



3M™ Scotchkote™ Fusion-Bonded Epoxy

Data Sheet and Application Guide

February 2016

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

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 when properly applied. This bonding process provides excellent adhesion and coverage on applications such as valves, pumps, pipe drains, hydrants, pipes, tanks and porous castings. Scotchkote coating 134 is NSF/ANSI 61 certified for potable water applications and is also 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.

Product Features

- No primer required for most applications.
- 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.
- Applied coating will not sag cold flow.
- Lightweight for lower shipping costs.
- Protects over wide temperature range.
- Resists direct burial soil stress.
- Resists cavitation and cathodic disbondment.
- Can be used for elevated temperature service in presence of H₂S, CO₂, CH₄, crude oil and brine when applied over phenolic primer such as 3M Scotchkote Liquid Phenolic Primer 345.
- Long-term performance history in water, sewage, and other service environments.
- Scotchkote coating 134 has been tested and certified to NSF /ANSI Standard 61, Drinking Water System Components. For NSF certified applications, the max approved thickness is 60 mil (1.5 mm) and the maximum approved operating temperature is 140°F/60°C. Primers may not be used for potable water applications.
- Scotchkote coating 134 meets the requirements of AWWA Standard C213 and C550.





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Temperature Operating Range For non-potable water applications Scotchkote coating 134, when properly applied to a nominal thickness of 15 mils, should perform 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.

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 ½ near-white metal.
3. Apply mechanical masks or mask with materials such as 3M Scotch® Glass Cloth Tape 361 or 3M Aluminum Foil Tape 425 as required.
4. Preheat article to the desired application temperature per cure specifications.
5. Deposit Scotchkote coating 134 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 coating 134 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 coating 134 must be cured according to the cure guide to achieve maximum performance properties.

If Scotchkote coating 134 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

Product - Physical and Chemical Properties

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	Color Forest Green
Specific Gravity – Powder (Air Pycnometer)	1.51
Coverage	127 ft ² /lb/mil (066 m ² /kg/mm)
Fluid Bed Density 33 lbs/ft ³ (530 kg/m ³)	33 lbs/ft ³ (530 kg/m ³)
Shelf Life at 80°F/27°C 18 months	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 ³ (30,6 g/m ³)
Ignition Temperature	986°F/530°C
V.O.C. (As Supplied)	0 g/L, as calculated

Chemical/Pressure/Temperature Resistance

Test Conditions	Gas Phase	Results
Autoclave, 120°F/49°C 48 hours, 1500 psi/10.3 MPa	99.5% CO ₂ 0.5% H ₂ 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 ₄ 12% CO ₂ 8% H ₂ 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 ₄ 8% CO ₂ 6% H ₂ 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 ₄ 10% CO ₂ Trace H ₂ S	Excellent adhesion, no coating loss or blisters in aqueous, hydrocarbon, or gas phase

All tests performed on 3M™ 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.

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Continued Product - Physical and Chemical Properties

Chemical Resistance Testing

ASTM G20-10 Immersion Testing at 20°C

Solution	30 days	60 days	90 days
Acetic Acid (5%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Acetone	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery
Carbon Disulfide	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Gasoline	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Hydrochloric Acid (10%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Kerosene	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Lime Water, Saturated	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Methyl Alcohol	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Methyl Ethyl Ketone	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery
Nitric Acid (10%)	Discoloration; No blistering or disbondment	Discoloration; No blistering or disbondment	Discoloration; No blistering or disbondment
Sodium Carbonate Solution (20%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Sodium Chloride Solution (10%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Sodium Hydroxide Solution (10%)	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Sulfuric Acid (30%)	No blistering or disbondment	No blistering or disbondment	Slight discoloration; No blistering or disbondment
Toluene	No blistering or disbondment	No blistering or disbondment	No blistering or disbondment
Trichloroethylene	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery	No blistering or disbondment, coating is slightly rubbery

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Continued Product - Physical and Chemical Properties

3M internal – Historical Chemical Resistance testing based on similar, but not identical products.**

Testing Temperature 73°F (23°C*)

Acetic Acid up to 25%	Ferric Nitrate	Potassium Borate
	Ferric Sulfate	Potassium Carbonate
Aluminum Chloride	Ferrous Nitrate	Potassium Chloride
Aluminum Hydroxide	Ferrous Sulfate	Potassium Dichromate up to 10%
Aluminum Nitrate	Formaldehyde up to 100%	Potassium Hydroxide
Aluminum Sulfate	Formic Acid up to 10%	Potassium Nitrate
Ammonium Carbonate	Freon; gas and liquid	Potassium Sulfate
Ammonium Chloride	Gas (Mfg)	Propylene Glycol
Ammonium Hydroxide up to 100%	Gas (Natural)	Sewage
Ammonium Nitrate	Gasoline Leaded	Silver Nitrate
Ammonium Phosphate	Gasoline Unleaded	Soap Solution
Ammonium Sulfate	Glycerine	Soaps
Amyl Alcohol	Heptane	Sodium Bicarbonate
Barium Carbonate	Hexane	Sodium Bisulfate
Barium Chloride	Hexylene Glycol	Sodium Carbonate
Barium Hydroxide	Hydrochloric Acid up to 25%	Sodium Chlorate
Barium Nitrate	Hydrofluoric Acid up to 40%	Sodium Chloride
Barium Sulfate	Hydrogen Sulfide	Sodium Hydroxide
Benzene	Isopropyl Alcohol	Sodium Meta Silicate up to 5%
Boric Acid	Jet Fuel	Sodium Nitrate
Borax		Sodium Sulfate
Butyl Alcohol	Linseed Oil	Sodium Thiosulfate up to 5%
Cadmium Chloride	Lubricating Oil	Stannic Chloride
Cadmium Nitrate	Magnesium Carbonate	Sulfur
Cadmium Sulfate	Magnesium Chloride	Sulfuric Acid up to 60%
Calcium Carbonate	Magnesium Hydroxide	Synthetic Sea Fuel (60% Naphtha,
Calcium Chloride	Magnesium Nitrate	20% Toluene, 15% Xylene,
Calcium Hydroxide	Magnesium Sulfate	5% Benzene)
Calcium Nitrate		Synthetic Silage
Calcium Sulfate	Mercuric Chloride	Tetrapropylene
Calcium Disulfide	Methanol (softened)	Toluene
Carbon Tetrachloride	MIBK (Methyl Isobutyl Ketone)	
Caustic Potash	Mineral Oil	Triethylene Glycol
Caustic Soda	Mineral Spirits	Trisodium Phosphate
Chlorine 2%	Molasses	Turpentine
Citric Acid up to 25%	Motor Oil	Undecanol
Copper Chloride	Muriatic Acid	Urea
Copper Nitrate	Naphtha	Urine
Copper Sulfate	Nickel Chloride	Vinegar
Crude Oil	Nickel Nitrate	Water
Cyclohexane	Nickel Sulfate	Chlorinated
Cyclohexene	Nitric Acid up to 30%	Demineralized
Cyclopentane	Nonane	Distilled
Detergent	Octane	Salt
Diesel Fuel	Oxalic Acid	Sea
Diethylene Glycol	Pentane	Xylol
Dipropylene Glycol	Perchloroethylene	Zinc Chloride
Ethanol (softened)	Phosphoric Acid up to 50%	Zinc Nitrate
Ethylbenzene	Phosphorous Trichloride	Zinc Sulfate
Ethylene Glycol	Potassium Aluminum Sulfate	10-10-10 Fertilizer, Saturated
Ferric Chloride up to 50%	Potassium Bicarbonate	

**Tests conducted for two years. No effect unless otherwise stated.

3M™ Scotchkote™ Fusion-Bonded Epoxy Coating 134

Storage	In a cool dry location less than 80°F (27°C)
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Shelf-Life	18 months from date of manufacture
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Availability	For ordering, technical, product information, or the Safety Data Sheet, call: Phone: 800-722-6721 Fax: 877-601-1305
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