

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

Acetic Acid up to 25%	Ferric Nitrate	Potassium Borate
Acetone (softened)	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	Kerosene	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, 20% Toluene, 15% Xylene, 5% Benzene)
Calcium Chloride	Magnesium Nitrate	Synthetic Silage
Calcium Hydroxide	Magnesium Sulfate	Tetrapropylene
Calcium Nitrate	MEK (softened)	Toluene
Calcium Sulfate	Mercuric Chloride	Trichloroethylene
Calcium Disulfide	Methanol (softened)	Triethylene Glycol
Carbon Tetrachloride	MIBK (Methyl Isobutyl Ketone)	Trisodium Phosphate
Caustic Potash	Mineral Oil	Turpentine
Caustic Soda	Mineral Spirits	Undecanol
Chlorine 2%	Molasses	Urea
Citric Acid up to 25%	Motor Oil	Urine
Copper Chloride	Muriatic Acid	Vinegar
Copper Nitrate	Naphtha	Water
Copper Sulfate	Nickel Chloride	Chlorinated
Crude Oil	Nickel Nitrate	Demineralized
Cyclohexane	Nickel Sulfate	Distilled
Cyclohexene	Nitric Acid up to 30%	Salt
Cyclopentane	Nonane	Sea
Detergent	Octane	Xylol
Diesel Fuel	Oxalic Acid	Zinc Chloride
Diethylene Glycol	Pentane	Zinc Nitrate
Dipropylene Glycol	Perchloroethylene	Zinc Sulfate
Ethanol (softened)	Phosphoric Acid up to 50%	10-10-10 Fertilizer, Saturated
Ethylbenzene	Phosphorous Trichloride	
Ethylene Glycol	Potassium Aluminum Sulfate	
Ferric Chloride up to 50%	Potassium Bicarbonate	

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

## 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 statements found in the Material Safety Data Sheet, and/or product label of chemicals prior to handling or use.

### Ordering Information/Customer Service

For ordering information, technical information, product information or to request a copy of the Material Safety Data Sheet:  
Phone: 800/722-6721 or 512/984-9385  
Fax: 877/601-1305 or 512/984-6296

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**CORVEL™ ECA-1660 GREEN 10-6051****Description**

CORVEL ECA-1660 Green 3363 10-6051 is a melt-mixed, 100% solids modified epoxy thermoset I.D. pipe coating powder designed for use at elevated temperatures and pressures in drill pipe, production tubing, valves and fittings. It is a tough, flexible coating which will resist damage and cracking during handling and coupling operations. When applied over CORVEL EP-10 primer 1P-0010, 10-6051 is also resistant to H<sub>2</sub>S, CO<sub>2</sub>, CH<sub>4</sub> and petroleum distillates.

**Application and Storage Conditions**

- All oil and grease, as well as scale and rust, must be removed.
- Iron or zinc phosphate pretreatment is recommended for optimum performance.
- Designed for application by fluidized bed, hot flock or electrostatic/hot spray.
  - Preheat: 20 minutes @ 320°F
  - Dip/Spray Cycle: As required (seconds)
  - Postheat: 30 minutes @ 425°F
  - Film thickness: 8.0-12.0 mils
- Shelf life is expected to be at least twelve months from date of shipment when stored in dry conditions at less than 70°F (21.1°C).

**Typical Performance Characteristics**

Property	Test Method	Results
Specific Gravity	Calculated	1.71
Coverage	Calculated	112 ft. <sup>2</sup> /lb./mil
Particle Size (Alpine Jet Sieve)	ASTM D 3451 (% retained)	+70 Mesh: 3% max +140 Mesh: 15-30% +325 Mesh: 50-65%
Impact Resistance (Direct)	ASTM D 2794 (5/8" indenter)	100 in.lbs.
Flexibility (4 point bend @ 75°F (23.9°C))		3°/PD
Edge Coverage, Method B Preheat: 15 minutes @ 320°F Dip Cycle: Dip 2 seconds Postheat: 15 minutes @ 425°F	RHPTM 10	30% @ 8.0-15.0 mils
Salt Spray Resistance ("x" scribe - 1/8" undercut)	ASTM B 117	1700+ hours

\*Testing was performed on Bonderite™ 1000 Parcolene™ 60 panels

Important: Warranty and Disclaimer — The performance characteristics of these products vary according to product application, operating conditions, materials applied to or with and use. Since these factors can affect results, we strongly recommend that you make your own test to determine to your satisfaction whether the product is of acceptable quality has not been affected by storage or transportation and is suitable for your particular purpose under Your own operating conditions prior to using any product in full scale production. Seller warrants the products to be free from defects in materials and workmanship. Such warranty is exclusive and is in lieu of any other warranty, express or implied, including but not limited to any implied warranty of merchantability of fitness for a particular purpose. No representative of ours has authority to waive or change this provision, which applies to all sales of these products.



# 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.

### 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 3M™ Scotchkote™ 345.
- 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. 
- Scotchkote 134 FBEC meets the requirements of AWWA Standard C213 and C550.
- Operating temperature dry is 235°F/ 113°C and wet is 175°F/79°C.

### General Application Steps

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.

### 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 <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

## Chemical/Pressure/Temperature Resistance

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.

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