

# 3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 134

## Product Description

3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 134 is a one-part, heat curable, thermosetting epoxy coating designed for corrosion protection of metal. 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 applications such as valves, pumps, pipe drains, hydrants and porous castings. Scotchkote 134 coating is resistant to wastewater, corrosive soils, hydrocarbons, harsh chemicals, and sea water. Powder properties allow easy manual or automatic application by electrostatic or air-spray equipment.

## Temperature Operating Range

Scotchkote 134 coating, when properly applied to a nominal thickness of 15 mils, should perform in a satisfactory manner on pipelines operating between -100°F/-73°C to 203°F/95°C. For temperatures reaching 230°F/110°C thicker coatings, greater than 30 mils, may improve the service capability. However, it is difficult to accurately predict field performance from the laboratory data due to the wide variations in actual field conditions. Soil types, moisture content, temperatures, coating thickness, and other factors specific to the area all influence the coating performance and upper temperature operating limits.

## Product Features

- No primer required for most applications.
- Particularly suitable for electrostatic or air-spray application on preheated metal articles.
- Can be electrostatically applied to unheated metal parts and subsequently cured by baking.
- Long gel time allows application on large or complex articles, minimizing fear of runs, sags, laminations, or unsightly overspray.
- Especially useful for coating the inside of pipe or other fabrications where a smooth, corrosion resistant coating is required.
- Can be machined by grinding or cutting to meet close tolerance requirements.
- Allows easy visual inspection of coated articles.
- Can be painted with alkyd paint, acrylic lacquer, polyurethane, or acrylic enamel for color coding.
- Will not sag, cold flow, or become soft in storage. Long term storage under most climatic conditions.
- Lightweight for lower shipping costs.
- Protects over wide temperature range.
- Resists direct burial soil stress.

- High adhesion and toughness.
- Resists cavitation and cathodic disbondment.
- Excellent chemical resistance.
- Suitable for elevated temperature service in presence of H<sub>2</sub>S, CO<sub>2</sub>, CH<sub>4</sub>, crude oil and brine when applied over phenolic primer such as Scotchkote 345.
- Long-term performance history in water, sewage, and other service environments.
- Scotchkote 134 FBEC meets the requirements of AWWA Standard C213 and C550.
- Operating temperature dry is 230°F/110°C.

## General Application Information

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. Apply mechanical masks or mask with materials such as Scotch Glass Cloth Tape 361 or Scotch Aluminum Foil Tape 425 as required.
4. Preheat article to the desired application temperature per cure specifications.
5. Deposit Scotchkote 134 coating by powder spray to the specified thickness.
6. Cure according to cure specifications.
7. Visually and electrically inspect for coating flaws after the coating has cooled.
8. Repair all defects.

## Cure Specifications

Scotchkote 134 coating may be applied to metal articles which have been preheated to a temperature of 300°F/149°C to 475°F/246°C. After application, Scotchkote 134 coating must be cured according to the cure guide to achieve maximum performance properties.

If Scotchkote 134 coating is electrostatically applied to unheated parts, the cure time should be measured from the time the coated part reaches the cure temperature. After cure, the coating may be force cooled using air or water to facilitate inspection and handling.



### 3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 134 Cure Guide

Temperature of Article at Time of Powder Application	Typical Gel Time	Cure Time
475°F/246°C	40 seconds	7 minutes
450°F/232°C	60 seconds	10 minutes
400°F/204°C	120 seconds	15 minutes
350°F/177°C	330 seconds	25 minutes
425°F/218°C	90 seconds	25 minutes for NSF/ANSI 61 approved applications

### Typical Properties

Property	Value
Color	Forest Green
Specific Gravity - Powder (Air Pycnometer)	1.51
Coverage	127 ft <sup>2</sup> /lb/mil (0,66 m <sup>2</sup> /kg/mm)
Fluid Bed Density	33 lbs/ft <sup>3</sup> (530 kg/m <sup>3</sup> )
Shelf Life at 80°F/27°C	18 months
Average Gel Time 400°F/204°C	120 seconds
Edge Coverage	12% to 18%
Minimum Explosive Concentration	0.03 oz/ft <sup>3</sup> (30,6 g/m <sup>3</sup> )
Ignition Temperature	986°F/530°C
V.O.C. (As Supplied)	0 g/L, as calculated

### Chemical/Pressure/Temperature Resistance

All tests performed on Scotchkote™ Fusion Bonded Epoxy Coating 134 applied over a 1 mil/25,4 µm phenolic primer. Liquid phase for all test conditions: 33% kerosene, 33% toluene, 34% brine solution of 5% NaCl.

Test Conditions	Gas Phase	Results
Autoclave, 120°F/49°C 48 hours, 1500 psi/10.3 MPa	99.5% CO <sub>2</sub> 0.5% H <sub>2</sub> S	Excellent adhesion, no coating loss or blisters in aqueous, hydrocarbon, or gas phase
Autoclave, 150°F/66°C 48 hours, 2200 psi/15.2 MPa	80% CH <sub>4</sub> 12% CO <sub>2</sub> 8% H <sub>2</sub> S	Excellent adhesion, no coating loss or blisters in aqueous, hydrocarbon, or gas phase
Autoclave, 200°F/93°C 24 hours, 3300 psi/22.8 MPa	86% CH <sub>4</sub> 8% CO <sub>2</sub> 6% H <sub>2</sub> S	Excellent adhesion, no coating loss or blisters in aqueous, hydrocarbon, or gas phase
Autoclave, 300°F/149°C 24 hours, 3000 psi/20.7 MPa	90% CH <sub>4</sub> 10% CO <sub>2</sub> Trace H <sub>2</sub> S	Excellent adhesion, no coating loss or blisters in aqueous, hydrocarbon, or gas phase

## 3M™ Scotchkote Fusion-Bonded Epoxy Coating 134 Test Data

Property	Test Description	Results
Adhesion	Elcometer	> 3000 psi (glue failure)/ 210 kg/cm <sup>2</sup>
Adhesion to Steel (Shear)	ASTM D 1002 10 mil/254 µm glue line	4300 psi/302 kg/cm <sup>2</sup> cohesive failure
Impact	Gardner 5/8 in/1,6 cm diameter tup 1/8" x 3" x 3" (0,32 cm x 7,6 cm x 7,6 cm) steel panel	160 in-lbs 1,8 kg•m
Hardness	Barcol ASTM D 2583	23
Abrasion Resistance	ASTM D 4060 CS-17 1000g weight / 5000 cycles	0,07 g loss
Thermal Shock	310°F/154°C to -320°F/-195°C coated pipe	10 cycles, no effect
Penetration	ASTM G 17 -40°F/-40°C to 240°F/116°C	0
Tensile Strength	ASTM D 2370	7300 psi/512 kg/cm <sup>2</sup>
Elongation	ASTM D 2370	4.2%
Compressive Strength	ASTM D 695	12800 psi/900 kg/cm <sup>2</sup>
Coefficient of Friction	API RP5L2-1968, App 8	23°
Electric Strength	ASTM D 149	1000 volts/mil (39,4 kv/mm)
Hot Water Resistance	160°F/71°C immersion / 120 days	Good adhesion, no blistering
Electrical Resistivity	ASTM D 257	1.2 x 10 <sup>15</sup> ohm•cm
Thermal Conductivity	MIL-I-16923E	7 x 10 <sup>-4</sup> cal/sec/cm <sup>2</sup> /°C/cm
Water Absorption	3M 10 mil/254 µm free film 30 days	6,5 g/m <sup>2</sup>
Fungus Resistance	MIL-STD 810-B Method 508	Funginert
Salt Fog	MIL-E-5272C	No effect
Weatherometer	ASTM G 23 5000 hours	Surface chalk
Soil Stress - Burial	Bureau of Reclamation 25 cycles	No effect
Salt Crock	30 day, 5 volt, 5% NaCl sand crock 230°F/110°C	Disbondment diameter 24 mm average
Bendability	3/8"/9,5 mm coupon mandrel bend at 73°F/23°C	30 pipe diameters 1.9° / diameter length

### 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.

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