Protective & Marine Coatings

HI-MIL SHER-TAR® EPOXY

PART A	B69B40	BLACK
PART B	B60V40	HARDENER

Revised 9/09

PRODUCT INFORMATION

4.71

PRODUCT DESCRIPTION

HI-MIL SHER-TAR EPOXY is a high build, polyamide cured, epoxy coal tar coating, which can be applied at high film thickness in one coat.

- Chemical resistant
- Corrosion and abrasion resistant
- High build in a single coat

PRODUCT CHARACTERISTICS

Finish: Semi-Gloss

Color: Black

Volume Solids: 68% ± 2%, mixed

Weight Solids: 77% ± 2%, mixed

VOC (calculated): mixed
Unreduced: <340 g/L; 2.8 lb/gal
Reduced 25%: <430 g/L; 3.59 lb/gal

Mix Ratio: 2 components, premeasured 3:1
4 gallons mixed

Recommended Spreading Rate per coat:

	Minimum		Maximum	
Wet mils (microns)	**24.0**	600	**35.0**	875
Dry mils (microns)	**16.0**	400	**24.0**	600
~Coverage sq ft/gal (m^2/L)	**45**	1.1	**68**	1.7
Theoretical coverage **sq ft/gal** (m^2/L) @ 1 mil / 25 microns dft	**1088**	26.6		

NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

Drying Schedule @ 29.0 mils wet (725 microns):

	@ 50°F/10°C	@ 77°F/25°C *50% RH*	@ 100°F/38°C
To touch:	10 hours	8-10 hours	2 hours
To handle:	48 hours	48 hours	6 hours
To recoat:			
minimum:	24 hours	16 hours	8 hours
maximum:	72 hours	48 hours	16 hours
To cure:	7 days	7 days	7 days

If maximum recoat time is exceeded, abrade surface before recoating.
Drying time is temperature, humidity, and film thickness dependent.

Pot Life:	6 hours	4 hours	1 hour
Sweat-in-Time:	1 hour	30 minutes	15 minutes

Shelf Life:	12 months, unopened Store indoors at 40°F (4.5°C) to 100°F (38°C)
Flash Point:	110°F (43°C) PMCC, mixed
Reducer/Clean Up:	Reducer #54, R7K54

RECOMMENDED USES

For use over prepared substrates such as steel and concrete in industrial environments.

- Penstocks
- Dam gates
- Offshore drilling rigs
- Liner for clarifiers
- Marine applications
- Heavy duty structural coating
- Non-potable water tank and pipe coating
- Acceptable for use with cathodic protection systems

PERFORMANCE CHARACTERISTICS

Substrate*: Steel
Surface Preparation*: SSPC-SP6/NACE 3
System Tested*:
1 ct. Hi-Mil Sher-Tar @ 20.0 mils (500 microns) dft/ct
*unless otherwise noted below

Test Name	Test Method	Results
Abrasion Resistance	ASTM D4060, CS17 wheel, 1000 cycles, 1 kg load	101 mg loss
Adhesion	ASTM D4541	600 psi
Direct Impact Resistance	ASTM D2794	>80 in. lbs.
Dry Heat Resistance (quench test only)	ASTM D2485	350°F (177°C)
Flexibility	ASTM D522, 180° bend, 1" mandrel	Passes
Moisture Condensation Resistance	ASTM D4585, 100°F (38°C), 1000 hours	No failure
Pencil Hardness	ASTM D3363	4H
Salt Fog Resistance	ASTM B117, 1000 hours	Excellent
Sea Water Immersion	ASTM D870 2 years	No blistering, cracking, or rusting
Water Vapor Permeability	ASTM D1653	0.021 perm-in.
Wet Heat Resistance	Non-immersion	120°F (49°C)

Provides performance comparable to products formulated to federal specifications: DOD-P-23236A (SH) Class 2. (Replaces MIL-P-23236) Type 1, Class 2, SSPC-Paint 16.

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RECOMMENDED SYSTEMS

		Dry Film Thickness / ct. Mils	(Microns)
Concrete or Steel, atmospheric or immersion:			
1 ct.	Hi-Mil Sher-Tar Epoxy	16.0-24.0	(400-600)
Concrete or Steel, atmospheric or immersion:			
2 cts.	Hi-Mil Sher-Tar Epoxy	8.0-12.0	(200-300)
Steel, zinc rich primer, atmospheric only:			
1 ct.	Zinc Clad II Plus	3.0-5.0	(75-125)
1 ct.	Hi-Mil Sher-Tar Epoxy	16.0-24.0	(400-600)
Steel, atmospheric only (Optional Epoxy Primer):			
1 ct.	Recoatable Epoxy Primer	4.0-6.0	(100-150)
1 ct.	Hi-Mil Sher-Tar Epoxy	16.0-24.0	(400-600)
Aluminum, atmospheric only:			
1 ct.	Hi-Mil Sher-Tar Epoxy	16.0-24.0	(400-600)
Galvanized Metal, atmospheric only:			
1 ct.	Hi-Mil Sher-Tar Epoxy	16.0-24.0	(400-600)

The systems listed above are representative of the product's use, other systems may be appropriate.

SURFACE PREPARATION

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Refer to product Application Bulletin for detailed surface preparation information.

Minimum recommended surface preparation:

Iron & Steel:
- Atmospheric: SSPC-SP6/NACE 3, 2 mil (50 micron) profile
- Immersion: SSPC-SP10/NACE 2, 4 mil (100 micron) profile
- Aluminum: Brush Blast, 2 mil (50 micron) profile
- Galvanizing: Brush Blast, 2 mil (50 micron) profile

Concrete Masonry:
- Atmospheric: SSPC-SP 13/NACE 6, or ICRI 03732, CSP 1-3
- Immersion: SSPC-SP 13/NACE 6-4.3.1 or 4.3.2., or ICRI 03732, CSP 1-3

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
Near White Metal		Sa 2.5	Sa 2.5	SP 10	2
Commercial Blast		Sa 2	Sa 2	SP 6	3
Brush-Off Blast		Sa 1	Sa 1	SP 7	4
Hand Tool Cleaning	Rusted	C St 2	C St 2	SP 2	-
	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

TINTING

Do not tint.

APPLICATION CONDITIONS

Temperature: 50°F (10°C) minimum, 120°F (49°C) maximum (air, surface, and material)
At least 5°F (2.8°C) above dew point

Relative humidity: 90% maximum

Refer to product Application Bulletin for detailed application information.

ORDERING INFORMATION

Packaging: 4 gallons (15.1L) mixed
- Part A: 3 gallons (11.3L) in a 5 gallon (18.9L) container
- Part B: 1 gallon (3.78L)

Weight: 10.3 ± 0.2 lb/gal ; 1.2 Kg/L, mixed

SAFETY PRECAUTIONS

Refer to the MSDS sheet before use.

Published technical data and instructions are subject to change without notice. Contact your Sherwin-Williams representative for additional technical data and instructions.

DISCLAIMER

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WARRANTY

The Sherwin-Williams Company warrants our products to be free of manufacturing defects in accord with applicable Sherwin-Williams quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by Sherwin-Williams. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SHERWIN-WILLIAMS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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APPLICATION BULLETIN

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SURFACE PREPARATIONS

Surface must be clean, dry, and in sound condition. Remove all oil, dust, grease, dirt, loose rust, and other foreign material to ensure adequate adhesion.

Iron & Steel (atmospheric service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Commercial Blast Cleaning per SSPC-SP6/NACE 3. For better performance, use Near White Metal Blast Cleaning per SSPC-SP10/NACE 2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (2 mils / 50 microns). Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Iron & Steel (immersion service)
Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1. Minimum surface preparation is Near White Metal Blast Cleaning per SSPC-SP10/NACE2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (4 mils / 100 microns). Remove all weld spatter and round all sharp edges by grinding. Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Galvanized Steel/Aluminum
Allow to weather a minimum of six months prior to coating. Remove all oil and grease from surface by Solvent Cleaning per SSPC-SP1 (recommended solvent is VM&P Naphtha). Lightly brush blast per SSPC-SP 7 to provide a 2 mil (50 micron) profile.

Concrete and Masonry
For surface preparation, refer to SSPC-SP13/NACE 6, or ICRI 03732, CSP 1-3. Surfaces should be thoroughly clean and dry. Concrete and mortar must be cured at least 28 days @ 75°F (24°C). Remove all loose mortar and foreign material. Surface must be free of laitance, concrete dust, dirt, form release agents, moisture curing membranes, loose cement and hardeners. Fill bug holes, air pockets and other voids with Steel-Seam FT910. Primer required.

Concrete, Immersion Service:
For surface preparation, refer to SSPC-SP13/NACE 6, Section 4.3.1 or 1.3.2 or ICRI 03732, CSP 1-3.

Always follow the standard methods listed below:
ASTM D4258 Standard Practice for Cleaning Concrete.
ASTM D4259 Standard Practice for Abrading Concrete.
ASTM D4260 Standard Practice for Etching Concrete.
ASTM F1869 Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete.
SSPC-SP 13/Nace 6 Surface Preparation of Concrete.
ICRI 03732 Concrete Surface Preparation.

Surface Preparation Standards

	Condition of Surface	ISO 8501-1 BS7079:A1	Swedish Std. SIS055900	SSPC	NACE
White Metal		Sa 3	Sa 3	SP 5	1
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	Pitted & Rusted	D St 2	D St 2	SP 2	-
Power Tool Cleaning	Rusted	C St 3	C St 3	SP 3	-
	Pitted & Rusted	D St 3	D St 3	SP 3	-

APPLICATION CONDITIONS

Temperature:	50°F (10°C) minimum, 120°F (49°C) maximum (air, surface, and material) At least 5°F (2.8°C) above dew point
Relative humidity:	90% maximum

APPLICATION EQUIPMENT

The following is a guide. Changes in pressures and tip sizes may be needed for proper spray characteristics. Always purge spray equipment before use with listed reducer. Any reduction must be compliant with existing VOC regulations and compatible with the existing environmental and application conditions.

Reducer/Clean Up .....Reducer #54, R7K54

Airless Spray
Pressure.....2500 - 3000 psi
Hose.....3/8" - 1/2" ID
Tip .....031"
Filter .....none
Reduction.....As needed up to 25% by volume

Conventional Spray (bottom feed tank recommended)
Gun .....Binks 95
Fluid Nozzle 66
Air Nozzle.....63PB
Atomization Pressure.....60 psi
Fluid Pressure.....40 psi
Reduction.....As needed up to 25% by volume

Brush
Brush.....Natural Bristle
Reduction.....Not recommended

Roller
Cover .....3/8" - 1/2" woven with solvent resistant core
Reduction.....Not recommended

If specific application equipment is not listed above, equivalent equipment may be substituted.

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APPLICATION PROCEDURES

Surface preparation must be completed as indicated.

Mix contents of each component thoroughly with low speed power agitation. Make certain no pigment remains on the bottom of the can. Then combine three parts by volume of Part A with one part by volume of Part B. Thoroughly agitate the mixture with power agitation. Allow the material to sweat-in as indicated. Re-stir before using.

If reducer solvent is used, add only after both components have been thoroughly mixed, after sweat-in.

Apply paint at the recommended film thickness and spreading rate as indicated below:

Recommended Spreading Rate per coat:

	Minimum		Maximum	
Wet mils (microns)	**24.0**	600	**35.0**	875
Dry mils (microns)	**16.0**	400	**24.0**	600
~Coverage sq ft/gal (m^2/L)	**45**	1.1	**68**	1.7
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NOTE: Brush or roll application may require multiple coats to achieve maximum film thickness and uniformity of appearance.

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To recoat:			
minimum:	24 hours	16 hours	8 hours
maximum:	72 hours	48 hours	16 hours
To cure:	7 days	7 days	7 days

If maximum recoat time is exceeded, abrade surface before recoating.

Drying time is temperature, humidity, and film thickness dependent.

Pot Life:	6 hours	4 hours	1 hour
Sweat-in-Time:	1 hour	30 minutes	15 minutes

Application of coating above maximum or below minimum recommended spreading rate may adversely affect coating performance.

CLEAN UP INSTRUCTIONS

Clean spills and spatters immediately with Reducer #54, R7K54. Clean tools immediately after use with Reducer #54, R7K54. Follow manufacturer's safety recommendations when using any solvent.

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PERFORMANCE TIPS

Stripe coat all crevices, welds, and sharp angles to prevent early failure in these areas.

When using spray application, use a 50% overlap with each pass of the gun to avoid holidays, bare areas, and pinholes. If necessary, cross spray at a right angle.

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, overthinning, climatic conditions, and excessive film build.

Excessive reduction of material can affect film build, appearance, and adhesion.

Do not apply the material beyond recommended pot life.

Do not mix previously catalyzed material with new.

In order to avoid blockage of spray equipment, clean equipment before use or before periods of extended downtime with Reducer #54, R7K54.

Coating must be fully cured before placing into immersion service.

For Immersion Service: (if required) Holiday test in accordance with ASTM D5162 for steel, or ASTM D4787 for concrete.

Refer to Product Information sheet for additional performance characteristics and properties.

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