

Royalite[®] R87/59



Royalite[®] R87/59 gives high weather resistance in an economical, fire-rated*, rigid composite thermoplastic sheet. Its retention of impact strength after weathering is superior to both Korad[®] capped and painted ABS materials. It is cost-competitive to both these materials, with the advantages of flammability, while eliminating the need for painting and allowing much greater flexibility in matching custom colors in smaller runs than Korad[®]. Royalite[®] R87/59 meets many flammability standards, including UL94V-O in gauges down to 0.047" and UL94-5VA in gauges as low as 0.090". It has high impact strength, high tensile strength and stiffness, and good formability. To maintain its economical cost, the standard offering of R87/59 is not recommended for use when surface appearance is critical, especially in gauges less than 0.125". Improved aesthetics may be achieved; please contact Royalite to discuss a specific application.

FEATURES AND BENEFITS

- Fire-rated*
- High impact and tensile strength
- Outstanding formability

COLORS & TEXTURES

Royalite[®] R87/59 is offered in a tremendous range of colors with a multitude of textures ranging from smooth to deep-textured.

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, the 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.

PROCESSING

This rigid, weather-resistant Royalite[®] R87/59 thermoplastic sheet can be processed on virtually all thermoforming equipment from high-volume, multistation rotary machines to hand-operated presses. It is readily hand-formed for prototyping. It is also 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. Stock temperatures of approximately 330°F-360°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 your specific application and equipment.

* 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.

TARGET MARKETS & APPLICATIONS

The combination of toughness, weatherability, fire-rating* and economy makes R87/59 suitable for a wide range of applications.

- **Pool and Spa** – for heaters
- **Marine** – for boats and other marine applications
- **Recreational vehicles**
- **Waste and garbage containers**

AVAILABILITY

Royalite[®] R87/59 weather-resistant, fire-rated* sheet is available in a wide variety of standard and custom colors, grain textures, gauges and blank sizes subject to normal production scheduling.

Sheets Size – maximum width 54"

Gauges – 0.047 – 0.312

Widths and gauges outside the standard are available with some restrictions.



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TYPICAL PROPERTIES

PROPERTY	TEST METHOD	UNITS	DATA
Specific Gravity	D-792		1.18-1.25 †
Tensile Strength machine direction	D-638	(psi)	4,600
Flexural Strength	D-790	(psi)	6,600
Flexural Modulus	D-790	(10 ⁵ psi)	2.2
Impact Strength Notched Izod @ 72°F	D-256	(ft. lb/in notch)	7.0
		@-20°F	(ft. lb/in notch)
Hardness	D-785	Rockwell Scale R	87
Heat Deflection Temp (annealed)	D-648	264 psi fiber stress (°F)	165
Coefficient of Thermal Expansion	D-969	(in/in°Fx10 ⁻⁵)	
Thermoforming Temperature Range	Machine	Low (°F)	330
		High (°F)	360
Mold Shrinkage		(in/in)	0.005-0.007
Weatherability	UL746C		Listed f1
Underwriters Labs	UL94 V-0		Listed 0.047" or greater
Underwriters Labs	UL94 5VA		Listed 0.090" or greater

† Color dependent

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GARDNER FALLING WEIGHT IMPACT TEST* COMPARATIVE DATA:

(A) R87/59 vs KORAD[®] CAPPED ABS (Sample thickness 0.125", both samples Bright Green)

	UNAGED		AGED			
			1000 Hr Weatherometer		2000 Hr Weatherometer	
	72°F	-20°F	72°F	-20°F	72°F	-20°F
R87/59	1.33	0.52	0.88	0.17	0.75	0.15
Korad ABS	1.05	0.13	0.21	0.03	Not Tested	

(B) R87/59 vs PAINTED GP ABS (Sample thickness 0.067", both samples Tan)

	UNAGED		AGED			
			1000 Hr Weatherometer		2000 Hr Weatherometer	
	72°F	-20°F	72°F	-20°F	72°F	-20°F
R87/59	1.97	0.55	0.57	0.25	0.57	0.10
Painted GP ABS	0.31	0.29	0.12	0.06	Not Tested	

*Expressed in in-lb of impact to break per mil (0.001") of sample thickness.

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. We cannot anticipate all conditions under which this information and our products, or the products of other manufacturers in combination with our products, may be used. We accept no responsibility for results obtained by the application of this information or the safety and suitability of our products, either alone or in combination with other products. Users are advised to make their own test to determine the safety and suitability of each such product or product combination for their own purposes. We sell the products without warranty. Buyers and users assume all responsibility and liability for loss or damage arising from the handling and use of our products, whether used alone or in combination with other products.

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