



Royalite® R57 FR/ABS Aircraft Grade Sheet

Markets and End-Use Applications - Aircraft

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.

Product Description

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 its lightweight with very high impact strength, high tensile strength and stiffness, and excellent formability and ductility.

Royalite R57 sheet is 10% lighter than competitive materials. This reduction in weight allows for reduced overall production costs for aircraft manufacturers and reduced operating costs and fuel consumption for aircraft operators. In addition to its lightweight capabilities, R57 offers excellent thermoformability. This results in attractive thermoformed parts that exhibit sharp, crisp detail and outstanding grain retention.

The primary features and benefits of Royalite R57 fire-rated sheet are:

- Lightweight - Results in reduced production and operation costs, lesser fuel consumption
- High tensile strength
- Fire-rated - Passes FAR 25.853b at 0.047" and above
- Excellent formability - Can be used for a variety of aircraft interior products of varied size and function
- Very high impact strength - Durable, long-lasting parts
- Available in a wide range of colors and textures ranging from smooth to deep-textured

Physical Properties	Metric	English	Comments
Specific Gravity	1.18 - 1.26 g/cc	1.18 - 1.26 g/cc	ASTM D792
Mechanical Properties	Metric	English	Comments
Hardness, Rockwell R	93	93	ASTM D785
Tensile Strength, Yield	34.5 MPa	5000 psi	ASTM D638
Flexural Yield Strength	53.8 MPa	7800 psi	ASTM D790
Flexural Modulus	1.93 GPa	280 ksi	ASTM D790
Izod Impact, Notched	4.81 J/cm	9.00 ft-lb/in	73 °F; ASTM D256
	0.854 J/cm	1.60 ft-lb/in	ASTM D256
Impact Test	@Temperature -28.9 °C 40.7 J	@Temperature -20.0 °F 30.0 ft-lb	Dynatup Instrumented Impact at 73 °F; ASTM D3763
Thermal Properties	Metric	English	Comments
CTE, linear	82.8 - 99.0 µm/m-°C	46.0 - 55.0 µin/in-°F	ASTM D696
	@Temperature 20.0 °C	@Temperature 68.0 °F	
Deflection Temperature at 1.8 MPa (264 psi)	77.8 °C	172 °F	ASTM D648

Descriptive Properties

FAA 12 Second Vertical Burn	Passes	FAR Pt 25, App F, Pt I
Flammability	Passes	MVSS (Motor Vehicle Safety Standard) 302

Some of the values displayed above may have been converted from their original units and/or rounded in order to display the information in a consistent format. Users requiring more precise data for scientific or engineering calculations can click on the property value to see the original value as well as raw conversions to equivalent units. We advise that you only use the original value or one of its raw conversions in your calculations to minimize rounding error.

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