3M™ Scotchkote™
Spray Grade Fusion Bonded Epoxy Coating 413

Product Description
3M™ Scotchkote™ Spray Grade Fusion Bonded Epoxy Coating 413 is a one-part, heat curable, thermostetting 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 bar, wire fabric, piling, tensioning hardware 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 AASHTO M 284 and AASHTO M 254
- Meets ASTM A 1078, type 1 and ASTM 1055
- Meets ASTM A 884

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. Preheat metal to 300°F to 460°F (149°C to 238°C).
4. Deposit Scotchkote 413 Spray Grade coating by electrostatic spray to the thickness required.
5. Cure by post baking according to cure guide below.
6. Electrically inspect for holidays after coating has cooled to 250°F (121°C) or lower.

Cure Specifications
Scotchkote 413 coating must be cured to achieve maximum performance properties. Suggested application temperatures and cure times are listed in the cure guide. Post bake is required. Cure time can vary because of differences in heating systems. Applications at lower temperatures or on lightweight material may require additional cure.

3M™ Scotchkote™ Spray Grade Fusion Bonded Epoxy Coating 413 Cure Guide

<table>
<thead>
<tr>
<th>Metal Temperature</th>
<th>Cure Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>350°F (177°C)</td>
<td>20 minutes</td>
</tr>
<tr>
<td>375°F (191°C)</td>
<td>12 minutes</td>
</tr>
<tr>
<td>400°F (204°C)</td>
<td>8 minutes</td>
</tr>
<tr>
<td>425°F (218°C)</td>
<td>6 minutes</td>
</tr>
<tr>
<td>450°F (232°C)</td>
<td>5 minutes</td>
</tr>
</tbody>
</table>

3M™ Scotchkote™ Spray Grade Fusion Bonded Epoxy Coating 413

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Green</td>
</tr>
<tr>
<td>Specific Gravity - Powder</td>
<td>1.21</td>
</tr>
<tr>
<td>(Air Pycnometer)</td>
<td></td>
</tr>
<tr>
<td>Coverage</td>
<td>159 ft²/lb/mil (0,83 m²/kg/mm)</td>
</tr>
<tr>
<td>Gel Time</td>
<td>15 to 20 seconds at 400°F (204°C)</td>
</tr>
<tr>
<td>Minimum Explosive Concentration</td>
<td>0.03 oz/ft³ (30,6 g/m³)</td>
</tr>
</tbody>
</table>
### 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  
ASTM A 775 | 160 in•lbs  
1.8 kg•m

| Abrasion Resistance | ASTM A 775  
CS-17 1000g weight / 1000 cycles | 5 mg loss

| Penetration | ASTM G 17  
-40° to 240°F (-40° to 116°C) | 0

| Hardness | Knoop Hardness | ≥ 16

| Cathodic Disbondment | ASTM A 775, 1.5 volt  
168 hours at 75°F (24°C), 3% NaCl  
0.12 in (3 mm) intentional holiday | 3.0 mmr

| Chemical Resistance | ASTM A 775  
45 days at 70°F (21°C) immersed in:  
3 molar (25% CaCl)  
3 molar (10.7% NaOH)  
Saturated Ca(OH)₂ | No blistering, cracking or peeling  
No blistering, cracking or peeling  
Slight reduction in adhesion  
No blistering, cracking or peeling

| Bendability | Rebar bend, #5 rebar around 3.13" (79.5 mm) diameter mandrel  
180° at 20°F (-7°C) | No cracks or tears

| Chloride Permeability | FHWA-RD-74-18 | < 2.86 x 10⁻⁵

| 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 disbondment radius average

| Relative Bond Strength to Concrete | FHWA-RD-74-18 | >88% of mean strength for uncoated bar

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