

3M™ Scotchkote™ Liquid Epoxy Coatings 323/323i

Data Sheet and Application Instructions


Product Description

3M™ Scotchkote™ Liquid Epoxy Coatings 323/323i are two-part systems designed to protect steel pipe and other metal surfaces from the harsh affects of corrosion.

Intended Uses

- As a patch material.
- As a girthweld coating.
- As an internal lining
- As a stand alone coating for pipe rehabilitation.
- In a wide variety of other field applications where corrosion protection of metal is required.

Product Features

- No solvents needed.
- High build, up to 45 mils/1150 microns in one application.
- Applicable by cartridge, brush, roller, HSS or plural component spray.
- Excellent adhesion.
- 100% solids.
- VOC for Parts A and B as mixed 12 g/L
- Can be applied to a substrate as cold as 41°F/5°C.
- Meets the requirements of AWWA C210, - 97 clause 4.3.4.1.
- Certified to ANSI/NSF Standard 61, Drinking Water System Components. 

Chemical Resistance

Scotchkote 323/323i are resistant to damage by acids and bases in the pH range of 2 to 14. It is also resistant to hydrocarbons such as crude oil, motor oil, gasoline and many solvents. Testing is suggested if the coating is to be used in continual contact with oxidizing agents such as sodium hypochlorite (bleach) and aggressive solvents such as methyl ethyl ketone (MEK).

3M™ Scotchkote™ 323/323i Coverage per kit size

(Assumes no waste)

Kit	lbs of material	Coverage in square feet @ mils		
		25 mils	28 mils	30 mils
50 ml	0.15	0.85	0.76	0.71
450 ml	1.34	7.63	6.81	6.36
Quart	2.10	11.90	10.60	9.90
Gallon	8.70	47.70	42.60	39.70
5-gal x 3	152.10	865.80	773.00	721.50
55-gal drum x 3	1,690.40	9,621.80	8,590.90	8,018.10

Number of U.S. Quarts/.95 L needed per weld*

Pipe Diameter (inches)	Total Length to coat (cut backs + overlaps)			
	6" (15 cm)	8" (20 cm)	10" (25 cm)	12" (30 cm)
6	0.06	0.08	0.10	0.13
12	0.13	0.17	0.21	0.25
20	0.21	0.28	0.35	0.42
24	0.25	0.33	0.42	0.50
30	0.31	0.42	0.52	0.63
36	0.38	0.50	0.63	0.75
42	0.44	0.59	0.73	0.88
48	0.50	0.67	0.84	1.00

*Assumes no waste. Based on a coating thickness of 25 mils.

General Application Steps

For use as a joint coating, a refurbishing coating or as a pipe coating:

1. Remove oil, grease and loosely adhering deposits.
2. Abrasive blast clean the surface to NACE No. 2/SSPC-SP10, ISO 8501:1, Grade SA 2 1/2 near-white metal.
3. Ensure the abraded surface is cleaned of abrading debris with the use of an air blast or a clean lint free cloth.
4. Within four hours of blasting as per the above cleaning process and with the metal above 41°F/5°C and a minimum of 5°F/3°C above the dew point, apply Scotchkote 323/323i at a minimum thickness of 635 microns or 25 mils. Allow to cure.
5. Repair all defects using Scotchkote 323/323i.



When applying to NSF standard:

Number of coats	1
Maximum field use dry film thickness (in mils)	30
Maximum thinner	None
Final cure time and temperature	120°F for 2 hours
Special comments	Mix ratio of A:B is 2:1 by volume

For use as a repair material in the field where scratches or other holidays may have occurred.

1. Remove oil, grease and loosely adhering deposits.
2. Abrade the FBE surface with medium grit sandpaper (approx 80 grit). Powered rotary sanders and sweep blasting are also acceptable means of performing this task as well. Ensure that the surrounding FBE is roughened for 10 mm on all sides of the holiday. An anchor pattern of 40 to 100 microns is preferred on the steel substrate.

3. Ensure the abraded surface is cleaned of abrading debris with the use of an air blast or a clean lint free cloth.
4. With the metal above 41°F/5°C and a minimum of 5°F/3°C above the dew point, apply Scotchkote 323/323i at a minimum thickness of 635 microns or 25 mils.

Properties

Property	Value	
Color	Blue-Green	
Mix Ratio	2A : 1B by volume 70.8% : 29.2% by weight	
Viscosity in cps @	323	323i
• Brush Grade 72°F/22°C	Part A: 154,000 Part B: 6,000	Part A: 154,000 Part B: 3,500
• Spray Grade 72°F/22°C	Part A: 90,000 Part B: 19,000	Part A: 90,000 Part B: 9,500
Shelf Life (unopened container)	24 months	
Specific Gravity	1.35 mixed	
Coverage	142 ft ² /(lb/mil) (0.74m ² /(kg/mm))	
Max Operating Temperature	<ul style="list-style-type: none"> • Wet 203°F/95°C* • Dry 250°F/121°C* 	
Minimum Coating Thickness	25 mils/635 microns recommended	

*Max operating temperature based on CD testing.

Typical Test Properties

Property	Test Description	Typical Value		
Shyodu Gel Time (approximate pot life)	200 gm mass	75°F / 24°C	20 Min	
		104°F / 40°C	11 min	
Dry to Touch Time	ASTM D1640 clause 7.5.2	41°F / 5°C	7 hrs	
		75°F / 24°C	1 hr 45 Min	
		122°F / 50°C	26 min	
Approximate Back Fill Time (For additional information see chart below)	ASTM D1640 clause 7.7.1	41°F / 5°C	8 hrs	
		75°F / 24°C	2 hr 39 min	
		122°F / 50°C	39 min	
Cathodic Disbondment (steel grit blasted plates laboratory applied; results may vary depending on blast media)	CSA Z245.20-06 clause 12.8	149°F / 65°C, 3.5V,	24 hrs	4.9 mmm
		149°F / 65°C, 1.5V,	48 hrs	5.5 mmm
		149°F / 65°C, 1.5V,	28 days	7.5 mmm
		176°F / 80°C, 1.5V,	14 days	6.4 mmm
		176°F / 80°C, 1.5V,	28 days	6.6 mmm
Adhesion of Coating	CSA Z245.20-06 clause 12.14	203°F / 95°C	24 hrs	Rating 1
		167°F / 75°C	48 hrs	Rating 1
		167°F / 75°C	28 days	Rating 1
Flexibility	CSA Z245.20-06 clause 12.11	68°F / 20°C 0.7	%PD	
		32°F / 0°C 0.7	%PD	
Abrasion Resistance	ASTM D4060-06 CS-17 wheels 1000 g load 5000 cycles wheels resurfaced every 500 cycles	0.325 g loss		
Impact Strength	ASTM G14	323 = 73.6 inch-lbs (8.3 Joules) at 75°F / 24°C 323i = 60.9 inch-lbs (6.8 Joules) at 75°F / 24°C		
Impact Resistance	CSA Z245 20-06 Clause 12.12	See Chart Below		

Impact Resistance

Impact value is the last Joule where three impacts have passed

Panel Number	Test Temperature	Joule Value	Holiday detection voltage	Average DFT (mils)
1	-40°F/-40°C	1.5	2500	30.4
2	-22°F/-30°C	1.0	2500	24.5
3	14°F/-10°C	1.5	2500	27.2
4	32°F/0°C	1.5	2500	25.0
5	68°F/20°C	2.75	2500	26.9
6	122°F/50°C	2.5	2500	27.7
7	149°F/65°C	4.0	2500	27.0
8	176°F/80°C	3.5	2500	26.3

Shore D Hardness vs. Time and Temperature

Time	10°C (50°F)	20°C (68°F)	30°C (86°F)	40°C (104°F)
1 hour	--	--	--	--
1.5 hours	--	--	--	72
2 hours	--	--	--	76
2.5 hours	--	--	72	79
3 hours	--	72	76	79
3.5 hours	--	73	78	79
4 hours	--	75	80	79
4.5 hours	--	76	81	80
5 hours	--	77	82	82
5.5 hours	--	79	82	82
6 hours	--	80	82	81
6.5 hours	--	81	83	81
7 hours	72	82	83	82
7.5 hours	73	82	83	81
8 hours	73	83	84	83
9 hours	74	83	83	81
17 hours	82	85	84	84
3 days	85	85	85	85

Scotchkote 323/323i Brush Grade Mixing Instructions

1. Mix parts A and B separately.
2. Pour part B into part A. Scotchkote 323/323i have a mix ratio of 2A to 1B by volume.
3. Thoroughly mix combined parts into a uniform color.

Pot Life (Approximate)

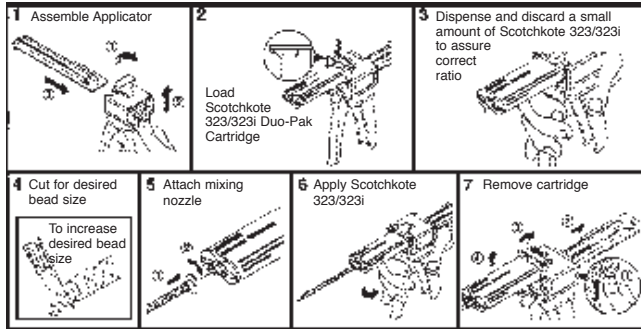
Based on 7-ounce (200-gram) samples	
75°F (24°C)	20 minutes
104°F (40°C)	11 minutes

Recommendations

- Prepare only the quantity of coating that can be applied in this period of time within the pot life.
- A 1/4" (6 mm) nap, lint-free roller is suggested.
- For speed of application, and to extend the working life of the product, pour mixed product directly to the top of the substrate/pipe, then pull the mixture down around pipe in one direction with brush.
- Because of the high viscosity of this product, we suggest mixing parts A & B together at temperatures above 68°F (20°C).

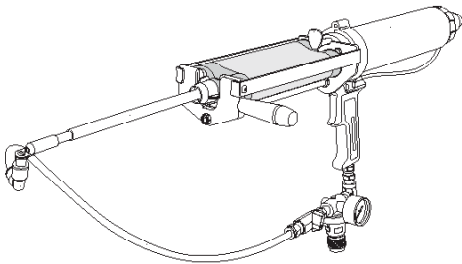
Using a brush or roller, apply Scotchkote 323/323i to a minimum thickness of 25 mils (635 µm) or as specified. Overlap the pipe coating no less than 1" (25 mm). Allow coating to properly cure before handling.

3M™ Scotchkote™ 323/323i Patch Compound Applicator



3M™ Scotchkote™ Spray System HSS-450

The application of Scotchkote 323/323i has been simplified using the 3M™ Scotchkote™ Spray System HSS-450. The HSS-450 system utilizes a dual-cartridge setup along with unique application equipment designed specifically to spray apply Scotchkote 323/323i.



Handling and Safety Precautions

Read all Health Hazard, Precautionary and First Aid, Material Safety Data Sheet, and/or product label prior to handling or use.

Important Notice

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For more information and additional literature on the Scotchkote HSS-450 system, please visit our web site at www.3M.com/corrosion2010 or contact our Customer Service Center at 1-800-722-6721.

Multiple Coats

Scotchkote 323/323i have been formulated to achieve a coating thickness of up to 45 mils/1150 microns in one coat. If additional thickness is required, apply the additional coats within four hours of the initial coat. This coating may be applied in any thickness consistent with producing an acceptable surface finish.

Helpful Plural Component Spray Information

- Suggested tip size of 625.
- Tip pressure approximately 2,200 psi/15.2 MPa.
- Preheat Part A to 150°F / 66°C.
- Preheat Part B to 120°F / 49°C.
- Mix ratio of pumps is 2:1.

Equipment Clean-Up

MEK or toluene may be used to clean spray equipment, rollers and brushes. Utilize proper safety guidelines.

Ordering Information/Customer Service

For ordering technical or product information, or a copy of the Material Safety Data Sheet, call:
Phone: 800/722-6721 or 512/984-9393
Fax: 877/601-1305 or 512/984-6296