



# Scotchkote™

## 323 and 323i Liquid Epoxy Coatings

### Data Sheet and Application Instructions


#### Product Description

3M™ Scotchkote™ 323 and 323i Liquid Epoxy Coatings 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 (1143 microns) in one application are possible.
- Applicable by cartridge, brush, roller or spray.
- Excellent adhesion.
- 100% solids.
- 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 and 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). The coating can be used without testing if contact is intermittent (splashes or spills).

#### Scotchkote 323 & 323i Coverage per kit size

Kit	Pounds	Assumes no waste		
		Coverage in square feet @ mils		
	Total	10	20	30 mils
50 ml	0.15	2.1	1.1	0.7
Quart	2.082	29.6	14.8	9.9
Gallon	8.378	119.2	59.6	39.7
5gal x 3	152.1	2164.4	1082.2	721.5
55-gal-drum x 3	1690.4	24054.4	12027.2	8018.1

#### General Application Steps

1. Remove oil, grease and loosely adhering deposits.
2. Abrasive blast clean the surface to NACE No. 2/SSPC-SP10 near-white metal, ISO 8501-Sa2.5.
3. Apply Scotchkote 323 or 323i at the specified thickness.
4. Allow to cure.
5. Visually or electrically inspect the coating for defects.
6. Repair all defects.

#### Properties

Properties	Value
Color	Blue-Green
Mix Ratio	2A : 1B by volume 70.8% : 29.2% by weight
Viscosity in cps	323
• Brush Grade	Part A: 280,000 Part B: 13,000
• Spray Grade	Part A: 120,000 Part B: 20,000
Viscosity in cps	323i
• Brush Grade	Part A: 150,000 Part B: 6,500
• Spray Grade	Part A: 87,000 Part B: 10,000
Shelf Life (unopened container)	18 months
Specific Gravity	1.35 mixed
Coverage	142 sq ft/lb/mil (0.74m <sup>2</sup> /kg/mm)
Max Operating Temperature	
• Wet	203° F
• Dry	250° F

#### Number of Quarts Needed per Weld

Pipe Diameter (inches)	Total Length to coat (cut backs + overlaps)			
	6"	8"	10"	12"
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

## 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 Z245.20-98 clause 12.8	149°F / 65°C, 3.5V,	24 hrs	4.9 mmr	
		149°F / 65°C, 1.5V,	48 hrs	5.5 mmr	
		149°F / 65°C, 1.5V,	28 days	7.5 mmr	
		176°F / 80°C, 1.5V,	14 days	6.4 mmr	
		176°F / 80°C, 1.5V,	28 days	6.6 mmr	
Adhesion of Coating	CSA Z245.20-98 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 Z245.20-98 clause 12.11	68°F / 20°C	0.7	1/2 PD	
		32°F / 0°C	0.7	1/2 PD	
Abrasion Resistance	ASTM D4060-95 CS-17 wheels 1000 g load 5000 cycles wheels resurfaced every 500 cycles	0.325 g loss			
Impact Resistance	CSA Z245.20-98 Clause 12.12	See Chart Below			

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°C	1.5	2500	30.4
2	-30°C	1.0	2500	24.5
3	-10°C	1.5	2500	27.2
4	0°C	1.5	2500	25.0
5	20°C	2.75	2500	26.9
6	50°C	2.5	2500	27.7
7	65°C	4.0	2500	27.0
8	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

### Repair of Fusion Bonded Epoxy Coating

Scotchkote coating requiring limited repair (scrapes, scars, coating imperfections or other minor defects) should be cleaned to remove dirt, scale and damaged coating by sanding or other suitable means. Feather the adjacent coating and remove all dust by wiping. Next, the coating should be applied to a minimum thickness of 25 mils (635 µm). The freshly coated area should be allowed to properly cure prior to handling and storage. Cure can be accelerated with heat.

### Surface Preparation for 323 & 323i Brush Grade and 323 & 323i Spray Grade

Coating performance is dependent on the cleanliness of the substrate surface receiving the coating. This surface must be clean, dry, free of loose rust and scale paint, etc. Remove all oils, grease and other contaminants with a suitable solvent. Metal should be blast cleaned in accordance with SSPC-SP10 or NACE No. 2, or ISO 8501 Sa2.5 to a near-white finish using a suitable abrasive.

To prevent the formation of rust or oxide, coat as soon as possible after cleaning. For maximum protection, the coating must have direct contact with the metal surface.

### 323 & 323i Brush Grade Application Instructions

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

### Pot Life (Approximate)

200 gm mass

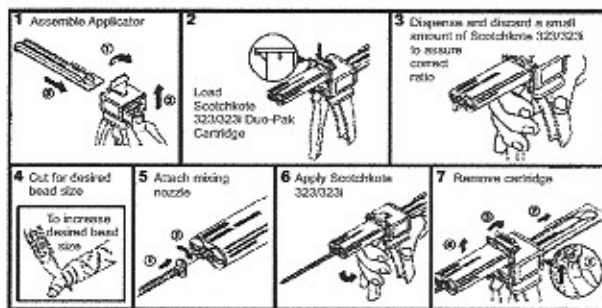
75°F (24°C)	20 minutes
104°F (40°C)	11 minutes

### Recommendations

- Prepare only the quantity of coating that can be applied in this period of time.
- We suggest a 1/4" nap roller.
- For speed of application, and to extend the working life of the product, we suggest pouring mixed product directly to the top of the substrate/pipe, then spread the mixture down around pipe to the desired thickness.

Using a brush or roller, apply Scotchkote 323 or 323i to a minimum thickness of 25 mils (635 µm) or as specified. Overlap the pipe coating no less than 1" (25,4 mm). Allow coating to properly cure before handling.

### Scotchkote 323 & 323i Patch Compound



### Multiple Coats

Scotchkote 323 and 323i have been formulated to achieve a coating thickness of up to 45 mils (1143 microns) in one coat. If additional coats are required, apply the additional coats within three hours of your initial coat. This coating may be applied in any thickness consistent with producing an acceptable surface finish.

### Circumferential Weld - Fusion Bonded Epoxy Coating

The welded joint must be clean; free of mud, oil, grease, and other foreign contaminants. The exposed metal in the weld zone must be blast cleaned in accordance with SSPC-SP10 or NACE No. 2, or ISO 8501 Sa2.5 to a near-white finish using a suitable abrasive. The adjacent fusion bonded coating should be brush blasted to clean and roughen the surface for a distance of 2" (50,8 mm) back from the weld zone.

### Helpful Spray Information

- Recommended tip size of 625.
- Tip pressure approximately 2,200 psi.
- 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.