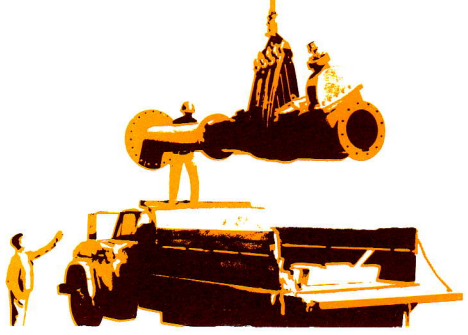
Scotchkote®

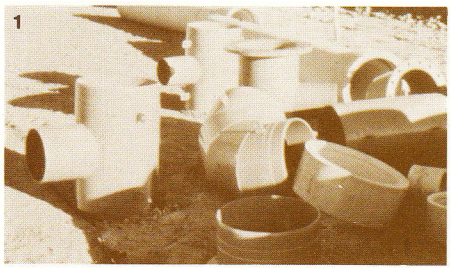
3M

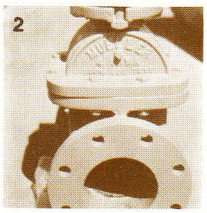
Fusion Bonded Epoxy Coatings

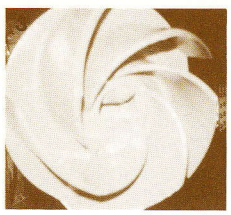
Designed for your specific corrosion protection needs

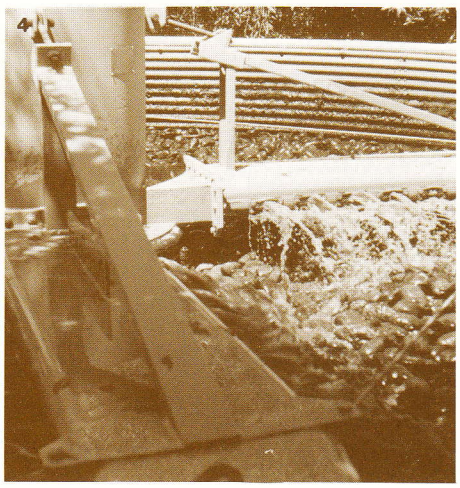


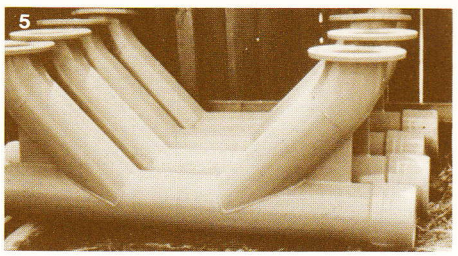
SCOTCHKOTE coatings . . .
anywhere corrision is a problem.

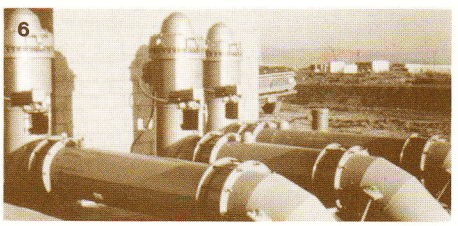


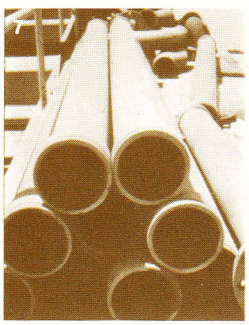


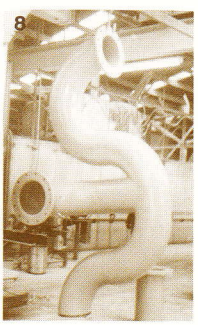


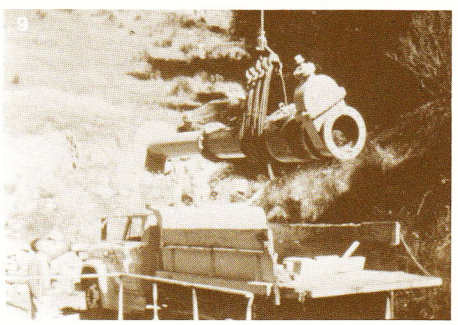


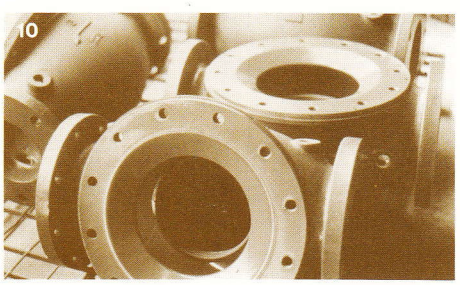


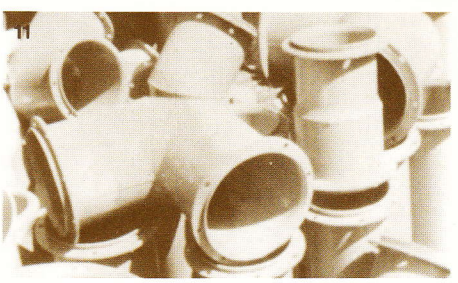


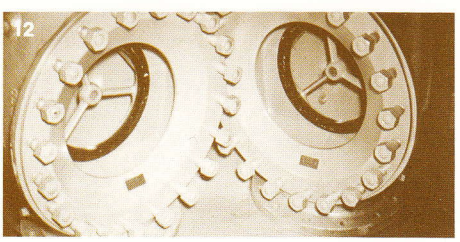


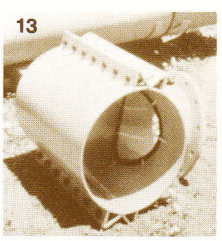


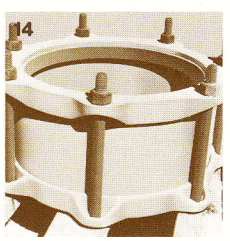


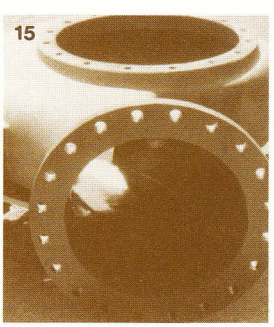


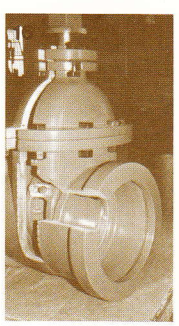


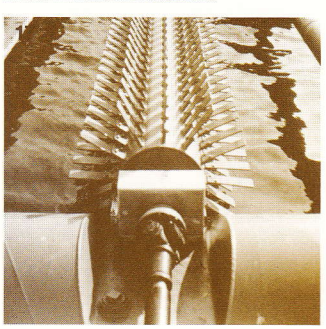












All of these product applications are coated with Scotchkote 206N, 203 or 134 coatings.

1. Pipe fittings.
2. Valve.
3. Pump impeller.
4. Sewage biofilter assembly.
5. Water manifolds.
6. Scotchkote 203 coating protects these pumps, flexible pipe couplers and pipe at a water lift station.
7. This sewage sludge line pipe is grooved for couplings.
8. Header piping for a water purification plant illustrates the types of complex shapes that can be coated with Scotchkote coatings.
9. Gate valve and water meter assembly resist damage in handling.
10. Scotchkote 134 coating protects the inside of these valve bodies.
11. Miscellaneous irrigation fittings.
12. Valves.
13. Tapping sleeves for use with asbestos cement pipe.
14. Flexible pipe coupling.
15. This pump volute is protected against corrosion with Scotchkote 134 coating.
16. This valve is internally and externally coated with Scotchkote 134 coating.
17. After 4 years of service in secondary sewage and salt water, aerator is in excellent condition.

Pictures courtesy of Water Works Manufacturing Company, Marysville, California, and Fusecote, South El Monte, California.

SCOTCHKOTE coatings for corrosion protection

Scotchkote coatings offer the superior performance that only a heat-cured, 100% solids, thermosetting epoxy coating can give - engineered for maximum protection of metal at a nominal cost. *Whether your application is by fluid bed, spray, or electrostatics, you'll find a Scotchkote coating designed to fit your specific coating needs - tailored to give total, smooth, pinhole-free coverage even on edges or the most inaccessible corner.

Features:

- No primer required.
- Gel and flow characteristics balanced to give no sag application.
- Can be machined by grinding or cutting to meet close tolerance requirement.
- Allows easy visual inspection of coating 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.
- Lightweight for lower shipping costs.
- Long-term storage under most climatic conditions.
- Protects over normal service temperature range.
- Resists direct burial soil stress.
- High adhesion and toughness.
- Resists abrasive action of light slurries.
- Good chemical resistance.
- Resists cathodic disbondment.
- Long-term performance history in varying service environments.

134

Scotchkote 134 Fusion Bonded Epoxy Coating is especially adaptable for electrostatic or flock spray on hot parts where a heavy build is required. Since it has a long gel time (up to 2½ minutes @ 350° F [177° C]), it allows the applicator plenty of time to coat large surface areas or parts with complex recesses before hardening without fear of runs, sags, or laminations. Scotchkote 134 coating can also be applied cold electrostatically. Scotchkote 134 coating is Environmental Protection Agency acceptable for use as a coating in contact with potable water and meets the requirements of American Water Works Association standards C205 and C213.

*Not recommended for use over galvanizing.

213 Spray Grade
214 Spray Grade

Scotchkote 213 Spray Grade and 214 Spray Grade coatings are formulated for hot spray application from 250°-450° F (121°-232° C) to welded wire fabric, reinforcing steel and cable tensioning hardware. When fully cured, the coatings are extremely flexible and meet FHWA requirements for corrosion prevention on reinforcing steel in bridges and a variety of related highway applications. 213 Spray Grade and 214 Spray Grade meet ASTM A 775-81, AASHTO M 284-811, and AASHTO M 254-77.

203

Scotchkote 203 coating is an extremely tough powder designed for large fluid bed applications (some measure to 12 ft. [3,66 m] deep). Slightly longer gel and flow characteristics without sag make this coating especially desirable where large parts are being coated. Scotchkote 203 coating can also be spray-applied on preheated small parts. The coating is EPA acceptable for use in contact with potable water.

206N

Scotchkote 206N coating is ideally suited for plant application on the interior and exterior of pipe. It provides maximum corrosion protection under widely varying operating conditions. The epoxy coating is unaffected by soil forces and is highly resistant to moisture penetration, bacteria and fungus attack, soil acids, alkalies and salts and other chemicals associated with underground and underwater use. Scotchkote 206N coating is Environmental Protection Agency acceptable for use as a coating in contact with potable water and meets the requirements of American Water Works Association Standard C 213.

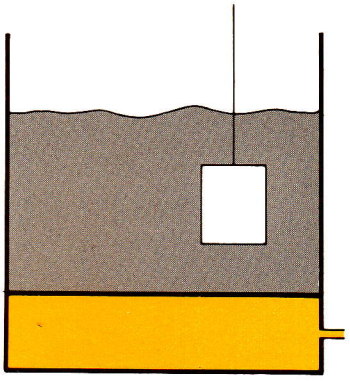
Application Methods

Flocking

Coating by flocking requires the least amount of equipment and can be used to maximum advantage where deep recesses in the object to be coated necessitate a forced air application. The object to be coated has to be preheated. All Scotchkote coatings adapt readily to this method.

Fluidized Bed

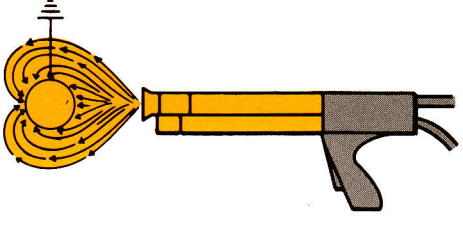
The fluidized bed consists of two chambers separated by a specially designed porous membrane which serves to uniformly diffuse air throughout the coating powder. In proper operation the resin expands to twice its original volume, ready to accept preheated objects. The fluidized bed is perhaps the fastest coating method. When used with Scotchkote coatings, maximum uniformity can be obtained without sags, runs or pinholes.



Electrostatic Coating

Electrostatic coating is accomplished by charging powder particles with a high voltage and spraying onto an object at ground potential. Coating by this method is ideal for flat, angular or irregularly shaped objects. Scotchkote coatings applied electrostatically have excellent edge coverage, coating continuity, and hiding power. With the proper powder collecting system, the overspray powder can be recirculated for utilization of up to 98% of the coating material.

Curing after electrostatic application is an easy process with Scotchkote coatings. Most coated parts can be completely cured in an oven at 350° F (177° C) for ten minutes or even faster at higher temperatures. Exact temperature and time cycles may vary, depending on objects to be coated.



Physical Properties

Properties	Test Method	Value				
		134	203	206N	213SG	214SG
Adhesion-Shear	ASTM D 1002 10 mil (254 micron) glue line	4300 psi 302 kg/cm²	4700 psi 330 kg/cm²	6150 psi 432 Kg/cm²	4700 psi 330 kg/cm²	
Impact	Gardner ⅝ in (1,6 cm) radius	160 in - lb 1,8 kg/m	160 in - lb 1,8 kg/m	160 in - lb 1,8 kg/m	160 in - lb 1,8 kg/m	
Hardness	Barcol Hardness Tester	23	17	18	17	
Thermal Shock (Cycles with No Effect)	310°F to - 100°F (154°C to - 73°C) 4 in x 4 in (10,2 cm x 10,2 cm) Panel	10	10	10	10	
Abrasion Resistance (g removed)	5000 cycles	0,07	0,08	0,11	0,01	
Penetration Resistance	ASTM G 17 —40°F to 240°F (—40°C to 116°C)	0	0	0	0	
Color		Forest Green	Light Green	Blue Green	Light Green	Brown

Chemical Resistance Properties

(2 years @ 73°F [23°C])

Below is a partial listing of tests made on Scotchkote 134, 203, 213 SG and 214 SG Fusion Bonded Epoxy Coatings for chemical resistance. No effect unless otherwise stated.

Acetic Acid up to 25%
* Acetone (Softened)
Aluminum Chloride
Aluminum Hydroxide
Aluminum Nitrate
Aluminum Sulfate
* Aly Alcohol
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
Carbon 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 Gycol
* 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 & Liquid
Gas (Mfg.)
Gas (Natural)
Gasoline Leaded
Gasoline Unleaded
Glycerin
Heptane
Hexane
* Hexylene Glycol
Hydrochloric Acid up to 25%
Hydrofluoric Acid up to 40%
Hydrogen Sulfide
Isopropyl Alcohol
Kerosene
Linseed Oil
Lubricating Oil
Magnesium Carbonate
Magnesium Chloride
Magnesium Hydroxide
Magnesium Nitrate
Magnesium Sulfate
* MEK (Softened)
Mercuric Chloride
* Methanol (Softened)
* MIBK (Methyl-Iso-Butyl 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 50%
Stannic Chloride
Sulfur
Sulfuric Acid up to 60%
Synthetic Sea Fuel (60% Naphtha, 20% Toluene, 15% Xylene, 5% Benzene)
Synthetic Sileage
Tetrapropylene
* Toluene
* Trichloroethylene (Softened)
* 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

* Scotchkote 203, 213 SG and 214 SG coatings are not recommended for continuous immersion service in solutions containing these chemicals. Suitable for service in many splash and fume areas.

For more complete product information, ask for a product Data Sheet.

To The Specifying Engineer:

How to Specify SCOTCHKOTE Coatings

To the engineer: Outlined below is an example of a typical coating specification . . . used to employ a Scotchkote Fusion Bonded Epoxy Coating on an item such as a water fitting for asbestos-cement pipe. Since it may be possible for an applicator to apply several of our powders by various methods, please consult your 3M Protective and Insulating Resins Sales Representative for the names and capabilities of local applicators.

Coating Specification Fusion Bonded Epoxy Coatings

Material: The lining and coating material shall be of 100% solids, thermosetting fusion bonded, dry powder epoxy coating such as Scotchkote 203 coating (3M Company) or approved equal.

Application: The epoxy powder shall be applied by the fluidized bed process. The thickness of the lining and coating shall not be less than 10 mils (254 microns). Fittings shall be heated and cured in accordance with the manufacturer's specifications.

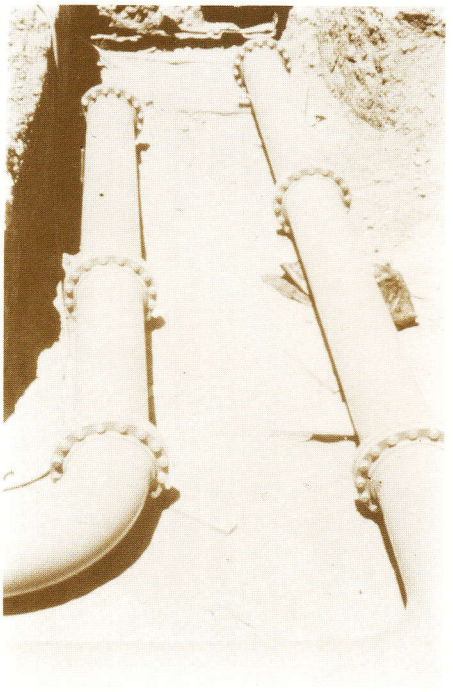
Surface preparation: All surface irregularities, welds and weld spatter shall be ground smooth ⅛ in. radius (3,18 mm). All surfaces shall be blasted to near white metal in accordance with Steel Structures Painting Council Surface Preparation Specification SSPC-SP10 or NACE No. 2 near white finish.

Inspection: The lining and coating shall be pinhole-free and tested with a low voltage, wet sponge holiday detector. All pinholes shall be marked, repaired and retested to insure a pinhole-free coating.

Fields Welds and Field Damage Repair

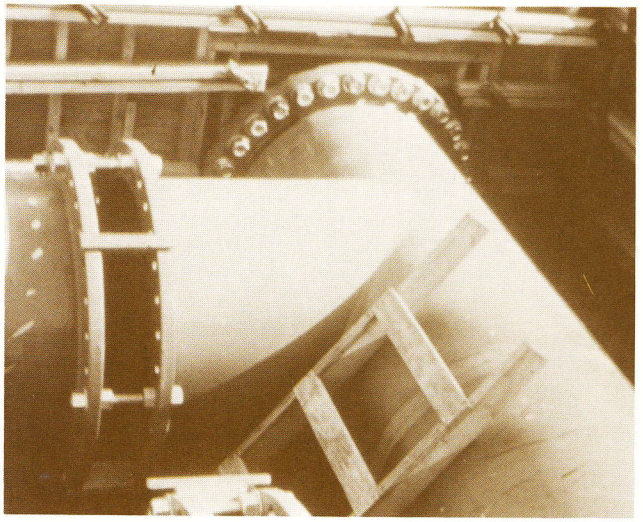
Material: All pinholes, welds and damaged areas shall be patched with Scotchkote 306 coating, a two-component, 80% solids liquid epoxy coating.

Procedure: All field welds shall be ground smooth. The joint area should be wire brushed, sandblasted or sanded to white metal; care should be taken to remove all charred or carbonized coating from the joint area. Lightly abrade or sandblast the Scotchkote 203 coating on either side of the weld before application of the liquid epoxy coating. Apply Scotchkote 306 coating to a minimum coating thickness of 10 mils (254 microns).



Small nicks or chips in the Scotchkote 203 coating caused by field, handling should be repaired by removing all oils, grease, oxidation or other contaminants using a suitable solvent prior to the application of Scotchkote 306 coating; if rust is apparent in the damaged area, attempts should be made to remove as much as possible by wire brushing, grinding, filing, or sanding. If the damaged area is more extensive, it is advisable to use abrasive or light sandblasting to roughen the surface of the Scotchkote 203 coating before solvent washing and application of Scotchkote 306 coating. Again, care should be taken to remove as much rust as possible in an attempt to achieve a white metal surface.

For additional information on Scotchkote 306 coating, see literature coded E-PD306.



Large prefabricated water piping coated with Scotchkote 203 coating for a deionized water system for a major government agency.