



PTU-AR™

AQUEOUS ACID / BASE RESISTANT POLYTHIOUREA ELASTOMER

Preliminary Data
03-03-14

DESCRIPTION

PTU-AR™ is the newest product in the PTU chemistry group. It is resistant to many acids, alkalines, and caustics in immersion service up to 200°F (93°C). This acid resistant coating provides high-ductility, allowing it to move with expanding and contracting surfaces in both primary and secondary containment applications. PTU-AR™ can be sprayed to any thickness in one application and returned to service in a matter of hours.

FEATURES

- An elastomer with acid resistance comparable to many epoxies.
- Self-priming in most instances, with strong adhesion.
- Return to service within hours not days (foot traffic 1 hour; vehicle traffic 4 hours).
- Typically applied in a single 'multi-pass' application.
- Eco-friendly, 100% solids. No VOCs.

RECOMMENDED USES

- Primary and secondary containment
- Tank linings
- Barge and ship holds
- Waste water treatment facilities
- Chemical transportation
- Industrial flooring
- Steel and concrete tanks, and silos
- Structural Steel
- Bridges
- Asbestos and lead encapsulation
- Power plants
- Pulp and Paper Industry

Examples of PTU-AR™ immersion in some common reagents

CHEMICAL	WEIGHT GAIN %	
	Weight Gain %	Time
Crude Oil @ 200°F	3.7	1 week
Hydrochloric Acid 24% / 30%	0.40	1 month
Kerosene	0.90	1 month
Nitric Acid 10% / 20%	10.5	1 month
Phosphoric Acid 60 % @ 180°F	14.4	1 month
Sulfuric Acid 50%	0	1 month
Sulfuric Acid 10% @ 180°F	- 6.4	1 month
Soluble in H2O 45%	0.60	1 month

Immersion samples were 'free films' (6 sides exposed). In service, containment liners have only one side of liner exposed to reagents. To calculate approximate chemical absorption, divide the weight gain percentage indicated on the adjacent chart by two. All tests performed at SPI location at room temperature unless otherwise noted.. Certified free film samples are available for immersion evaluation.

WET PROPERTIES @ 77°F (25°C)

Solids by Volume	100%
Solids by Weight	100%
Volatile Organic Compounds	0 lbs/gal (0g/l)
Theoretical Coverage DFT	100 sq. ft. @ 16 mils/gal
Weight per gallon (approx.)	9.6 lbs. (4.35 kg)
Number of Coats	1 or more
Mix Ratio	1 "A": 1 "B"
Viscosity (cps) @ 77° F (25 °C)	A: 390 approx. B: 1040 approx. (B: @ 90°F 700 cps)
Shelf Life Unopened Containers @ 60-85°F (16°-29°C)	Three months

Minimum "A" component material/container temperature application is 70°F (21°C). Minimum "B" component material/container temperature prior to and during application 90°F (32°C) (90°F (32°C) – 100°F (38°C) fluid temperature)

DRY PROPERTIES @ 70 mils (1.77 mm)*

Tensile Strength ASTM D638	>1450
Elongation ASTM D638	>75%
Hardness (Shore A) ASTM D2240-81	± 96
Hardness (Shore D) ASTM D2240-81	± 47

CURING SCHEDULE @ 70°F (21°C)

Gel	4 sec.
Tack Free	6 sec.
Post Cure**	12 - 24 hours
Recoat	0 min. - 6 hours

*All cured film properties are approximate since processing parameters, ad-mixture types, and quantities will change physical properties of the cured elastomer. All samples for above tests were force cured or aged for more than one week, it is recommended that the user perform their own independent testing.

**Complete polymerization to achieve final strength can take up to several days or weeks, depending on a variety of conditions and product type.

The samples for tests were sprayed with Graco EXP3 @ 2700 psi dynamic. Primaries/Hose Heat 170°F (77°C,) Graco MP Fusion spray gun with 29/29 module and .040 ceramtip. Test results from SPI.

Note: Currently, this product is manufactured exclusively in our Lakewood, Washington facility. Therefore, please allow additional transit time and additional transportation charges to certain geographic areas.

COLOR

PTU-AR™ is available in SPI standard colors. It should be noted that PTU-AR™ is an aromatic polyurea; therefore, as with all aromatics, color change and superficial oxidation will occur.

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SPI Manufacturing/Distribution Locations: Lakewood, WA · Rowlett, TX · Anchorage, AK

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GENERAL APPLICATION INSTRUCTIONS

PTU-AR™ applicators must be trained and certified by SPI. Apply PTU-AR™ only to clean, dry, sound surfaces free of loose particles or other foreign matter. A primer may be required depending on type and/or condition of the substrate. Consult technical service personnel for specific primer recommendations and substrate preparation procedures.

It is recommended that PTU-AR™ be sprayed in multi-directional (north-south/east-west) passes to ensure uniform thickness.

The polyol "B" component must be thoroughly power mixed each day, prior to use. Contact a SPI technician regarding proper mixing equipment.

Follow the instructions attached to "A" and "B" containers.

RECOMMENDED EQUIPMENT AND SETTINGS

- Standard 1:1 ratio, heated, plural-component equipment developing a minimum of 2500 psi dynamic pressure (13.90 mpa) dynamic pressure with heating capabilities to 165° F (74 °C) will adequately spray PTU-AR™. These include Graco HXP3, HXP2, EXP2, H-25, EXP1, PMC GH-25, GH-40, PHX-25, and PHX-40. Gun models include Graco Fusion MP, GX7-DI and Gusmer GX7-400.
- Pre-heater temperature should be at 160-170°F (71-76 °C).
- Hose temperature should be at 160 -170° F (71-76°C). A hose thermometer inserted under the insulation near the gun should read a minimum of 145-155°F (63-68°C).
- Physical properties will be enhanced when sprayed at higher pressure (3000 psi or more) (20.8mpa), utilizing an impingement mix gun such as the MP Fusion or GX7-DI.
- Other application equipment may be acceptable depending on product and application. Contact SPI technical service for specifics.

MIXING AND THINNING

The polyol "B" component must be thoroughly power mixed each day, prior to use. Contact a SPI technician regarding proper mixing equipment.

Thinning is not required. Using any thinner may adversely affect product performance.

GENERAL SAFETY, TOXICITY & HEALTH DATA

Safety Data Sheets are available for this coating material. Any individual who may come in contact with these products should read and understand the M.S.D.S. **CHEMTREC EMERGENCY NUMBER 1-800-424-9300**

WARNING: Contact with skin or inhalation of vapors may cause an allergic reaction. Avoid eye contact with the liquid or spray mist. Hypersensitive persons should wear protective clothes, gloves and use protective cream on face, hands and exposed areas.

CLEAN UP: Use DPM, NMP, and Polyclean.

EYE PROTECTION: Safety glasses, goggles, or a face shield are recommended.

SKIN PROTECTION: Chemical resistant gloves are recommended. Cover as much of the exposed skin area as possible with appropriate clothing.

RESPIRATORY PROTECTION: Use a respirator approved for isocyanates and organic vapors. If you are not sure or not able to monitor levels, or if you are spraying in an enclosed/indoor area, use

MSHA/NIOSH approved supplied air respirator. Consider the application and environmental concentrations in deciding if additional protective measures are necessary.

INGESTION: Do not take internally. It is believed that ingestion of polymeric isocyanates would not be fatal to humans, but may cause inflammation of mouth and stomach tissue.

LIMITATIONS

- PTU-AR™ applicators must be trained and certified by SPI.
- This product is for professional use only.
- This product must be stored at temperatures between 60° F to 90° F (15 °C to 30 °C).
- Minimum material/container temperature for spray application is 70°F (21 °C).
- Avoid moisture contamination in containers. Containers should not be resealed if contamination is suspected, CO₂ created pressure can develop. Do not attempt to use contaminated material.
- Liquid components exposed to undried air will result in reduced physical properties of the cured coating.
- Apply PTU-AR™ when surface and air temperatures are above 40°F (5°C) and rising, and 7°F (-13°C) above dew point.

Note: The material supplied is two components (Component "A"/Component "B") used to formulate this product. The quality and characteristics of the finished polymer is determined by the mixture and application of the two components.

WARRANTY & DISCLAIMER

Specialty Products, Inc. has no role in the manufacture of the finished polymer other than to supply its two components. It is vital that the person applying this product understands the product, and is fully trained and certified in the use of plural-component equipment.

Specialty Products, Inc., an Alaska corporation, warrants only that the two components of this product shall conform to the technical specifications published in the product literature.

The quality and fitness of the product are dependent upon the proper mixture and application of the components by the applicator. There are no warranties that extend beyond the description on the face of this instrument.

Failure to apply the product within the parameters stated on this document shall void the warranty.

SPECIALTY PRODUCTS, INC. MAKES NO WARRANTY OF MERCHANTABILITY OF THE PRODUCT OR OF FITNESS OF THE PRODUCT FOR ANY PARTICULAR PURPOSE.

Specialty Products, Inc. makes no warranty as to the quality of any product modified, supplemented, tinted, or altered in any way after it leaves the manufacturing plant.

Specialty Products, Inc. does not warrant that this product is suitable for use as a liner for potable water containers. Use of this product in a potable water container could be hazardous to health if it is improperly processed or applied.

The liability of Specialty Products, Inc. for any nonconformity of the product to its technical specifications shall be limited to replacement of the product.

The sole exclusive remedy of buyer, which is to have Specialty Products, Inc. replace any nonconforming product at no cost to buyer, is conditioned upon buyer notifying Specialty Products, Inc. or its distributor in writing of such defect within thirty days of the discovery of such defect.

Specialty Products, Inc. shall not be liable for any direct, incidental, or consequential damages resulting from any breach of warranty.

The data presented herein is intended for professional applicators or those persons who purchase or utilize this product in the normal course of their business.

The potential user must perform any pertinent tests in order to determine the product's performance and suitability in the intended application, since final determination of fitness of the product for any particular use is the responsibility of the buyer.

The aforementioned data on this product is to be used as a guide and is subject to change without notice.

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