Fahrenheit, which means the season in which road crews can work, as well as the times of day in cooler weather, has been extended.”

Lower VOC waterborne products are gaining in popularity as the importance of reducing VOCs becomes a worldwide issue.

respect and support over solventborne coatings among industrial and government purchasers for several important reasons. First, waterborne coatings are more environmentally advanced. They do not emit the level of potentially unhealthy and harmful volatile organic compounds (VOCs) that solventborne coatings emit. This is better for the environment and health of the workers who mark approximately 4 million miles of vital, heavy-use

marking paint, FASTRACK™ XSR,” says Cynthia Randazzo, group leader, Traffic Markings technical service with Dow. “This waterborne traffic paint resin was developed for improved durability and shorter drying time compared to a standard traffic marking paint when it is applied at colder temperatures. These improvements provide striping flexibility for the applicator and improved safety for drivers.”

A-OK for lift-off at the Cape

Dow resins developed for traffic markings are also acquiring a good reputation at airports, where optimal reflectivity on runways is crucial. FASTRACK™ HD-21A, another resin in the FASTRACK product line that can be applied in a higher film thickness and retain bigger and brighter glass beads for superior light refractivity, has recently been applied to runways used by NASA's space shuttle at Cape Canaveral. The marking was done by Sightline Airport Marking Consultants (AMC) of Culpepper, Virginia.

Sightline AMC president Donna Speidel says her company just repainted NASA's Cape Canaveral space shuttle runways with FASTRACK HD-21A. “The runway markings were faded and in need of repainting. The new coating with FASTRACK HD-21A included an added biocide to fight algae that can grow on and obscure markings on runways in hot, humid climates.”

In addition to positioning FASTRACK HD-21A on Cape Canaveral runways and at other airports nationally and internationally, Sightline is working with Dow to develop a manual for “best practices” for airfield markings.

A strong but flexible film is required for airfield use

“For the last few months we have been meeting with airport officials and gathering data for the *Airfield Marking Best Practices Handbook*,” says Speidel.



Punishing laps at 200 MPH put the most durable line marking to the test. Brazil's Interlagos Racetrack adopted FASTRACK technology to withstand grueling Formula 1™ tire heat and friction.

Ask Shruti Singhal, Philadelphia-based Dow Coating Materials Marketing Director for North America what the key drivers to business growth have been in North America and he will tell you directly: “safety and innovation in traffic paint binders.”

“We continue to work on improving drying times and addressing adhesion issues on tough substrates, such as highways, parking lots and even airport runways,” says Singhal.

According to Speidel, because airport markings have different specifications and more demanding needs than roadway markings, FASTRACK HD-21A's patented crosslinking for exceptional adhesion to glass beads, and its ability to be applied at a higher film thickness, makes it the ideal resin destined for runway and other airport markings.

Randazzo, part of the Dow team traveling with Speidel, observes and evaluates striping maintenance and repair. "Because of the extreme abuse to which airfield striping is subjected, re-striping, especially of the centerline, may occur as often as bi-weekly," says Speidel.

"Centerlines on runways are each three feet wide and 120 feet long, and they really take a pounding," explains Speidel. "The stresses on the film are much greater than on a six-inch-wide highway line. The film on runway markings must be more



to waterborne traffic markings, says Mexico-based Dow marketing manager Cesar Soto.

"Nine states in Brazil are using FASTRACK HD-21A, five states are testing it and two more states are interested," says Soto, adding that in addition to already being used in Mexico, FASTRACK is being introduced in Costa Rica, Panama and Honduras.

The 10-lane superhighway between São Paulo and Rio de Janeiro is marked with FASTRACK technology, as is the highway across the Brazilian Pantanal, the world's largest wetland covering 93,000 square miles, an area about the size of Colorado. The Pantanal is an environmentally sensitive area in a hot, harsh, humid climate. Brazilian highway authorities liked the environmentally advanced formula as well as the durability factor and low VOC profiles.

The "Imigrantes Highway" between São Paulo and Santos City has also been marked with FASTRACK, says Dow's Brazil-based Oswaldo Prickaitis.

"This highway goes through the Mata Atlantica area, an environmentally protected region," explains Prickaitis. "FASTRACK is ISO 14000 certified and FASTRACK technology was instrumental in gaining certification."

One attribute favoring application of FASTRACK on Brazilian highways was its quick drying time in high humidity.

According to Soto, in 80 percent relative humidity FASTRACK can dry in 40 minutes; it takes a solventborne traffic marking up to two hours to dry in 80 percent relative humidity.

Also in Brazil, FASTRACK was taken onto the "fast track" when used for marking the Interlagos Racetrack for Formula 1™ Grand Prix car races for the last three years. Knowing tire stress and heat would put the markings to a severe test, the Brazilian paint company, Indutil, used FASTRACK technology in their paints so that the markings could stand up through the grueling races.

Soto points out that black tire marks show up darker on solventborne paints than on waterborne markings. This means that FASTRACK holds its brightness better during the race and, because it retains larger glass beads better, improved retroreflectivity.

"FASTRACK has done well in Brazil and Mexico because it better serves the customers' needs," concludes Soto. "High durability on concrete and asphalt, better glass bead retention, rapid drying, environmental safety and ease of waste disposal all add up."

Australia and beyond

Travel down under and you'll find FASTRACK line marking hard at work, too. Stephen Borrie, Dow traffic paint specialist in Australia and New Zealand, reports that New Zealand is following Australia's move toward waterborne technology.

"Road Traffic Authorities, concerned

Not afraid of the cold

The XSR in waterborne FASTRACK XSR stands for eXtended Seasonal Range. This new traffic marking product extends the range of weather conditions available for striping to include the "shoulder" seasons of early spring and late fall. It has an "extended" life span; it is "seasonal" because it can be used in colder weather than previous traffic marking paints; and the product has "range" in the sense that it has opened wider the "window" during which it can be applied.

flexible, not brittle, and the glass beads must be the largest."

Safety, in terms of enduring visibility, is the prime concern, but cost-savings is important as well. The purpose of the study and the handbook to result from it will be to inform the industry on "best practices."

Environmental sensitivity in Latin America

Brazil in South America and Central American nations are increasingly shifting

Why a 'best practices' handbook?

"We want to improve the quality of airfield markings," says Donna Speidel, president of Sightline AMC. Speidel, along with specialists from Dow, Safety Coatings, Inc., FOL Tape, Hawkins Engineering and Stephen Quilty of Bowling Green State University, are developing the *Airfield Marking Best Practices Handbook*.

"The handbook will be for use by engineers, airport managers, maintenance managers, airport marking staff, contractors and inspectors, and for both military and commercial interests," she explains.

Evaluation is ongoing as a research team tours the nation analyzing runway surfaces, pavement preparation, marking removal and marking durability factors.

"The research team is looking at the marking materials already used at airports," reports Speidel, who has worked in the pavement marking industry since 1974. "We are examining the advantages and disadvantages of each product. We want to identify the marking materials that are the most effective, most functional, and which perform best."

The handbook effort started with a roundtable of 30 participants from industry, government (including the Federal Aviation Administration), engineers, marking contractors and airport maintenance staff.

Cynthia Randazzo, Dow technical service group leader, has traveled with Speidel to help with both the evaluation and the handbook in-progress.

"We are committed to this effort," affirms Randazzo. "We all fly, and safety is a prime concern. Airport markings need to be of the highest quality. This is a collaborative effort to keep us all safer."

about environmental and worker health issues, became advocates and issued specifications that solventborne technologies were unable to meet," explains Borrie. "Without FASTRACK technology, the large glass bead required for wet night retroreflectivity could not be held in the paint film. Now, market penetration of waterbased traffic paint with FASTRACK resins is almost complete."

The market is expanding to Asia quickly, says Borrie, adding that specification authorities from Japan, Korea, China, Malaysia and Thailand have visited Australia on waterborne traffic marking 'fact-finding missions.'

As FASTRACK XSR makes its global entry into widely distant applications, spring and fall seasonal temperatures will not interrupt efforts to keep highway markings bright and fresh — meaning that contractors will not see interruptions to progress. Also, the fast-cure action of FASTRACK products will keep motorists happier, since their travel lanes are ready sooner. States, counties and municipalities will be pleased with the durability factor, since highway marking needs to be done less frequently.

"FASTRACK HD-21A's 100 percent acrylic crosslinking technology can provide multi-year durability. These coatings can be applied thicker and hold larger glass beads, which can offer more reflectivity and visibility," summarizes Randazzo. "Some say the improvements in long-term durability with FASTRACK HD-21A, and now the lower-

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temperature application advantage with FASTRACK XSR, has made FASTRACK technology the industry's workhorse."



Sighting the runway for returning Space Shuttles is greatly assisted with proper markings.

