

ACRYLITE® aircraft products

Solar Control Colors for Aviation

Product Description

ACRYLITE® Aviation products are now available in Solar Control colors. The Solar Control color technology provides design flexibility to aircraft cockpits and cabins by reducing unwanted ultraviolet (UV) and infrared (IR) radiation. The reduction of UV and IR radiation exposure, helps minimize the weathering of interior fabric and components, and prevents heat build-up in the aircraft. The Solar Control color technology is available in all standard and custom colors. Additionally, these colors are available across our range of aviation glazing products: ACRYLITE® GMU (AMS-LP391), ACRYLITE® GMS (MIL-PRF-5425) and ACRYLITE® 249 (MIL-PRF-8184 and MIL-P-25690).



The ACRYLITE® Advantage

- Reduced degradation of interior materials – longer life of interiors.
- Reduced heat build inside aircraft – more comfort, less stress on cooling systems.
- Color match any existing transparencies – or pick a color with similar heat transmittance with increased visibility
- Larger sheet sizes, up to and including 80x120 with exceptional flatness – tight thickness control even in these larger sizes.
- High quality glazing – lowest levels of distortion, inclusion and surface imperfections.

Light Transmission Properties

Ultraviolet Reduction

For every 3,300 ft of altitude, UV levels increase by approximately 10%. This increase in exposure can lead to an increased incidence of skin cancer for those that fly frequently. UV light can also cause weathering damage to interior fabrics and plastics, causing cracking and discoloration.

Our Solar Control colors show excellent blocking of both the UV-A and UV-B radiation. The UV radiation blocking properties of all Solar Control technology is significantly increased to 99.99% or more of all colors.

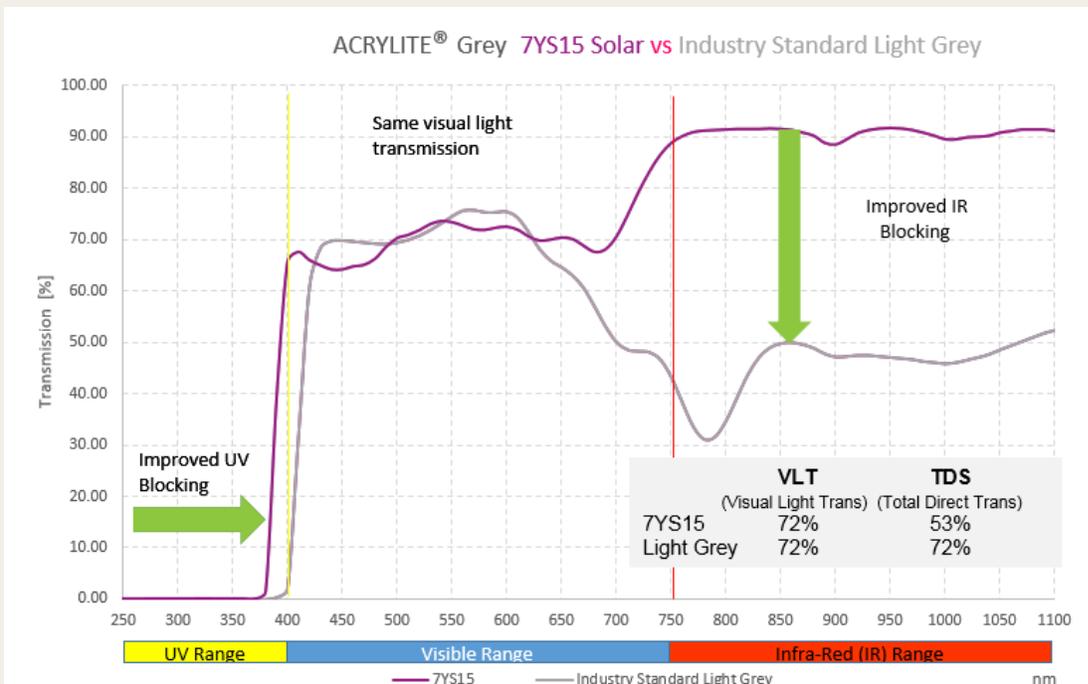
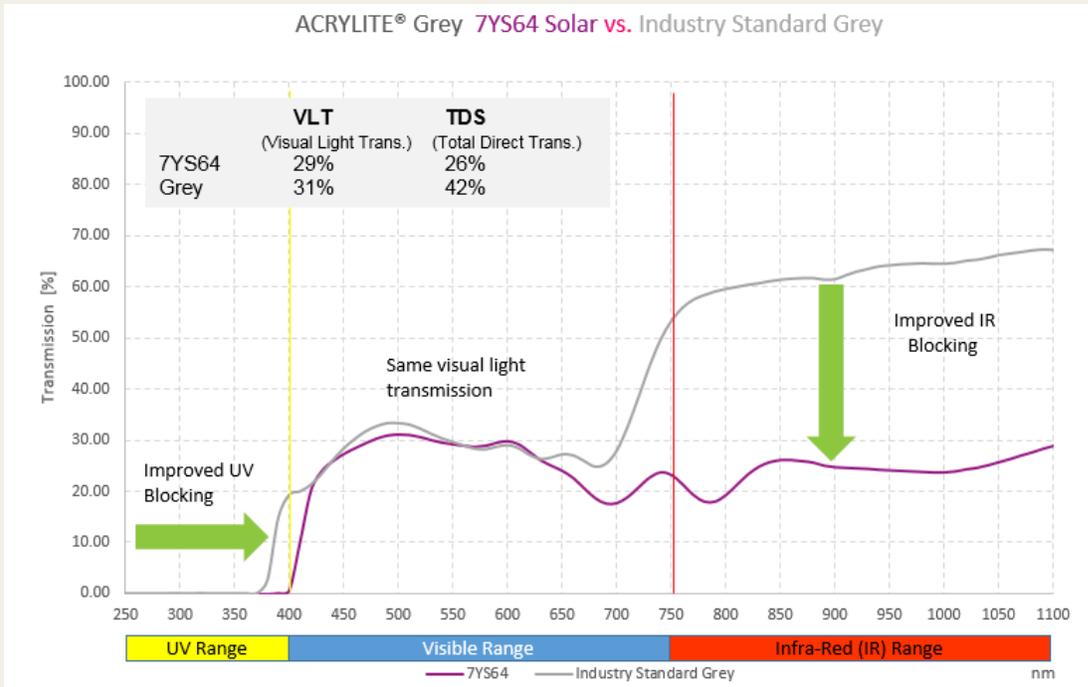
Infrared Transmission Reduction

Total direct transmission in the IR range (>750 nm) is reduced from 72% for the standard light grey to 53% for the solar control grey. This reduces the heat buildup within an aircraft.

Despite this reduction in UV & IR transmission, visual light transmission and visual appearance is the same for both Solar Control and our standard aviation colors.

Fabrication

Our solar control products form, cut and process the same as our ACRYLITE® GMU, GMS and 249 products. In addition, Evonik's sheet sizes – up to and including 80x120, allow for greater yields and larger formed parts.





Physical Properties

Properties	Test Method	Unit	Typical Value		
			ACRYLITE® GMU	ACRYLITE® GMS	ACRYLITE® 249
Specific Gravity	ASTM D-792	g/cm ²	1.19	1.19	1.19
Tensile Strength	ASTM D-638	psi	10,000	11,000	11,650
Elongation	ASTM D-638	%	4.2	5.7	4.4
Internal Strain	MIL-PRF-8184/ MIL-PRF-5425	%		< 1	< 1
Light Transmittance	ASTM D-1003	%	92	92.6	92.6
- initial					
- after accelerated weathering		%		92.3	92.5
Haze	ASTM D-1003	%	-	0.4	0.3
- initial					
- after accelerated weathering		%		0.4	0.7
Angular Deviation	ASTM D-637	minutes	-	< 3	3
Thermal Expansion	ASTM D-696	In/in °C	0.000061	0.000061	0.00056
Deflection Temperature (264psi)	ASTM D-648	°C	115	115	112
		°F	239	239	234
Flammability	ASTM D-635	Inch/min	1.80 (.118mm thickness)	1.25 (.250mm thickness)	0.83 (.500mm thickness)
Water Absorption (24h)	ASTM D-570	%	0.80	0.33	0.13
Craze Resistance					
dry : Isopropanol	MIL-PRF-8184	psi			3150
Toluene / Isobutyl acetate	MIL-PRF-8184	psi			2100
			-	-	
wet: Isopropanol	MIL-PRF-8184	psi			2300
Toluene / Isobutyl acetate	MIL-PRF-8184	psi			1610

Compatibility

Like other plastic materials, ACRYLITE® sheet is subject to crazing, cracking or discoloration if brought into contact with incompatible materials. These materials may include cleaners, polishes, adhesives, sealants, gasketing or packaging materials, cutting emulsions, etc. See the Tech Briefs in this series for more information, or contact your ACRYLITE® sheet Distributor for information on a specific product.

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