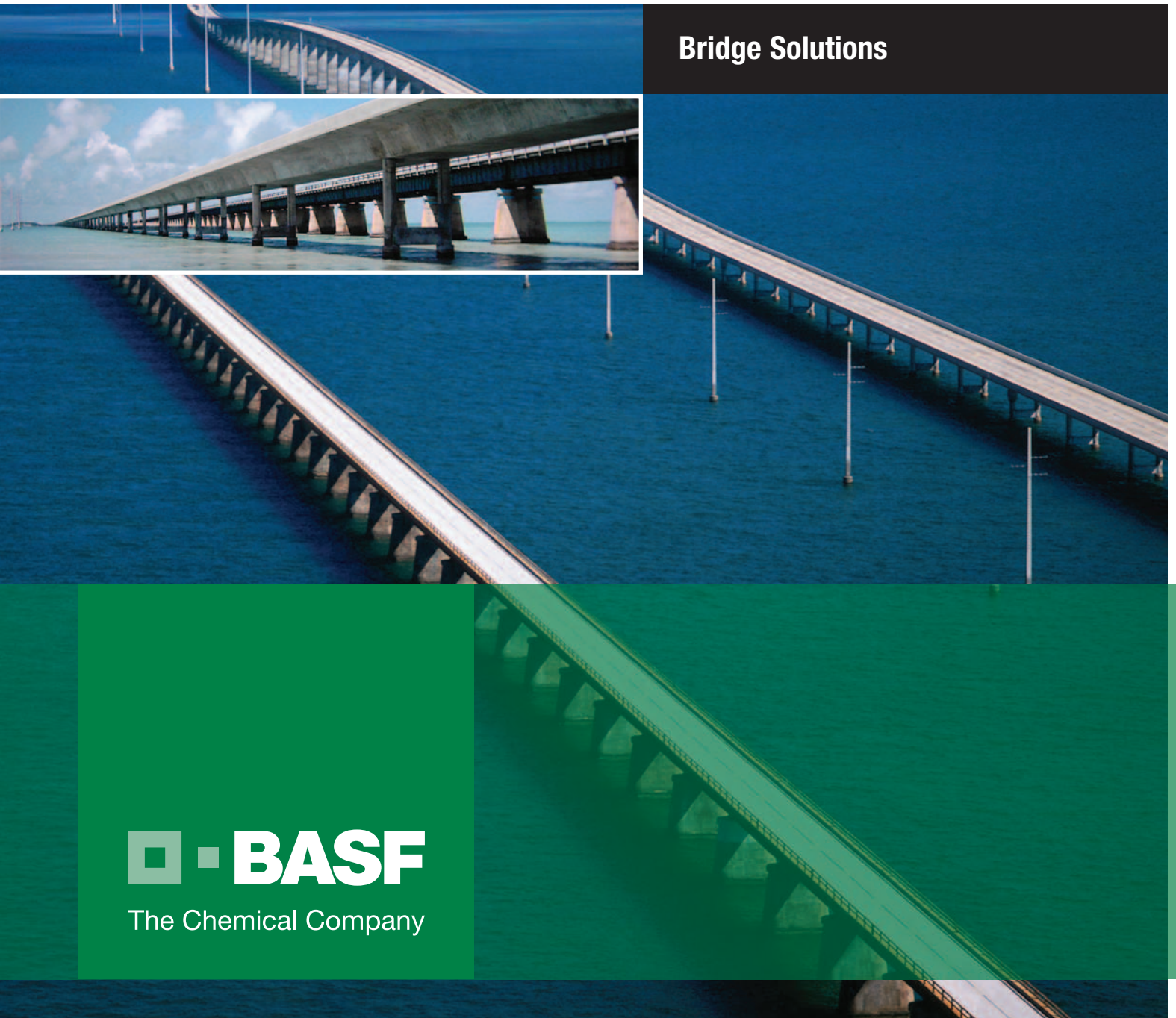


Specialty Products for Bridge Construction, Repair & Maintenance

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Bridge Solutions



 **BASF**
The Chemical Company

Bridge Deck Protection

deck protection solutions

Bridge decks require protection from chloride ion intrusion from de-icing salts, as well as freeze-thaw cycles and traffic erosion over time. BASF offers a wide variety of products to protect bridge decks ranging from water repellents to thin polymer overlays. The ultimate goal is to have a concrete deck free of deterioration, keeping it sound and safe for years to come.

Water Repellent

Water repellents chemically bond with concrete to create invisible protection that minimizes water intrusion and protects against chloride penetration. BASF products provide deep surface penetration creating lasting protection and extending the service life of new and existing bridge decks.

Enviroseal® 40

Water-based 40% silane penetrating sealer.

Hydrozo® 100

Water-based 100% penetrating silane sealer.

Hydrozo® Silane 40 VOC

Solvent-based ±40% silane penetrating sealer. Ideal for cold weather applications.

Crack Sealing

Cracks in concrete are an entryway for water and other contaminants, including chlorides. No matter the size, both large and hairline cracks must be sealed to promote the long term integrity of the deck. BASF provides effective products that are also quick and easy to apply, minimizing traffic closure.

Degadeck® Crack Sealer Plus

Methacrylate resin that fully penetrates, seals, and repairs hairline concrete cracks by gravity. Fully cured in one hour allows fast return to traffic. UV resistant.

EpoXeal™ GS Structural

Epoxy resin that penetrates and repairs concrete cracks. Easy to apply by gravity feed. Accepts aggregate broadcast to provide a slip resistant surface.



Corrosion Mitigation

Each corrosion problem requires a customized solution based on experience, know-how and the use of the right product. BASF offers more than one solution for corrosion prevention and rehabilitation.

Masterseal® CP

Surface-applied clear liquid that penetrates concrete to inhibit corrosion of steel bars and tendons. Effective for both new concrete and concrete that is heavily chloride-contaminated or carbonated. Can be used in combination with Degadeck Crack Sealer Plus for increased protection.

Zincrich Rebar Primer

One-component, zinc-rich, epoxy primer designed to prime and protect reinforcing steel. Hinders corrosion through electrochemical means by preventing anode transfer.

Corr-Stops® CI

Puck-shaped, Corr-Stops have a zinc core working as a sacrificial anode. When wired to steel bars, pucks prevent

High Friction Waterproofing Overlay

Thin epoxy and methacrylate overlay systems provide ideal protection of the concrete deck.

These are multiple layer waterproofing membranes that also impart slip resistance and minimize traffic disruption for increased safety.

Trafficguard® EP35

Epoxy-based overlay system that provides high durability and extended service life. Low modulus accommodates thermal movements of the substrate. Primerless system and rapid strength development allow for fast return to traffic.

Degadeck® Bridge Deck Overlay System

Methacrylate overlay system that can be applied at temperatures ranging from 14° to 104° F (-10° to 40° C). Resin coats melt into one another creating a cross link bond that cannot be broken, providing exceptional durability and extended deck service life.

Bridge Construction, Repair and Maintenance solutions

BASF solutions for the bridge industry are built upon a solid foundation of proven, advanced chemistry, and intelligent networking of technologies, know-how, products and service. We help make the structures you build better.

The Bridge Challenge

High strength. Structural integrity. Long term durability. All are critical to the health of our nation's bridge and highway systems. In 2007, however, 12% of the 600,000 bridges in the FHWA inventory were classified as Structurally Deficient and an additional 13% as Functionally Obsolete.

After enduring heavy exposure to the elements, traffic, deicing salts, oil and gas spills, and more, even new bridges can show accelerated deterioration that leads to safety and liability issues, as well as economic impact due to the disruption of traffic delays and bridge closings.

The problems are complex but the challenge is clear: to build, repair and protect our bridges with the most effective long-term strategies, methods and high performance materials possible.

Effective Strategies and Solutions

The Building Systems division of BASF Construction Chemicals has met the challenge through a comprehensive approach that begins with identifying the specific root causes of bridge problems. Our experts then apply their expertise and innovative BASF chemistry to develop strategies tailored to the specific needs of each project.

Customized, durable, long term solutions that include products, application requirements, cost structures and complete system specifications are developed in partnership with owners, contractors, and designers.

Specialized Products and Comprehensive Systems

High performance specialty products that utilize the most advanced technologies are the hallmark of BASF. An extensive product offering and technical know-how enable us to bundle products into comprehensive systems that maximize efficiency and effectiveness. The result: single source solutions to the bridge construction, restoration and maintenance challenges you face... with all the quality you would expect from a leader.

Our Commitment to Support and Customer Satisfaction

Everyone at BASF works together to ensure that customers' needs for each bridge project are met. We strive to exceed your expectations.

From our in-house Technical Support Team that provides support, technical documents, testing information, certification, and compliance letters... to our field-based Technical Service Team, with an average of over twenty years of experience in the construction industry... to our Customer Service and Sales Teams over 100 managers strong, you can expect all the support you need, where and when you need it.

... and for the Future

Beyond providing quality products and services today, our commitment extends to helping our valued customers to be more successful in the future. At BASF we work toward developing ever-more intelligent solutions for bridge challenges, ensuring sustainable development, and ultimately making a positive impact on the world for a better future.



Cabrillo Bridge, San Diego, CA
*ICRI 2006 Award of Excellence
in Historic Restoration*

Bridge Concrete Repair System

concrete repair solutions

Diagnose, repair and protect: look beyond the superficial damage to identify the underlying cause of deterioration. Develop a repair strategy utilizing the right products to restore the integrity of structural elements. Design the repair strategy to prevent further damage, provide lasting protection and improve the loading capacity of the bridge structure. Our comprehensive product systems offer owners, designers and contractors effective solutions to bridge repair challenges at different levels of complexity.



Patching

BASF offers a variety of products and technologies for vertical and horizontal patching applications. Vertical patching can be applied by hand, spray, or form and pour. Horizontal patching products provide very rapid setting and early strength allowing return to traffic in as little as 45 minutes.

VERTICAL PATCHING

Gel Patch

Cement-based, polymer-modified, silica fume-enhanced mortar for small repairs by trowel. Fast setting, non-sagging with low shrinkage. Can be placed on vertical or overhead surfaces in lifts up to 2 inches deep without forming.

Emaco® S 88 CI

Shrinkage-compensated, fiber-reinforced, cement-based structural repair mortar with integral corrosion inhibitor. Provides high early and ultimate compressive, flexural and bond strengths. Applied by both trowel and low pressure spray.

Emaco® S 66 CI

Flowable, rheoplastic, shrinkage-compensated, cement-based mortar for structural repairs with integral corrosion inhibitor. Recommended for formed vertical and overhead concrete repairs.

HORIZONTAL PATCHING

Emaco® T415 and Emaco® T430

Rapid-setting, one-component, cement-based patching repair mortars. Produce high early strength and allow a quick return to traffic in as little as 2 hours. Aggregate extendable up to 55% by weight for deep patches. Emaco T430 is ideal for hot weather applications.

10-60 and 10-61 Rapid Mortar

Very rapid hardening, high early strength, one-component, cement-based repair mortars. Allow return to traffic in 1 hour and epoxy coating in 4 hours. Shrinkage compensated to minimize cracking. 10-61 Rapid Mortar can be aggregate extended up to 100% by weight.

Set® 45 and Set® 45 W

One-component, magnesium phosphate-based repair mortars. At 70° F (21° C) Set 45 sets in approximately 15 minutes and takes rubber-tire traffic in 45 minutes. Must be applied in ambient temperatures below 85° F (29° C) including freezing temperatures. Set 45 HW is designed for ambient temperatures ranging from 85° to 100° F (29° to 38° C).

Degadeck® Polymer Concrete

Rapid setting, three-component, methacrylate repair mortar. One hour curing allows fast return to traffic. Can be used in sub-freezing temperatures. Can be aggregate extended up to 100% for deep repairs.

Large Repair

BASF provides solutions for a variety of job site situations involving application by form and pour, spray or underwater.

LA40 and LA40 PMAC Repair Mortar

Flowable, shrinkage-compensated, form and pour micro-concrete. Pre-extended, designed for structural repairs typically from 3 inches to full depth. LA40 PMAC contains corrosion inhibitor and is polymer-modified.

Shotpatch® 21 and 21 F

Prepackaged, silica-fume-enhanced mortars with integral corrosion inhibitor. Can be applied with wet or dry process shotcreting methods. Shotpatch 21® F is fiber-reinforced.

SP10 Shotcrete

Dry process, sprayable shotcrete mortar with high early strength development. Cement-based, shrinkage-compensated, microsilica-enhanced, with low rebound for minimum waste. Can be troweled after gunning.

A-P-E® (Advanced Pile Encapsulation)

All-polymer encapsulation system for structural rehabilitation of piles and piers above and below the waterline. The A-P-E system includes underwater epoxy repair materials and consists of custom-fit, purpose-built A-P-E Translucent FRP Jackets that are filled with A-P-E Grout. A-P-E Pile Grout is an aggregate filled epoxy system used where large volumes must be placed.

Concrete Strengthening

Damaged bridges can be restored to full load-bearing capacity, or upgraded to a new capacity level through the MBrace® system, which does not alter the original geometry of the structural elements.

MBrace®

Externally-bonded, fiber-reinforced polymer (FRP) strengthening system for structural repairs and reinforcement of structural elements. High strength, lightweight and durable. Can be engineered to upgrade load bearing capacity, restore capacity lost to damage or deterioration, improve seismic performance or correct structural deficiencies in the original construction. The MBrace system consists of flexible carbon fiber, glass fiber or aramid fiber fabrics that are applied with system specific epoxy resins and topcoats.

MBrace® S&P Laminate

Surface mounted and near surface mounted high strength carbon fiber-reinforced polymer plates for strengthening existing structures.

Bridge Grouting

grouting solutions

Epoxy Bonding/Injection

Complete system of epoxy resins for injection and concrete bonding.

Concrete® Liquid LPL

Two-component, 100% solids, liquid epoxy bonding agent with long pot life. Designed to bond to existing concrete in form and pour applications where long working time is needed. Can be extended with sand.

Concrete® Paste LPL

Two component, 100% solids non-sag, epoxy paste/gel. Can be mixed with Concrete Liquid LPL allowing users to create need based, variable viscosity bonding agent. Can be mixed with fine aggregate to obtain an epoxy mortar.

Concrete® Paste SPL

Two-component, 100% solids, epoxy adhesive with short pot life. Ideal for sealing surfaces before epoxy injection. Quick cure time allows for vertical, overhead and horizontal applications.

Concrete® Standard LVI

Two-component, 100% solids, low viscosity epoxy for injection of fine cracks. Structurally bonds to hardened concrete. LVI can be mixed with aggregate to make high-strength, high-modulus epoxy micro-concrete and mortar.

SCB Concrete® Injection Resins

Full product line of specialty epoxy injection resins for all structural bonding needs.

BASF offers a variety of technologies from cement and magnesium phosphate-based grouts to epoxy and methacrylate. BASF grouts are designed for ease of application, durability and high performance properties. They have been independently tested and certified for use in State DOTs across the country.

Bearing Pad/Seat

Cement-based grouts and methacrylate mortars for use where load-bearing support and uniform load transfer are required.

Construction Grout

General construction, non-shrink, non-bleed mineral aggregate grout. Can be extended with coarse aggregate. Can also be used for damp-pack applications.

Masterflow® 928

High-precision, non-shrink, non-bleed mineral aggregate grout with high one day and later age compressive strength. Pumpable with extended working time. Resistant to sulfate environments and to freeze/thaw conditions. Ideal for marine environment applications.

Degadeck® Polymer Concrete

Rapid set, three-component methacrylate mortar that can be applied at temperatures from 14° to 104° F (-10° to 40° C). High strength, reaches 7,000 psi in one hour. Extremely durable. Can be aggregate-extended up to 100%.

Key Way Joint

Magnesium phosphate-based anchoring products for use in a wide range of ambient temperatures.

Set®45 and Set®45 HW

Set 45 sets in approximately 15 minutes and reaches 2,000 psi compressive strength in one hour at 70° F (21° C). Resistant to freeze/thaw cycles and de-icing chemicals. Suitable for marine environments. Must be applied at temperatures below 85° F (29° C). Set 45 HW is designed for ambient temperatures ranging from 85° to 100° F (29° to 38° C).

Post-Tensioning Grout

Cement-based grouts to encapsulate and protect bonded post-tensioned steel tendons from corrosion.

Masterflow® 1205 and 1341

Easy to pump for long distances, non-gas forming grouts with extended working time. Both grouts harden without bleeding, settlement, shrinkage or formation of voids. Can be used at temperatures ranging from 40° to 95° F (4° to 32° C). Masterflow 1205 is ideal for horizontal and inclined tendon applications while Masterflow 1341 is designed for vertical tendons.

End Cap Anchorage

Epoxy grout to protect steel tendon end cap anchorages from corrosion.

Masterflow® 648 CP Plus

Three-component epoxy grout. High flow allows grouting in confined working space. Non-shrink properties prevent chloride and CO₂ penetration providing protection and averting deterioration. High early and 7-day strength development with excellent adhesion to provide permanent protection to encapsulated anchorages.



A History of Successful Bridge Solutions

The **Building Systems** division of BASF construction chemicals serves the bridge industry, along with **Admixtures**, a leader in chemical and mineral admixtures for high-performance concrete, and **Watson Bowman Acme**, an innovator in the design and manufacture of highly engineered mechanical expansion joint systems.

YEAR	BRIDGE	STATE	DESCRIPTION	PRODUCTS
2007	23rd Street Bridge	MO	Repair of concrete columns deteriorated by corrosion of steel reinforcement. FRP to reinforce and prevent future damage.	MBrace, Thorocoat Fine
2006-07	7 Mile Bridge	FL	Protection of the anchorages of the post-tensioned cables with low exothermic epoxy grout.	Masterflow 648 CP Plus
2001	Alaska Way Viaduct	WA	Shear strengthening of bridge beams to repair damage resulting from the 2001 Nisqually Earthquake.	MBrace
2007	Big Carlos Bridge	FL	Concrete spall repairs. Crack injection and joint sealing.	10-61 Rapid Mortar, Gel Patch, Concreative LVI, Emaco P 24, SL-2
2005	Cabrillo Bridge	CA	Historical bridge: repair of damaged concrete and corroded steel reinforcement.	Emaco R 400 Architectural, LA Repair Mortar, Zincrich Rebar Primer
2003-05	Cooper River Bridge	SC	Grouting of longitudinal cables and deck tendons. Cross beam grouting in the main towers.	Masterflow 1205
2004	Esplanade Riel Pedestrian Bridge	Manitoba, Canada	Cable stayed pedestrian bridge across the Red River: longitudinal cable grouting.	Masterflow 1341
2001	Evans-Crary Bridge	FL	Segmental pre-cast bridge over inter-coastal waterway. Longitudinal cable grouting.	Masterflow 1205
2004-08	Galveston Causeway Bridge	TX	Twin cast-in-place segmental bridge. Pumped cable grout 300 feet horizontal.	Masterflow 1205
2002	Garden State Parkway and Patcong Creek	NJ	Underwater encapsulation of 18" octagonal concrete piles to repair and prevent future corrosion.	A-P-E
2007	Hardy Toll Road Bridge at I-45	TX	Repair damaged precast AASHTO girders resulting from alkali silica reactive aggregates (ASR).	MBrace CF 130, Thorocoat DOT, Hydrozo Clear 40 VOC, Shotpatch 21F
2004-05	Houston St. Bridge	TX	Repair of a historic 80 year old bridge with custom colored cement-based mortar.	Shotpatch 21F
1988-08	Lake Pontchartrain Causeway Bridge	LA	Underwater encapsulation of precast cylinder piles supporting the 26-mile long bridge over Lake Pontchartrain.	A-P-E
2004	McKenzie River Bridge	OR	Structural reinforcement of RC bridge beams to account for cracking resulting from inadequate shear capacity.	MBrace
2001-02	Mid-Bay Bridge	FL	Re-grouting of post-tensioned cable ducts. Anchorage anchorage end-cap protection and encapsulation.	Masterflow 1205, Masterflow 648CP Plus
2006	Minetto Bridge over Oswego River	NY	Encapsulation of this concrete arch bridge against future corrosion damage and concrete spalling.	MBrace
2002-03	Ohio Turnpike Bridge	OH	Installed cable grout by pumping 900 feet from one end with 18 foot vertical lift.	Masterflow 1205, Masterflow 928, Emaco P24
2003-05	Queen Isabella Causeway	TX	Repaired bridge footings, caps and columns of TXDOT's longest over-water bridge.	Shotpatch 21F
2001	Railroad Trestle Bridge at Port of Stockton	CA	Encapsulation of timber piles including filling hollow center cavities to restore deterioration.	A-P-E
2000	Smart Roads Bridge	VA	Longitudinal draped cables in 450 ft. spans.	Masterflow 1205
2007	St. Pete Port Pier	FL	Concrete spall repairs. Crack injection and joint sealing.	10-61 Rapid Mortar, Gel Patch, Concreative LVI, Emaco P 24, SL-2
2000	Translink Skytrain Bridge	BC, Canada	Strengthening of cross beams for additional shear capacity.	MBrace
2007	US2 Ebey Island Bridge	WA	Repaired corrosion-damaged precast sections on a mile-long bridge. Upgraded the capacity of the bridge.	10-60 Rapid Repair Mortar, MBrace
2003-04	Wacker Drive Bridges	IL	Grouting of longitudinal post-tensioned beam cables in this 2 mile bridge that spans the inner city of Chicago.	Masterflow 1205
2006	Wakota Bridge	MIN	Sealing of concrete deck cracks.	Degadeck Crack Sealer Plus
2007	Winchester Bridge	OR	Concrete repair and strengthening.	LA Repair Mortar, MBrace

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