

# 3M™ Scotchkote™ Fusion Bonded Epoxy Coating 413

## Product Description

3M™ Scotchkote™ Fusion Bonded Epoxy Coating (FBEC) 413 is a one-part, heat curable, thermosetting epoxy coating designed for corrosion protection of reinforcing steel. The epoxy is applied to preheated steel as a dry powder which melts and cures to a uniform coating thickness. This bonding process provides excellent adhesion and coverage on concrete reinforcing steel bar and other steel members of any size or shape. Scotchkote 413 is resistant to corrosive agents such as deicing salts, airborne salt spray, sea water, harsh chemicals, acid rain, carbonation, contaminated aggregate and concrete additives.

## Features

- No primer required
- Economical
- Improved UV resistance
- Fast curing for high-speed application
- Protects over wide temperature range
- Resists deicing salts
- Can be shipped with minimum damage
- Is not damaged by concrete embedment
- Resistant to cathodic disbondment
- Lightweight for lower shipping costs
- Will not sag, cold flow, or become soft in storage
- Easy visual inspection of coated articles
- Meets FHWA requirements
- Meets ASTM A 775/A 775M
- Meets ASTM A 1078, type 1 and ASTM 1055
- Meets AASHTO M 284 and AASHTO M 254

## General Application Steps

1. Remove oil, grease and loosely adhering deposits
2. Using steel grit or a steel grit/shot mixture, blast clean the bar surface to the SSPC-SP No.10/NACE No.2 Near-White Blast Cleaning standard or ISO 8501 Sa2.5.
3. Pre-heat metal to 375° to 475°F (191° to 246°C)
4. Deposit Scotchkote 413 coating by electrostatic spray to the specified thickness
5. Allow to cure according to the cure guide
6. Electrically inspect for holidays after coating has cooled to 250°F (121°C) or lower

## Cure Specifications

Cure by residual heat. Post bake is not normally required. Actual cure time depends on application temperature and cool down rate. Longer cure times are required for lower application temperatures.

### 3M™ Scotchkote™ Fusion Bonded Epoxy Coating 413 Cure Guide

Application Temperature (bare steel measured by Tempilstik)	Time to Quench
425° - 475°F (218° - 246°C)	27 seconds (min.)
400° - 425°F (204° - 218°C)	28-40 seconds
375° - 400°F (191° - 204°C)	41-60 seconds

Application Temperature (coated steel measured by IR gun)	Time to Quench
400° - 450°F (204° - 232°C)	27 seconds (min.)
375° - 400°F (191° - 204°C)	28-40 seconds
350° - 375°F (177° - 191°C)	41-60 seconds

### 3M™ Scotchkote™ Fusion Bonded Epoxy Coating 413

Properties	
Color	Green
Specific Gravity - Powder (Air Pycnometer)	1.21
Coverage	159 ft <sup>2</sup> /lb/mil (0,83 m <sup>2</sup> /kg/mm)
Gel Time	4 to 5 seconds at 450°F (232°C)
Gel Time	6 to 9 seconds at 400°F (204°C)
Minimum Explosive Concentration	0.03 oz/ft <sup>3</sup> (30,6 g/m <sup>3</sup> )



## 3M™ Scotchkote™ 413 Fusion Bonded Epoxy Coating

Property	Test Description	Results
Impact	ASTM G 14 1/8" x 3" x 3" (0,32 cm x 7,6 cm x 7,6 cm) steel panel, 5/8" (1,6 cm) radius tup	160 in•lbs 1,8 kg•m
	ASTM A 775	80 in•lbs 0,9 kg•m
Relative Bond Strength	ASTM A 944	> 85% of mean strength for uncoated bar
Abrasion Resistance	ASTM A 775 CS-10 1000g weight / 1000 cycles	17 mg loss
Penetration	ASTM G 17 -40° to 240°F (-40° to 116°C)	0
Hardness	Knoop Hardness	≥ 16
Cathodic Disbondment	ASTM A 775/A 775M ASTM G 8, rebar cathode 1.5 volt, 3% NaCl 168 hrs at 75°F (24°C) 0.12 in (3mm) intentional holiday	3.3 mmr
Chemical Resistance	ASTM A 775 /A 775 M 45 days at 70°F (21°C) immersed in: 3 molar (25% CaCl) 3 molar (10.7% NaOH) Saturated Ca(OH) <sub>2</sub>	No blistering, cracking or peeling No blistering, cracking or peeling Slight reduction in adhesion No blistering, cracking or peeling
Bendability	Rebar bend, ASTM A 775 #5 rebar bent 180° around 3.13 in (79.5 mm) diameter mandrel at 73°F (22°C) 0.325 in (8,25 mm) wall pipe 0.500 in (12,7 mm) Thick weld seam	No cracks or tears  Weld seam bend 9.2 pipe diameters 6.2/diameter length
Chloride Permeability	ASTM A 775 FHWA-RD-74-18 45 days at 75°F(24°C)	Chloride concentration (moles/liter) 1.14 x 10 <sup>-5</sup>
Salt Spray Resistance	ASTM A 775/A 775M ASTM B 117, coated rebar 5% NaCl 800 hrs at 95°F (35°C) 0.12 in (3mm) intentional holiday	2.0 mmr

### Handling & Safety Precautions

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

### Ordering Information/Customer Service

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

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