



# TECHNICAL DATA

Revised Date: 01/2008  
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## PROTEC<sup>®</sup> II (16868) FAST SET URETHANE

### Product Description

100% solids, fast set, two component urethane. It provides a very hard, tough surface with outstanding adhesion and impact resistance to protect against damage during the process of burying for underground service conditions. It provides outstanding corrosion protection under a wide variety of soil pH levels, chemicals and water. Requires plural component, heated application equipment.

### Features

- Excellent adhesion directly to steel and ductile iron.
- Fast curing for increased productivity and short turn around times.
- Zero VOC.
- Extremely tough, durable coating providing high abrasion and impact resistance.
- Meets AWWA C-222 requirements.

### Recommended Uses

Ideal protective coating system that provides long-term chemical resistance and corrosion protection for steel and ductile iron pipelines, sheet piling and many other metal substrates. It is also an excellent internal lining for steel tanks, steel and ductile iron pipeline for service in water, wastewater and saltwater. Note: For pipe with inside diameters less than 24" contact ITW Futura Coatings for specific recommendations.

### Primers

**Steel:** Normally none.

**Other:** Contact ITW Futura Coatings for recommendations.

### Typical Properties

<b>Solids by Volume</b>	100%
<b>Volatile Organic Compounds</b>	0.0 lb/gal (0 g/l)
<b>Theoretical Coverage</b>	1604 ft <sup>2</sup> @ 1 mil (3.8 m <sup>2</sup> @ 1 mm)
<b>Recommend DFT</b> (Typical)	15 – 50 mils (0.4 – 1.3 mm)
<b>Number of Coats</b>	1 or more
<b>Mix Ratio</b> (by volume)	1"A" : 1"B"
<b>Flash Point</b> (PMCC)	311°F (168°C)
<b>Shelf Life</b> @ 60-90°F (16-32°C)	Part A 12 months Part B 12 months
<b>Color</b>	Standard Gray & Black

### Specification Data

<b>Elongation</b> – ASTM D 412	< 10%
<b>Adhesion</b> – ASTM D 4541	> 2500 psi
<b>Abrasion Resistance</b> ASTM D 4060	45 mg loss 48 mg loss
	CS 17 H 10
<b>Tensile Strength</b> ASTM D 412	4000 psi
<b>Impact Resistance</b> ASTM G 14 – 15 mm ball	125.4 in-lbs (1447 cm/kg)
<b>Hardness</b> – ASTM D 2240	75 Shore "D"
<b>Dielectric Strength</b> ASTM G 62	400 volts / mil
<b>Flexibility</b> 180° Bend over 4" mandrel 90° Bend over 4" mandrel	Pass – 30 mils @ 75°F Pass – 30 mils @ -40°F
<b>Permeability</b> – ASTM E 96 (60 mil dry film thickness)	0.0078 U.S. perms 0.0113 metric perms
<b>Accelerated Weathering</b> ASTM G 23 – Q/UV, 2500 hrs	No cracking, checking or loss of flexibility; slight chalking.
<b>Cathodic Disbondment</b> ASTM G 95 – Average Radius	30 days @ 75°F   7 mm 14 days @ 149°F   8 mm

### Ordering Information

<b>Packaging:</b>	10 gal & 110 gal kits
<b>Shipping Weight:</b>	10.5 lb/gal (4.7 kg/gal)

# APPLICATION INFORMATION PROTEC II

## Surface Preparation

Remove all oil, grease or other contaminants from the surface to be coated in accordance with SSPC-SP 1.

### **Steel and Cast Iron:**

**Immersion and Non-Immersion:** Abrasive blast to a Near White Blast in accordance with SSPC-SP 10 and obtain a 3 -4 mil (75-100µ) angular anchor pattern.

**Other:** Contact ITW Futura Coatings for specific surface preparation and primer recommendations.

## Mixing

Power mix "B" component thoroughly for 15 to 20 minutes to a uniform consistency, "A" component does not require mixing.

**DO NOT BATCH MIX.**

## Thinning

**DO NOT THIN**

## Pot Life

Material Temperature	Time
50-100°F (10-38°C)	< 30 seconds

## Application Conditions

	Normal	Minimum	Maximum
<b>Material*</b>	140-150°F (60-65°C)	135°F (57°C)	170°F (77°C)
<b>Surface</b>	75-90°F (24-32°C)	45°F (7°C)	150°F (65°C)
<b>Ambient</b>	75-90°F (24-32°C)	35°F (2°C)	120°F (49°C)
<b>Humidity</b>	30-50%	0%	85%

\*Materials must be preheated to 75-90°F (24-32°C) min prior to use. Surface temperature must be 5°F (3°C) above the dew point.

## Application Equipment

### **Heated Plural Component Airless (only)**

Applicator training is required and spray equipment must be approved by ITW Futura Coatings Technical Service.

- 1:1 ratio capable of producing a minimum delivery rate of 1¼ gallons per minute at a tip pressure of 2500-3000 psi.
- Proportioner heaters and heated hose capable of maintaining material temperatures of 135-150°F (57-65°C) at the spray tip.
- Drum heaters capable of maintaining material temperatures of 75-90°F (24-32°C) during application
- 2:1 ratio transfer pumps minimum.
- Contact ITW Futura Coatings for specific information.

## Clean Up

Consult ITW Futura Coatings "Plural Component Equipment Guide" for specific information.

## Cure Time

These times are based on a 30-50% RH. Excessive film thickness, cooler temperatures or inadequate ventilation will require longer cure times and could result in premature failure.

	<u>Surface Temperature</u>		
	50-69°F (10-21°C)	70-89°F (21-32°C)	90-110°F (32-43°C)
<b>Surface dry</b>	4-10 minutes	3-4 minutes	½-2 minutes
<b>Hard Film</b>	10-20 minutes	5-10 minutes	5 minutes
<b>Recoat (min)</b>	4-10 minutes	3-4 minutes	½-2 minutes
<b>Recoat (max)</b>	4 hours	2 hours	30 minutes
<b>Full cure</b>	3 days	2 days	24 hours

- If the maximum recoat time has been exceeded contact ITW Futura Coatings for recommended recoat procedure.
- Holiday testing per NACE RP0188-98 can be started once the cure time shown for "Hard Film" has been achieved.

## Repair

- ITW Futura Coatings recommends that repairs or touch-up be completed using **Protec II**.
- **Pipemate 1** is the recommended repair material when plural component equipment is not available.
- Contact ITW Futura Coatings for specific information.

## Safety Information

- Read the Material Safety Data Sheet (MSDS) and container labels for detailed health and safety information.
- Do not apply material in enclosed areas without adequate air exchange and ventilation.
- All application personnel must use fresh air respirators or fresh air hoods.
- Wear protective clothing, gloves and eye protection.
- Breathing fumes or contact with the skin may cause severe allergic reactions.
- **This product is intended for industrial use by properly trained professional applicators only.**

## Storage Conditions

- Urethane coatings need to be protected from moisture contamination. Store drums and pails in a dry location at 60-90°F (16-32°C).
- Drums must be kept sealed at all times with a positive feed dry air, nitrogen blanket or desiccant cartridge system.
- Materials must be kept above **50°F (10°C)**.

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