

Polyurethanes

Aliphatic Polyurethane Sheet

PPG's aerospace business manufactures and sells high quality polyurethane sheet materials for the lamination of dissimilar materials via an autoclave laminating process.

First in the manufacture of high-grade polyurethanes over 25 years ago, PPG's aerospace business has continuously upgraded and enhanced material properties with an emphasis on quality, performance, and longevity to maximize your product design latitude.

PPG's aerospace business is unique among polyurethane manufacturers in that we utilize our urethane materials in the production of our own commercial and military aircraft transparencies, as well as high security and bullet resistant commercial, military, architectural and vehicle applications. Thus, we are able to directly apply our performance and production experience our material.

PPG's aerospace business and our customers rely on our polyurethanes to ensure superior product performance and reliability.

Key advantages of these specialty polyurethanes include:

- Consistency
- Optical purity – colorless and non-yellowing.
- UV stability – material will not discolor over time.
- Dimensional uniformity in gauge thickness and "layflat" properties provide total usable roll widths.
- Adhesion promoting primers for glass, polycarbonate and acrylic included within the polyurethane itself.
- Wide selection of gage and roll sizes.

PPG polyurethanes are available in a wide range of material types, gage thicknesses and roll widths. Shelf life is two (2) years from date of manufacture. Product must be stored in cool, dry location in original sealed packaging. Standard sheet and material properties are specified in the accompanying tables

Polyurethane Material Properties

Property	Test method	Polyurethane interlayer reference		
		S-123	S-142	S-158
Specific gravity (g/cc) ASTM D-792 1.08 1.08 1.08	ASTM D-792	1.08	1.08	1.08
Shore hardness	ASTM D-2240	80A	98A	64A
Tensile strength @ 25°	ASTM D412C	6200 psi	6600 psi	3400 psi
Modulus @ 100% elongation @ 25°	ASTM D412C	530 psi	1700 psi	370 psi
Modulus @ 300% elongation @ 25°	ASTM D412C	1700	4000 psi	740
Ultimate elongation (%) @ 25°	ASTM D412C	620	390	860

* Values are nominal and subject to variability. Material should be tested by user for suitability for use.

Polyurethane Sheet Properties

Item	Tolerance	Control or test	Nominal polyurethane interlayer thickness (inches)				
			0.015	0.025	0.05	0.75	0.100
Thickness	± 10%	Digital Caliper along roll width	0.015 in (0.38 mm)	0.025 in (0.64 mm)	0.05 in (1.27 mm)	0.075 in (1.83 mm)	0.100 in (2.54 mm)
Roll width	-0 to +½	Digital tape ruler	50/62 in (127/151.5 cm)	40/50/62 in (102/127/157.5 cm)	40/50/62 in (102/127/157.5 cm)	40/50/62 in (102/127/157.5 cm)	40/50/62 in (102/127/157.5 cm)
Maximum diameter of bubbles	+0	Optical Comparator ¹	0.035 in (0.889 mm)	0.035 in (0.889 mm)	0.035 in (0.889 mm)	0.035 in (0.889 mm)	0.035 in (0.889 mm)
Minimum distance between bubbles	+0	Optical Comparator ¹	3.9 in (99.0 mm)	3.9 in (99.0 mm)	3.9 in (99.0 mm)	3.9 in (99.0 mm)	3.9 in (99.0 mm)
Maximum diameter of impurities	+0	Optical Comparator ¹	0.035 in (0.889 mm)	0.035 in (0.889 mm)	0.035 in (0.889 mm)	0.035 in (0.889 mm)	0.035 in (0.889 mm)
Minimum distance between Impurities	+0	Optical Comparator ¹	3.9 in (99.0 mm)	3.9 in (99.0 mm)	3.9 in (99.0 mm)	3.9 in (99.0 mm)	3.9 in (99.0 mm)
Clouds		Visual ¹	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Stains		Visual ¹	Not Allowed	Not Allowed	Not Allowed	Not Allowed	Not Allowed
Peel adhesion to Glass	Min.	ASTM D3167	16 PLi (2.8 kN/m)	25 PLi (4.4 kN/m)	30 PLi (5.3 kN/m)	33 PLi (5.8 kN/m)	33 PLi (5.8 kN/m)
Peal adhesion to PC	Min.	ASTM D3167	16 PLi (2.8 kN/m)	25 PLi (4.4 kN/m)	30 PLi (5.3 kN/m)	33 PLi (5.8 kN/m)	33 PLi (5.8 kN/m)
UV transmission	Max	After lamination between two ½ Glass	10%	10%	10%	10%	10%
Visible light Transmission	Min.	After lamination between two ½ Glass	85%	85%	85%	85%	85%

¹Measured along the first three square meters of each roll.

Health Precautions

This product is safe to use and apply when recommended precautions are followed. Before using this product, read and understand the Material Safety Data Sheet (MSDS), which provides information on health, physical and environmental hazards, handling precautions and first aid recommendations. An MSDS is available on request.

Avoid overexposure. Obtain medical care in case of extreme overexposure.

All recommendations, statements, and technical data contained herein are based on tests we believe to be reliable and correct, but accuracy and completeness of said tests are not guaranteed and are not to be construed as a warranty, either expressed or implied. User shall rely on his own information and tests to determine suitability of the product for the intended use and assumes all risks and liability resulting from his use of the product. Seller's and manufacturer's sole responsibility shall be to replace that portion of the product of this manufacturer which proves to be defective. Neither seller nor manufacturer shall be liable to the buyer or any third person for any injury, loss, or damage directly or indirectly resulting from use of, or inability to use, the product. Recommendations or statements other than those contained in a written agreement signed by an officer of the manufacturer shall not be binding upon the manufacturer or seller.

This document has been reviewed by the PPG Aerospace Export Control Department and has been determined to contain only EAR99 controlled data.

Approvals and Authorizations

- Original Equipment Manufacturer (OEM)
- ISO 9001/AS9100 Certificated No. 3204

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