Resin Bound Paving and Surfacing

Design and engineering teams will benefit from high-performing, low-maintenance polyurethane resin surfacing. Create permeable, and textured aggregate surfaces with superior performance and design options.

This summary will outline:

- **Surfacing Products** – decorative, anti-slip, and permeable options
- **Material Components** – Two-part hybrid polyurethane resin and natural aggregate
- **Installation Process** – Cold application with increased moisture tolerance and a wider temperature range

Performance in wet and cold environments - See link

- Resin Surfacing withstands winter weather, salt, and snow plows[1] – (NJ crosswalk 2007)
- Resists deterioration in Coastal installations – (Headland Park-UK North Sea Coast – 2002)
- Video Demo of Resin Surfacing Flexibility

Products –

Resin Bonded Exposed Aggregate Surfaces,

Decorative, Anti-Slip, Color Demarcation & Reflective Coatings
Resin-bonded surfaces apply polyurethane resin to a suitable substrate of asphalt, concrete, steel, etc. Aggregate is broadcast and bonded onto the wet resin providing an exposed aggregate surface. Use for refurbishment projects, or create streetscape safety surfaces for anti-slip and color demarcation.

Figure 1. Aggregate is available in a wide range of natural tones, or vibrant colors

Resin Bonded product information is linked below:

- GeoGripX Exposed Aggregate Product Information

Rigorous Testing Acknowledges Outstanding Performance

GeoBondX resin bound paving is Accredited by the British Board of Agrément (BBA) through comprehensive laboratory tests, on-site evaluations, quality management checks and inspections of production.

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www.StoneResinSurfacing.com

Resin Bound Paving

Permeable Surfaces, Tree Pits, and Traffic Calming Elements

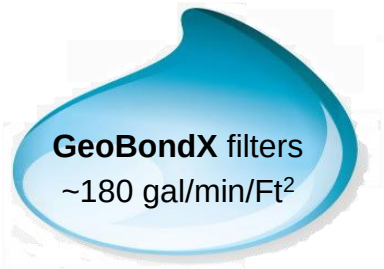
Resin-bound surfacing mixes decorative aggregate with polyurethane resin, providing a thicker trowel on application. The *GeoBondX,* in Figure 2, creates permeable drives, paths, public spaces, tree pits, atriums, and more. Sealing GeoBondX makes impermeable paving for interior stone carpets and traffic-calming elements. Including stamped crosswalks – see Figure 3.

Figure 2. Permeable tree pit installations with *GeoBondX*

Figure 3. GeoBondX creates durable stamped crosswalks

GeoBondX permeable paving information is linked below.

- GeoBondX Permeable Paving & Tree Pits – Product Overview/Specs
- GeoBondX Flexibility Demo Video



Improved Rainwater Management and Performance

GeoBondX offers a Low Impact Development (LID) option that complies with UK's Sustainable Urban Drainage System (SUDS) regulations. See this GeoBoundX Percolation Demo Video.

State Department of Transportation Agencies and the US Army Corps of Engineers specify durable polyurethane resin systems.[1]

Material Components

Our hybrid polyurethane resin provides superior durability and performance compared to epoxy, thermoplastic, and even other polyurethane resin binders.

Polyurethane Resin Surfaces Outperform Other Polymer Systems

Polyurethane resin chemically cures into a durable base that combines epoxy's strength with thermoplastic's flexibility and elasticity. The surface offers superior resistance to wear and chemical spills and performs well in high service temperatures. Incorporating aggregate with the resin helps protect the binder providing increased durability and service life over thermoplastic and epoxy overlay systems.

Additional hybrid polyurethane benefits include:

- *Solvent and odor-free* – Poly-base made of plant biomass byproducts
- *Easy to Maintain* - Fuel, oil, and solvent resistant – no vacuuming maintenance
- *Competitive Pricing* - Comparable to decorative blockwork

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Figure 4. Polyurethane Resin Offers Benefits over other Polymer Systems	
vs. Epoxy Systems	vs. Thermoplastic Systems
• Less affected by Temperature extremes • Greater Flexibility • Better adhesion to asphalt • Less affected by age embrittlement • Less prone to debonding	• More attractive • Low application temperature • Use in sites with restricted access • Use in "Fire Hazard Zones" • Longer service life

Installation Process

The two-part resin systems are cold-applied by hand, requiring no heat or specialized equipment. Stone Resin Surfacing provides application training. With a pot life of 30 minutes, the products are applied in temperatures ranging from 40 to 90 degrees Fahrenheit. At 65 degrees, the finished surface can be open to traffic in two to four hours, with full cure time achieved in about 24 hours. After application, the surface is unaffected by any rainfall that occurs during cure. Permeable resin-bound surfacing requires no vacuum maintenance. All resin surfaces benefit from occasional light pressure washing. See the links below for additional information.

- GeoBondX Installation Overview Video
- GeoGripX Textured Surfacing - Overview Video

Conclusion

Polyurethane resin creates distinctive stone surfaces that provide superior service life and performance. Use GeoBondX permeable paving as a low maintenance alternative to block pavers. GeoGripX textured surfaces refurbish existing pavement and provide durable safety and color demarcation options.

Please see footnotes on the following page, and review gallery images at:

- www.StoneResinSurfacing.com
- www.CompleteStreetsUSA.com

With thanks and appreciation,

Rick Lawless
Stone Resin Surfacing LLC
One Mayflower Place, Milford, CT 06460
203.450.6640 | Rick@StoneResinSurfacing.com

Footnotes

1. **Demonstrated Performance**
    a. See Demonstrated Performance in cold, wet climates
    b. Notable US engineering teams specify polyurethane resin-bound surfacing including:
        i. Penn DOT - GeoPrint for use in crosswalks.
        ii. The US Army Corps of Engineers - GeoBondX for 9K SF of permeable walkways at Franklin D. Roosevelt Presidential Library and Museum
        iii. Caltrans DOT - GeoBondX for 20K SF of permeable paving in Redding, CA.
        iv. New York City DOT - GeoPrint for crosswalks in Staten Island
        v. James Corner Field Operations Group – ColdGrip for sidewalks in Polk Brothers Park at Navy Pier in Chicago, Illinois. After three years of continuous testing through Chicago winters, Navy Pier selected and installed 40K SF of textured walkways.
        vi. BSC Group - Orton Field, Boston – GeoBondX permeable tree pits
    c. Our polyurethane resin systems have over 30 years of demonstrated international performance. The products' high-level European and British manufacturing, surfacing, and environmental certifications reflect the durability of their products, including: :
        i. ISO 9001 Certification – Helps ensure high-quality assurance through BSI's internationally recognized Quality Management System
        ii. British Board of Agreement (BBA) - Provides approval of construction products through robust test and assessment schemes
        iii. Sustainable Drainage Systems (SuDS) Compliant – GeoBondX was developed to comply with The British Geological Survey Council's permeable paving system requirements. GeoBondX allows water to soak through the surface at an average rate of 180 gallons/min/Ft^2, helping prevent the rapid surface water runoff that causes flooding.

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