Scotchkote™

134 Fusion Bonded Epoxy Coating for Water and Wastewater Applications

Product Description

3M™ Scotchkote™ 134 Fusion Bonded Epoxy Coating (FBEC) 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.

Product Features

- No primer required.
- 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, 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_2S, CO_2, CH_4, crude oil and brine when applied over phenolic primers.
- Long-term performance history in water, sewage, and other service environments.
- Scotchkote 134 coating has been tested and certified to ANSI/NSF Standard 61, Drinking Water System Components.

General Application Steps

1. Remove oil, grease and loosely adhering deposits.
2. Abrasive blast clean the surface to NACE No.2/SSPC-SP 10 near-white metal, ISO 8501-Sa2.5.
3. Apply mechanical masks, release agents or mask with 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 FBEC coating may be applied to metal articles which have been preheated to a temperature of 300°F/149°C to 450°F/232°C. After application, 134 coating must be cured according to the cure guide to achieve maximum performance properties.

If Scotchkote 134 FBEC 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™ 134 Fusion Bonded Epoxy Coating 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

Typical Properties

Property	Value
Color	Forest Green
Specific Gravity - Powder (Air Pycnometer)	1.51
Coverage	127 ft^2/lb/mil (0.66 m^2/kg/mm)
Fluid Bed Density	33 lbs/ft^3 (530 kg/m^3)
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

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

Property	Test Description	Results
Adhesion	Elcometer	> 3000 psi (glue failure)/210 kg/cm^2
Adhesion to Steel (Shear)	ASTM D 1002 10 mil/254 µm glue line	4300 psi/302 kg/cm^2
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 -100°F/-73°C 4" x 4" (10,2 cm x 10,2 cm) coated panel	10 cycles, no effect
Penetration	ASTM G 17 -40°F to 240°F (-40°C to 116°C)	0
Tensile Strength	ASTM D 2370	7300 psi/512 kg/cm^2
Elongation	ASTM D 2370	4.2%
Compressive Strength	ASTM D 695	12800 psi/900 kg/cm^2
Coefficient of Friction	APIRP5L2-1968, 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^{15} ohm•cm
Thermal Conductivity	MIL-I-16923E	7 x 10^{-4} cal/sec/cm^2/C°/cm
Water Absorption	3M 10 mil/254 µm free film 30 days	6,5 g/m^2
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	10 mm radius
Bendability	3/8"/9,5 mm coupon mandrel bend at 73°F/23°C	30 pipe diameters 1.9° / diameter length

Chemical Resistance Exposure at 73°F/23°C*

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

Xylol
Zinc Chloride
Zinc Nitrate
Zinc Sulfate
10-10-10 Fertilizer, Saturated

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

Handling and Safety Precautions

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

For ordering information, technical information, product information or to request a copy of the Material Safety Data Sheet: phone: 1-800-722-6721 or 1-512-984-1038
fax: 1-800-828-9329 or 1-512-984-2210

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