

ROYALITE®

R57

FIRE-RATED*
RIGID
ABS/PVC
SHEET



	Very High	High	Average	Low
Tensile Strength		●		
Impact Strength	●			
High Temperature Performance			●	
Low Temperature Performance			●	
Stiffness		●		
Formability		●		

ROYALITE® R57 thermoplastic sheet is a fire-rated*, rigid ABS/PVC product specifically developed to meet Federal Aviation Administration requirements. It passes FAR 25.853b at 0.047" and above. It combines lightweight with very high impact strength, high tensile strength and stiffness, and excellent formability and ductility.

APPLICATIONS:

Lightweight, toughness and beauty, plus the ability to achieve almost any shape in a wide range of thicknesses are some of the reasons why fire-rated* ROYALITE® R57 sheet is found in many small aircraft applications. It is used for tray tables and armrests in smaller commuter and private airplanes; additionally, it is used for interior ceiling and side panels in many helicopters.

Handwritten notes in blue ink:
 4100 TL 3
 PL 3
 4/11/82

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PROCESSING:

ROYALITE® R57 rigid, fire-rated* thermoplastic sheet can be processed on virtually all thermoforming equipment from high-volume, multi-station rotary machines to hand-operated presses. It is readily hand-formed for prototyping and is suitable for use with aluminum and epoxy molds and fine-grain wood molds such as mahogany. Care must be taken in forming so as not to overheat the sheet since ROYALITE® R57 is an ABS/PVC alloy. Stock temperatures of approximately 325°F-400°F are recommended for proper forming. As with any thermoplastic material, care should be taken to account for the coefficient of thermal expansion when considering design parameters. Please contact Royalite for data relating to a specific application or equipment.

COLORS & TEXTURES:

ROYALITE® R57 is offered in a tremendous range of colors with a multitude of textures ranging from smooth to deep-textured. This Royalite product is normally capped with calendered film, which provides exceptional color and gloss control, plus outstanding grain retention after forming.

FINISHING:

With conventional plastic fabricating tools, it is possible to machine, saw, drill, rout and grind this rigid Royalite sheet. It can be punched and die-cut, and paints can be applied by spray, silk screen or roller coating. For optimum performance, paints formulated for plastics must be used. As long as proper procedures are followed, this material can be joined to other materials, or itself, by adhesive bonding, ultrasonic welding and by mechanical fasteners such as screws and rivets. Please contact Royalite for specific recommendations.

AVAILABILITY:

ROYALITE® R57 is available from our warehouse with standard dimensions of 54" x 94" in a variety of colors in a haircell or level haircell finish in gauges ranging from 0.047" to 0.187". Specific blank sizes can be cut to order for an extra charge. For a specific listing of our warehouse offerings, please contact us or our nearest distributor. Warehouse material can normally ship within 72 hours of receipt of the order.

Other standard and custom colors, grain textures, gauges and blank sizes are available subject to normal production scheduling. Maximum width available is 54". Gauges range from 0.047" to 0.312". Widths and gauges outside the standard are available with some restrictions.

SUMMARY OF PROPERTIES:

ROYALITE® R57 thermoplastic sheet is a rigid, fire-rated* ABS/PVC product that combines lightweight with very high impact strength, high tensile strength and stiffness, and excellent formability and ductility.

PHYSICAL PROPERTIES (units)	AVERAGE VALUES	TEST METHODS
Specific Gravity	1.18-1.26 †	ASTM D-792
Tensile Strength, machine direction (psi)	4800	ASTM D-638
Flexural Strength (psi)	7700	ASTM D-790
Flexural Modulus (10 ⁵ psi)	2.8	ASTM D-790
Impact Strength @ 72°F (ft-lb/in notch)	8.0	ASTM D-256
Notched Izod @ -20°F (ft-lb/in notch)	1.6	
Hardness Rockwell Scale R	93	ASTM D-785
Heat Deflection @ 264 psi Temperature (annealed) (°F)	175	ASTM D-648
Thermoforming Temperature Range Low (°F) High (°F)	325 400	Machine
Flammability Rating*: Motor Vehicle Standard Underwriters Lab FAA 12s vert burn	Passes Passes ⁽¹⁾ Passes ⁽²⁾	FMVSS 302 UL 94 V-0 FAR 25.853b

† Color Dependent - R57 sheet is not listed with UL

¹ At 0.085"

² FAR Part 25, Appendix F, Part I, Section (a)(1)(ii)

* This term and any corresponding data refer to typical performance in the specific tests indicated and should not be construed to imply this material's behavior under actual fire conditions.

NOTE: The data listed herein reflect typical sheet properties. They are the latest available at the time of publication and are reliable to the best knowledge of Royalite. The properties are listed solely to give general guidance and are not to be construed as a warranty or representation for which Royalite assumes responsibility.

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