



Polythiourea (PTU™)

The chemical resistant polyurea

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	Polythiourea (PTU™) patents pending						
	24 hour Wt.Gain	7 Days	30 Days	60 Days	6 Months	1 Year	> 1 Year
Acetic 10%	0.0002%	0.03%	0.13%	0.11%			
Acetic 40%	0.38%	1.90%			7.32% (10 months)		
Acetic 50%					9.75% (11 months)		
Diesel	0.00%	0.00%	0.00%	0.01%			0.1% (3 years)
Ethanol				8.73% (3 months)			
Ethanol 47.5% Methanol 47% MIBK 5%	2.48%	4.19%	5.43%		8.13%		
Gasoline (unleaded)	0.07%	0.50%	1.40%	2.30%	5.16%		4.75% (17 months) Shore D 54
Hydrochloric Acid HCl 24%	0.00%	0.01%	0.02%				
Jet Fuel JP - 1, 2, 3	0.00%	0.00%	0.00%	0.01%			1.4% (5 year)
JP-7 Jet Fuel 60% Toluene	0.61%	2.41%	4.10%	4.93%	8.34%		8.67% (19 months)
Methanol	2.30%	3.41%			12.4%		9.12% (19 months)
Phosphoric Acid H3PO4 50%	0.00%	0.001%	0.02%				
Skydrol	0.39%	2.30%	4.93% (25 days)		13.7%	16.5%	
Sodium Hypochlorite 12%					-1.5% (8 months)		
Sodium Hydroxide NaOH 50%	0.00%	0.001%		0.70%			2.36% (2 years)
Sulphuric Acid H2SO4 50%	0.00%	0.00%				6.15%	
Sulphuric Acid 14% Phosphoric Acid 30%						2.36%	- 0.86% (2 years)
Sulphuric Acid H2SO4 93%	Destroyed (2 days)						
Water	0.00%	0.00%					
Xylene	1.10%	4.60%		20.0%	21.63%		
Crude Oil			3.70%				

Compared to a Typical Spray Applied Polyurea

	24 hour Wt.Gain	7 Days	30 Days
Acetic 40%	20.1%	46.2%	
Gasoline (unleaded)	58.3%	70.4%	75.1%
Jet Fuel JP - 1, 2, 3	11.6%	22.1%	28.0%
JP-7 Jet Fuel 60% Toluene	45.5%	51.6%	
Methanol	89.6%	95.0%	95.8%
Skydrol	78.00%	183.00%	
Sodium Hydroxide NaOH 50%	0.01%	0.30%	2.40% (60 days)
Water	0.01%	0.10%	
Xylene	136.4%	152.6%	165.2%

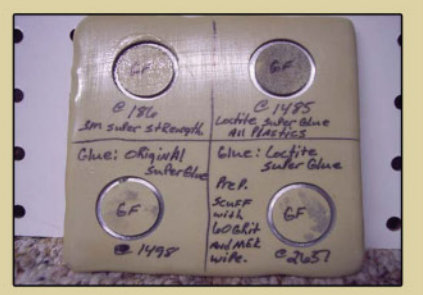
Color Code:	Recommended for Immersion Service	Secondary Containment	Not Recommended
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Note: Immersion samples were 'free films' (6 sides exposed). In service, containment liners have only one side of liner exposed to reagents. To calculate the approximate chemical absorption, divide the weight gain percentage indicated on the adjacent chart by two.

- A spray-applied polyurea elastomer with chemical resistance
 - comparable to many Epoxies
- Return to service in hours; not days
- Typically applied in a single 'multi-pass' application
 - providing substantial labor savings
- Self-priming in most instances *
- 100% solids - No VOC's - 1:1 ratio
- Apply with conventional heated, plural component equipment
 - min. 2500 psi - min. temperature 165°F
- Explosion proof equipment not required
 - for confined space applications

* OUTSTANDING ADHESION WITHOUT PRIMER

Sample plate was abrasive blasted per SSPC-SP10 with a surface profile of 5.6 mils. Blast media used was Reed Mineral Black Beauty 12/40. Surface was coated to a thickness of 60-80 mils of SPI's PTU™ Polyurea with AE-4 adhesion ad-mixture. Coating was allowed to cure for one week. Surface was abraded with 60 grit sandpaper and cleaned with a MEK wipe. Four 20mm dollies were glued on with four types of single component glues. The contact surface of the dollies were given a light abrasive blast for better bonding. The first glue used was 3M Super Strength with a pull of 186 PSI which resulted in total glue failure with no delamination of coating from substrate. The second glue used was Loctite Super Glue All Plastics with a pull of 1,485 PSI which resulted in total glue failure with no delamination of coating from substrate. The third glue used was Original Super Glue with a pull of 1,485 PSI which resulted in total glue failure with no delamination of the coating from substrate. The fourth glue used was Loctite Super Glue with a pull rate of 2,637 PSI which resulted in total glue failure with no visible signs of coating delamination from the substrate. The most effective glue used was the Loctite Super Glue.



Text & photo provided by Abbott Consulting

Comparing Chemical Resistance of PTU™ to Common Elastomers

	PTU™			Viton			NBR			Nitrile		
	24 hour Wt.Gain	7 Days	6+ Months	24 hour Wt.Gain	7 Days	6+ Months	24 hour Wt.Gain	7 Days	6+ Months	24 hour Wt.Gain	7 Days	6+ Months
	40% Acetic Acid	0.38%	1.90%	7.32% (10 months)	3.20%	4.99%	52.5% (9 months)					
Gasoline	0.07%	0.50%	5.16% (6 months)	0.20%	0.51%	5.53% (9 months)	13.70%	17.60%	19.4% (9 months)	14.20%	15.08%	11.3% (9 months)
JP-7 Jet Fuel 60% Toluene	0.61%	2.41%	8.34% (6 months)	0.01%	0.30%	5.08% (9 months)	22.00%	24.30%	19.72% (9 months)	21.00%	18.00%	13.4% (9 months)
Methanol 99%	4.30%	8.40%	12.42% (6 months)	16.80%	25.40%	11.87% (9 months)	5.70%	6.10%	6.84% (9 months)	2.00%	2.50%	1.32% (9 months)
Xylene	1.10%	4.60%	21.63% (6 months)	1.20%	2.80%	8.03% (9 months)	72.10%	71.90%	42.73% (9 months)	59.00%	54.10%	35.28% (9 months)