

SECTION F

CORROSION PREVENTION

1. GENERAL

The Company requires that underground metallic piping be protected against corrosion. Protection is accomplished by coatings, designed specifically for use on underground pipe, and cathodic protection, by the use of magnesium anodes. The coating and anodes complement each other, and adequate protection cannot be achieved when either is used alone.

Effective corrosion prevention also requires that the protected piping be electrically isolated (insulated).

2. INSTALLATION REQUIREMENTS

2.1 Electrical Isolation

Electrical isolation is accomplished by use of dielectric fittings, commonly known as insulating fitting. Insulating fittings are required whenever steel pipe leaves or enters the ground. The Company provides electrical isolation at the curb and at the meter.

2.2 Coatings

Coatings used on service piping shall be of a suitable type, designed for underground use. Paint type coatings are not acceptable. Steel service pipe having an acceptable coating applied at a coating mill is available and is preferred. However, field applied coatings are acceptable, provided a compatible primer is used if necessary and proper installation techniques are followed. Field applied coatings must be installed in accordance with the manufacturer's instructions. In general, these materials should be spiral wrapped and overlapped 1/2 inch minimum.

Acceptable Mill Applied Coatings

- (1) Reinforced coal tar enamel
- (2) Extruded polyethylene
- (3) Fusion bonded epoxy

Acceptable Field Applied Coatings

- (1) Coal tar/synthetic resin tape with plastic backing.
- (2) Coal tar/synthetic resin tape with glass reinforcement.
- (3) Pressure sensitive polyethylene or polyvinyl chloride tape.
- (4) Wax impregnated tape

Acceptable Manufacturers of Field Applied Coatings

The following manufactures are listed here to provide users with a choice of acceptable field applied coating systems. The Company does not solicit the use of any specific manufacturer's coating. Coatings other than those listed must be approved by the Company's Gas Engineering Department prior to use. Coating systems listed for above grade usage are UV resistant. Coating systems for buried piping must be suitable for below grade usage.

<u>Manufacturer</u>	<u>Primer</u>	<u>Tape</u>	<u>Where Used</u>
Royston Labs	747 Primer	Greenline	Below Grade
Royston Labs	747 Primer	C. P. Tan	Above Grade
Tape Coat	TC-Cold Primer	H-30	Above/Below Grade
Tape Coat	Not Required	H-35	Above/Below Grade
Polyken	1027 Primer	930 Tape	Below Grade
Polyken	1027 Primer	936 Tape	Above Grade
Trenton Corp.	Wax Tape Primer	#1 Wax Tape	Above/Below Grade

Surfaces to be coated must be dry, and free of loose rust, scale, and foreign material prior to coating application.

2.3 **Anodes**

Anodes are installed at equal distances along the length of the piping. They are buried a minimum distance of two (2) feet from the pipe and at or below the pipe depth and backfilled with soil. The connecting wire shall be attached to the pipe, using a cadweld, thermite weld or brazed. The point of attachment to the service must be cleaned to bright metal to insure a durable, low resistance connection. After the connection is made, exposed metal shall be coated with Duke Energy approved pipe coating material.

MAXIMUM SPACING FOR MAGNESIUM (MG) ANODES

Size Of Service (Inches)	3# Mg ANODE	5# Mg ANODE	9# Mg ANODE	17# Mg ANODE
3" - 4"	NR	100 ft.	200 ft.	400 ft.
6" - 8"	NR	NR	100 ft.	200 ft.
12"	NR	NR	NR	100 ft.

NR = NOT RECOMMENDED

This table specifies the maximum allowable spacing between anodes. Use half of this spacing to determine maximum distance from an insulating joint to the nearest anode.

Steel service risers for 3" and larger plastic services are typically protected with a single 3# or larger magnesium anode. See Sketch 4, Section K.

3. INSPECTION

Adequacy of pipe coating and anode installation is checked as part of the visual inspection as noted in Section H of this manual.