

### TECHNICAL DATA SHEET

Eco-Pur® 352 is a two component, closed cell, rigid polyurethane foam system specially formulated for pour-in-place applications. This product uses a blowing agent that has zero ozone depleting potential. This product meets all the requirements of the Montreal protocol to protect the ozone layer. Eco-Pur 352 meets the requirements of the US Coast Guard Specification "Code of US Regulation": Navigation and Navigable Waters Article # 183-114. Eco-Pur 352 also meets several requirements of Military Test Standard MIL-P-21929C "Military specification for plastic material, cellular polyurethane foam-in-place, rigid" as describe in the physical property table of this Technical Data Sheet. All of these tests were performed at an independent laboratory. Eco-Pur 352 meets the criteria to qualify for a UL 94 HBF, UL 94 HF-1 and UL 94 HF-2 classification.

Applications: Injection, flotation, wall cavities and insulating panels.

PHYSICAL PROPERTIES			
Density	2.5 lb/ft <sup>3</sup>	40 kg/m <sup>3</sup>	ASTM D 1622
Thermal Resistance R (2 in. thick panel, 2 days @ 73°F (23°C))	7.0 Btu•in/ft <sup>2</sup> •h•°F	1.23 W/m <sup>2</sup> •°C	ASTM C 518
Thermal Resistance R (2 in. thick panel, 90 days @ 73°F (23°C))	6.5 Btu•in/ft <sup>2</sup> •h•°F	1.15 W/m <sup>2</sup> •°C	ASTM C 518
Thermal Resistance K (2 in. thick panel, 2 days @ 73°F (23°C))	0.143 ft <sup>2</sup> •h•°F/Btu•in	0.811 m <sup>2</sup> •°C/W	ASTM C 518
Thermal Resistance K (2 in. thick panel, 90 days @ 73°F (23°C))	0.154 ft <sup>2</sup> •h•°F/Btu•in	0.873 m <sup>2</sup> •°C/W	ASTM C 518
Compressive Strength	23.5 psi	162 kPa	ASTM D 1621
Dimensional Stability (% volume change @ 28 days)			
176°F (80°C), Ambient Relative Humidity	0.19%		ASTM D 2126
-22°F (-30°C), Ambient Relative Humidity	-0.59%		
158°F (70°C), 90% Relative Humidity	2.71%		
UL 94 HBF, UL 94 HF-1, UL 94 HF-2	Pass		
U.S. COAST GUARD - ARTICLE # 183-114			
Flotation Test (% absorption after soaking process)			
Type B Gasoline (30 days)	0.25%		ASTM D 2842
Oil #2 (30 days)	-0.31%		
Phosphate Tri-sodium (30 days)	0.30%		
Type B Gasoline Vapor (30 days)	0.84%		
None (water only)	1.66%		
MIL-P-21929C			
Density	2.5 lb/ft <sup>3</sup>	40 kg/m <sup>3</sup>	ASTM D 1622
Compressive Strength (10% deformation)	23.5 psi	162 kPa	ASTM D 1621
Volume Change After Heat Aging (% of original)			
Volume Change After Humidity Aging (% of original)	0.02%		ASTM D 2126
Distortion or Other Visible Change After Aging	No Change		
Compression Set	3.5%		
Water Absorption	0.08 lb/ft <sup>2</sup>		ASTM D 2842
Unicellularity	14.78%		ASTM D 6226
Oil Resistance	No Change		ASTM D 471

FIRE TEST RESULTS		
Surface Burning Characteristics Flame Spread Index Smoke Developed	Class I 0 0	ASTM E 84
Tested in actual end use configuration consisting of 6" of foam injected inside a metal frame covered on both sides by 1/2" gypsum board (a thermal barrier).		

LIQUID COMPONENT PROPERTIES*		
PROPERTY	A-PMDI ISOCYANATE	ECO-PUR 352 RESIN
Color	Brown	Amber
Viscosity @ 77°F (25°C)	180 - 220 cps	400 - 700 cps
Specific Gravity	1.24	1.11 - 1.15
Shelf Life of unopened drum properly stored	12 months	6 months
Storage Temperature	50 - 100°F (10 - 38°C)	50 - 85°F (10 - 29°C)
Mixing Ratio (volume)	100	100
Mixing Ratio (weight)	110	100

\*See SDS for more information.

REACTIVITY PROFILE				
	Cream Time	Gel Time	Tack Free Time	Free Rise Density
Hand Mix*	21 - 28 seconds	150 - 180 seconds	200 - 400 seconds	2.00 - 2.15 lb/ft <sup>3</sup>
Machine Mix**	10 - 14 seconds	75 - 90 seconds	190 - 260 seconds	1.90 - 2.05 lb/ft <sup>3</sup>

\*Hand mixed using a 2" mixer @ 2500 RPM for 10 seconds, liquid components at 68°F (20°C).

\*\*High pressure machine (2500 psi), liquid components at 73°F (23°C).

PROCESSING RECOMMENDATIONS*				
Type of Machine	High or low pressure PIP machine		Spray machine	
Isocyanate Temperature	68 - 73°F	20 - 23°C	95 - 105°F	35 - 41°C
Resin Temperature	68 - 73°F	20 - 23°C	110 - 120°F	43 - 49°C
Hose Temperature	-	-	95 - 105°F	35 - 41°C
Mold or Panel Temperature	110 - 130°F	43 - 54°C	110 - 130°F	43 - 54°C
Minimum In-place Density	2.5 lb/ft <sup>3</sup>	40 kg/m <sup>3</sup>	2.5 lb/ft <sup>3</sup>	40 kg/m <sup>3</sup>

\*Foam application temperatures and pressures can vary widely depending on temperature, humidity, elevation, substrate, equipment and other factors. While processing, the applicator must continuously observe the characteristics of the foam and adjust processing temperatures and pressures to maintain proper cell structure, adhesion, cohesion and general foam quality. It is the sole responsibility of the applicator to process and apply Eco-Pur 352 within specification.

**General Requirements:** It is important to monitor the in-place density of the foam as stated in the Processing Recommendations section above. A lower density will result in poor physical properties. Furthermore, proper temperature of the substrates (110 - 130°F (43 - 54°C)) is critical in order to obtain a good adhesion of the foam to the substrate. It is the user's responsibility to test the product to ensure it performs to their expectations. This product should not be used when the continuous service temperature of the substrate is outside the range of -76°F (-60°C) to 176°F (80°C).

**Disclaimer:** The information herein is to assist customers in determining whether our products are suitable for their applications. We request that customers inspect and test our products before use and satisfy themselves as to contents and suitability. Nothing herein shall constitute a warranty, expressed or implied, including any warranty of merchantability or fitness, nor is protection from any law or patent inferred. All patent rights are reserved. The foam product is combustible and must be protected in accordance with applicable codes. Protect from direct flame and spark contact, around hot work for example. The exclusive remedy for all proven claims is replacement of our materials.