

Sikadur® 32 Hi-Mod

High-Modulus, High-Strength, Epoxy-Based Protective Coating and Bonding Adhesive

Description Sikadur® 32 Hi-Mod, is a multi-purpose, two-component, solvent-free, moisture-insensitive, structural epoxy adhesive and protective coating.

- Where to Use**
- Protective coating for reinforcing steel.
 - Bond fresh, plastic concrete to hardened concrete and steel.
 - Grout bolts, dowels, and pins etc.
 - Grout horizontal cracks in structural concrete and wood by gravity feed.
 - Structural adhesive for concrete, masonry, metal, wood, etc.

- Advantages**
- High-build, chemically resistant and protective coating.
 - Super-strength bonding/grouting adhesive.
 - Insensitive to moisture before, during and after cure.
 - Excellent adhesion to most structural materials.
 - Easy to mix: 1:1 ratio.
 - Easy to use for bonding/grouting applications.
 - Free of service-inhibiting polysulfides.
 - Fast initial set; rapid gain to ultimate strengths.
 - USDA-approved for use in food plants.
 - Meets ASTM C881, Type I, II and V, Grade 2, Class B and C, epoxy resin adhesive.
 - Ministère des Transports du Québec acceptance.

Technical Data			
Packaging	10 L (2.6 US gal.) unit		
Colour	Concrete Grey		
Yield	1 L = approx. 2 m ² (1 US gal. = approx. 80 ft ²)		
Shelf Life	2 years in original, unopened packaging. Store dry at 5 to 32°C (41 to 89°F). Condition product at 18 to 30°C (65 to 86°F) before using.		
Mix Ratio	A:B = 1:1 by volume		
Contact Time	4°C (39°F)*	23°C (73°F)*	32°C (89°F)*
	14 to 16 hrs	3 hrs 30 min to 4 hrs	1 hr 30 min to 2 hrs
Properties at 23°C (73°F) and 50% R.H.			
Viscosity	2800 cps		
Pot Life, 318 g (11.2 oz)	30 - 38 min		
Compressive Strength ASTM D695, MPa (psi)	4°C (39°F)*	23°C (73°F)*	32°C (89°F)*
8 hrs	-	-	7 (1015)
16 hrs	-	17 (2466)	31 (4498)
1 day	-	32 (4643)	44 (6384)
3 days	5 (725)	56 (8125)	57 (8270)
7 days	50 (7255)	66 (9576)	57 (8270)
14 days	56 (8125)	66 (9576)	57 (8270)
28 days	60 (8706)	66 (9576)	57 (8270)
* Product cured and tested at the temperatures indicated.			
Modulus of Elasticity ASTM D695			
28 days	3.03 GPa (4.4 x 10 ⁵ psi)		
Tensile Properties ASTM D638			
14 days	Tensile strength	33 MPa (4788 psi)	
	Elongation at break	1.9%	
	Modulus of elasticity	2.2 GPa (3.2 x 10 ⁵ psi)	
Flexural Properties ASTM D790			
14 days	Modulus of rupture	51 MPa (7400 psi)	
	Tangent modulus of elasticity in bending	3.24 GPa (4.7 x 10 ⁵ psi)	
Shear Strength ASTM D732			
14 days	41 MPa (5949 psi)		
Water Absorption ASTM D570			
7 days	2 hrs boil	0.7%	



Deflection Temperature ASTM D648

14 days Fiber stress loading = 1.8 MPa (261 psi) 49°C (120°F)

Bond Strength ASTM C882

14 days Plastic concrete to hardened concrete 13 MPa (1886 psi)
Plastic concrete to steel 13 MPa (1886 psi)

Product properties are typically averages, obtained under laboratory conditions. Reasonable variations can be expected on-site due to local factors, including environment, preparation, application, curing and test methods

How to Use

Surface Preparation

Substrate must be clean and sound. It may be dry or damp, but free of standing water. Remove dust, laitance, grease, curing compounds, impregnations, waxes, foreign particles and disintegrated materials.

Concrete: Sandblast or use other approved mechanical methods.

Steel: Sandblast to white-metal finish (SP-10).

Mixing

Pre-stir each component then proportion equal parts by volume of component A and component B into a clean pail. Mix thoroughly for 3 minutes with paddle on low-speed drill (300-450 rpm) until blend is a uniform colour. Mix only that quantity that can be applied within its pot life.

Application

To protect steel reinforcing: Apply two coats of Sikadur® 32 Hi-Mod by brush or spray. Allow first coat to become tack-free. Apply second coat prior to application of repair mortar/concrete.

To bond fresh concrete to hardened concrete: Apply by brush, roller, broom or spray. Place fresh concrete while Sikadur® 32 Hi-Mod is still tacky. If coating becomes glossy and loses tackiness, remove any surface contaminants then recoat with additional Sikadur® 32 Hi-Mod and proceed.

To anchor bolts, dowels and pins: Use neat. For efficient transfer of stress, the holes should be not greater than 6 mm (1/4 in) in diameter than the bar, pin or rod to be embedded. Depth of embedment is typically 10 to 15 times the bar diameter.

To gravity feed cracks: Pour neat material into "V"-notched crack. Continue placement until completely filled. Seal underside of slab prior to filling if cracks reflect through.

Clean Up

Collect with absorbent material. Dispose of in accordance with local disposal regulations. Uncured material can be removed with Sika® Equipment Cleaner. Cured product can only be removed mechanically.

Limitations

- Do not use as a bonding agent with set accelerated mortars, e.g. SikaQuick® 1000, SikaQuick® 2500, SikaTop® 122 PLUS Winter Grade and SikaTop® 123 PLUS Winter Grade. Consult Sika Canada Technical Services.
- Minimum application temperature: 4°C (39°F).
- Product is a vapour barrier after cure.
- Do not thin with solvents.

Health and Safety Information

For information and advice on the safe handling, storage and disposal of chemical products, users should refer to the **most recent Material Safety Data Sheet** containing physical, ecological, toxicological and other safety-related data.

KEEP OUT OF REACH OF CHILDREN
FOR INDUSTRIAL USE ONLY

The information, and in particular, the recommendations relating to the application and end-use of Sika products, are given in good faith based on Sika's current knowledge and experience of the products when properly stored, handled and applied under normal conditions, within their shelf life. In practice, the differences in materials, substrates and actual site conditions are such that no warranty in respect of merchantability or of fitness for a particular purpose, nor any liability arising out of any legal relationship whatsoever, can be inferred either from this information, or from any recommendations, or from any other advice offered. The proprietary rights of third parties must be observed. All orders are accepted subject to our current terms of sale and delivery. Users should always refer to the most recent issue of the Product Data Sheet for the product concerned, copies of which will be supplied on request or can be accessed in the Internet under www.sika.ca.

Sika Canada Inc.

Quebec

601 Delmar Avenue
Pointe-Claire, QC H9R 4A9
Tel.: 514-697-2610
Fax: 514-697-3087

Ontario

6915 Davand Drive
Mississauga, ON L5T 1L5
Tel.: 905-795-3177
Fax: 905-795-3192

Alberta

18131-114th Avenue N.W.
Edmonton, AB T5S 1T8
Tel.: 780-486-6111
Fax: 780-483-1580

1-800-933-SIKA
www.sika.ca

An ISO 9001 certified company
Pointe-Claire : ISO 14001 certified EMS



AMERLOCK 400

March 2012
Revision of November 2011

DESCRIPTION	High Solids Epoxy Coating
PRINCIPAL CHARACTERISTICS	<ul style="list-style-type: none"> – Low VOC – High performance general maintenance coating for new or old steel – Self priming over most existing coatings – Compatible with prepared damp surfaces – Compatible with adherent rust remaining on prepared surfaces – Dry temperature resistance up to 450°F on insulated or uninsulated surfaces when mixed with Amercoat 880 glass flake additive
COLOR AND GLOSS	<p>Semi-gloss Standard primer colors, custom colors, and aluminum</p> <p><i>* Epoxy coatings will chalk and fade with exposure to sunlight. Light colors are prone to ambering to some extent. Note that product tinted to custom colors are not recommended for immersion service. Only use factory grind batches for immersion.</i></p>
BASIC DATA	
Volume solids	85% ± 3% 400AL is 88% +/- 3%
VOC	1.5 lbs/gal (180 g/L) 1.4 lbs/gal (163 g/L) Directive 1999/13/EC, SED 400AL = 1.0 lbs/gal; 120 g/L (Use Amerlock 400VOC when <100 g/L formulation is required)
Recommended Dry film thickness (per coat)	4 – 8 mils (100 – 200 microns)
Theoretical Spread Rate	@ 1 mils dft 1331 ft ² /gal @ 5 mils dft 266 ft ² /gal
Components	2
Shelf Life	3 years from date of manufacture
SURFACE PREPARATION	<p>Coating performance is, in general, proportional to the degree of surface preparation. Abrasive blasting is usually the most effective and economical method. When this is impossible or impractical, Amerlock 400 can be applied over mechanically cleaned surfaces. All surfaces must be clean, dry and free of all contaminants, including salt deposits. Contact PPG for maximum allowable salt containment levels.</p>
Mild Steel	<ul style="list-style-type: none"> – Remove all loose rust, dirt, grease or other contaminants by one of the following depending on the degree of cleanliness required: SSPC-SP2, 3, 6, 7 or 10 (ISO 8501-1 St-2, St-3, Sa 1, Sa 2.5). These minimum surface preparation standards apply to steel that has been previously abrasive blasted. The choice of surface preparation will depend on the system selected and end-use service conditions. For more severe service and immersion, clean to SSPC-SP10 (ISO8501-1 Sa 2.5). Blast to achieve an anchor profile of 1.0-5.0 mils (50-75microns) as indicted by a Keane-Tator Surface profile Comparator or Testex Tape. Previously blasted steel may be ultra-high pressure water jetted to NACE No. 5/SSPC-SP 12 WJ-2L. The wet surface can be dried by blowing with dry compressed air giving special attention to horizontal surfaces and recesses.
Concrete	<ul style="list-style-type: none"> – Prepare / clean surface in accordance with SSPC SP-13 guidelines. Abrade surface per ASTM D-4259 to remove all efflorescence and laitance, to expose sub-surface voids, and to provide a surface roughness equivalent of 60 grit sandpaper or coarser. Test for moisture by conducting a plastic sheet test in accordance with ASTM D4263. Fill voids as necessary with Amercoat 114A epoxy filler. For slabs on grade, test for moisture in accordance with ASTM F1869 (calcium chloride test). The maximum allowable moisture transmission is 3 lbs / 1,000 ft²/24 hours. Refer to Information Sheet 1496ACUS for further details regarding moisture measurements.

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- Galvanized Steel
 - Remove oil or soap film with detergent or emulsion cleaner. Lightly abrasive blast with a fine abrasive in accordance with SSPC SP-16 guidelines to achieve a profile of 1.5-3.0 mils. When light abrasive blasting is not possible, galvanizing can be treated with a suitable zinc phosphate conversion coating. Galvanizing that has at least 12 months of exterior weathering and has a rough surface with white rust present may be over-coated after power washing and cleaning to remove white rust and other contaminants. The surface must have a measurable profile. A test patch is recommended to confirm adhesion. Not recommended over chromate sealed galvanizing without blasting to thoroughly remove chromates. Adhesion problems may occur.
- Non-Ferrous Metals and Stainless Steel
 - Abrasive blast in accordance with SSPC SP-16 guidelines to achieve a uniform and dense 1.5-4.0 mil anchor profile. Size and hardness of abrasive should be adjusted as necessary based on the hardness of the substrate. Aluminum may be treated with a surface treatment compliant with Mil-DTL-5541 or equivalent (non-immersion applications only).
- Aged coatings
 - All surfaces must be clean, dry, tightly bonded and free of all loose paint, corrosion products or chalky residue. Abrade surface, or clean with Prep 88. Amerlock 400 is compatible over most types of properly applied and tightly adhering coatings, however, a test patch is recommended to confirm compatibility.
- Repair
 - Prepare damaged areas to original surface preparation specifications, feathering edges of intact coating. Thoroughly remove dust or abrasive residue before touch-up.

ENVIRONMENTAL CONDITIONS

- Ambient temperatures*
 - 40°F to 122°F (5°C to 50°C)
 - 20°F to 122 °F (-6°C to 50°C) with 1 pint per gal of Amercoat 861 accelerator per 5 gal
 - * *Amerlock 2 hardener can be used with the Amerlock 2/400 base component for faster cure and curing in lower temperatures. The A component is the same for Amerlock 400 and Amerlock 2. The B components are interchangeable.*
- Material temperatures
 - 40°F to 90°F (5°C to 32°C)
- Relative humidity
 - 0 to 100%, surface must be free of visible moisture. For immersion service and for optimum performance, surface temperature must be at least 5°F above the dew point temperature.
- Surface temperature
 - 40°F to 122°F (5°C to 50°C)
 - 20°F to 122 °F (-6°C to 50°C) with 1 pint of Amercoat 861 thinner per 5 - gallons
 - * *Amerlock 400 may be applied to surfaces as hot as 250°F (121°C) for non-immersion service. When applying Amerlock 400 to surfaces between 122°F and 250°F, Amerlock 400 must be thinned at 1/2 pint per gallon with only Amercoat 101 thinner. Multiple thin passes may be required to achieve film build and to avoid solvent blistering.*
- General air quality
 - Area should be sheltered from airborne particulates and pollutants. Avoid combustion gases or other sources of carbon dioxide that may promote amine blush. Ensure good ventilation during application and curing. Provide shelter to prevent wind from affecting spray patterns. Refer to Information Bulletin #1489 for further information.

INSTRUCTIONS FOR USE

- Mixing ratio by volume
 - 1 part base to 1 part hardener
 - Pre-mix pigmented components with a pneumatic air mixer at moderate speeds to homogenize the container. Add hardener to base and agitate with a power mixer for 1-2 minutes until completely dispersed.

Pot life

	50°F	70°F	90°F
400	3 hours	2 hours	1 hour
400 w/ 1 pint of 861 per 5 gallons	1.5 hours	1 hour	___ hours
400AL	10 hours	5.5 hours	3.5 hours

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Induction time	None required
Airless spray	45:1 pump or larger, 0.017-0.019 fluid tip Can be sprayed with plural component application equipment.
Air spray	Thin up to 20%, standard conventional equipment, 0.070" fluid orifice
Brush & roll	Use a high quality natural bristle brush and / or solvent resistant, 3/8" nap roller. Ensure brush / roller is well loaded to avoid air entrainment. Multiple coats may be necessary to achieve adequate film build.
Thinner	Amercoat 65, Amercoat 101
Cleaning solvent	Amercoat 12 Cleaner or Amercoat 65 thinner (xylene)
Primers	Direct to substrate; Dimetcote series primers, Amercoat 68HS
Topcoats	Amercoat 450 Series Polyurethanes, Amershield, PSX 700, PSX 1001, Amercoat 220 Series Acrylics, Pitthane Polyurethanes, PittTech Acrylics
Safety precautions	For paint and recommended thinners see safety sheet 1430, 1431 and relevant material safety data sheets

This is a solvent borne paint and care should be taken to avoid inhalation of spray mist or vapor as well as contact between the wet paint and exposed skin or eyes.

DRY/CURE TIMES

Amerlock 400 @ 5 mils dft

	32°F	50°F	70°F	90°F
Dry to touch	96 hours	28 hours	9 hours	4.5 hours
Dry through	140 hours	48 hours	20 hours	12 hours
Dry to recoat/topcoat	120 hours	36 hours	16 hours	6 hours
Max recoat, self	120 days	120 days	90 days	30 days
Max topcoat, urethanes, PSX	30 days	30 days	30 days	15 days
Cure to immersion <i>factory colors only</i>	NR	21 days	7 days	4 days

Amerlock 400 Aluminum @ 5 mils dft

	32°F	50°F	70°F	90°F
Dry to touch	96 hours	36 hours	12 hours	4 hours
Dry through	216 hours	72 hours	24 hours	7.5 hours
Dry to recoat	120 hours	36 hours	16 hours	6 hours
Max recoat, self	120 days	120 days	90 days	30 days
Max topcoat, urethanes, PSX	30 days	30 days	30 days	15 days
Cure to immersion <i>factory colors only</i>	NR	21 days	7 days	4 days

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ACCELERATED DRY TIMES

Amerlock 400 w/ 1 pint Amercoat 861 per 5 gallons @ 5 mils dft

	20°F	32°F	50°F	70°F	90°F
Dry to touch	96 hours	48 hours	15 hours	4 hours	2 hours
Dry through	160 hours	72 hours	24 hours	9 hours	5 hours
Dry to recoat/topcoat	28 hours	16 hours	16 hours	7 hours	4 hours
Max recoat, self	60 days	60 days	45 days	30 days	15 days
Max topcoat, urethanes, PSX	30 days	30 days	21 days	14 days	5 days
Cure to immersion <i>factory colors only</i>	NR	NR	NR	NR	NR

* Dry times are dependent on air and surface temperatures as well as film thickness, ventilation, and relative humidity. Maximum recoating time is highly dependent upon actual surface temperatures – not simply air temperatures. Surface temperatures should be monitored, especially with sun-exposed or otherwise heated surfaces. Higher surface temperatures shorten the maximum recoat window. An extended recoatable window may be allowable in some circumstances. Please contact your PPG PMC representative for more details.
Surface must be clean and dry. Any contamination must be identified and removed. A detergent wash with Prep 88 or equivalent is required prior to application of topcoats after 30 days of exposure. However, particular attention must be paid to surfaces exposed to sunlight where chalking may be present. In those situations, a further degree of cleaning may be required. PPG Technical Service can advise on suitable cleaning methods. If maximum recoat/topcoat time is exceeded, then roughen surface.

PRODUCT QUALIFICATIONS

- Compliant with USDA Incidental Food Contact Requirements
- NFPA Class A for Flame Spread and Smoke Development
- Qualified for ANSI / NSF Standard 61 (potable water) for valves only.
For NSF application instructions, please visit our website at:
www.ppgamercoatus.ppgpmc.com/NSF/
- AWWA C210-98
- AWWA C550-98
- MPI Category #108
- LEED's compliant for Anti-corrosive Paint category
- Nuclear Service Level 2 (ANSI N 5.12, ANSI N 101.2)

AVAILABILITY

Packaging

Available in 2-gallon and 5-gallon kits
2-gallon kits have 1 full gallon of base and 1 full gallon of hardener
5 gallon kits have 2.5 gallons of base and 2.5 gallons of hardener

Inventory (made to order, etc..)

Global availability

Product codes

AK2-1	Buff
AK2-3	White
AK2-9	Black
AK2-23	Pearl Gray
AK2-72	Oxide Red
AK2-81	Safety Yellow
AK2-T1	Deep Tint base
AK2-T2	Light Tint base
AK2-T3	Neutral Tint base
AK2-T4	Red Tint base
AK2-T5	High Hiding Yellow Tint base
AK400-B	Hardener component
AK400AL	Amerlock 400 Aluminum base
AK400AL-B	Amerlock 400 Aluminum hardener

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Worldwide statement

While it is always the aim of PPG Protective & Marine Coatings to supply the same product on a worldwide basis, slight modification of the product is sometimes necessary to comply with local or national rules/circumstances. Under these circumstances an alternative product data sheet is used.

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This data sheet supersedes all previous versions and it is the user's responsibility to ensure that this data sheet is current prior to using the product. The English text of this document shall prevail over any translation thereof.

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The data contained herein are liable to modification as a result of practical experience and continuous product development.

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