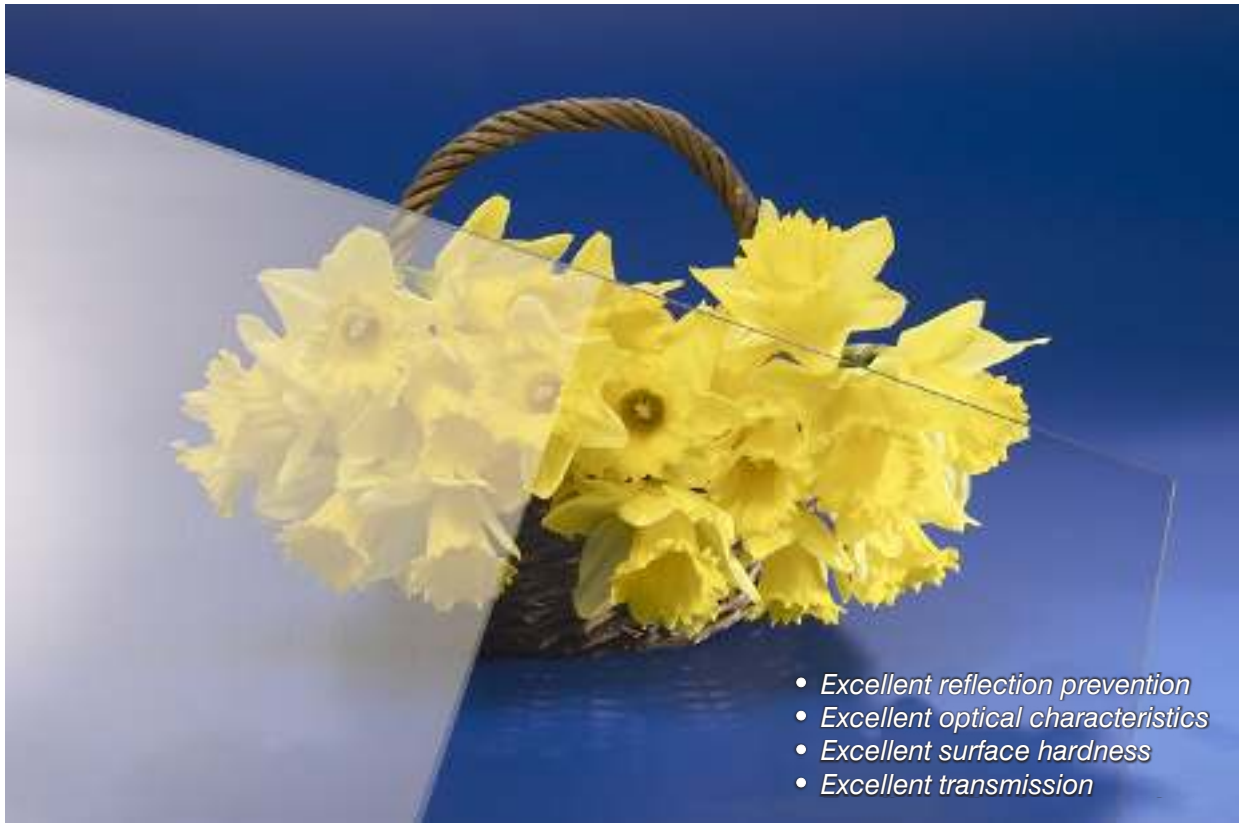


# Optiguard AR™

Anti-Reflection Coating



- *Excellent reflection prevention*
- *Excellent optical characteristics*
- *Excellent surface hardness*
- *Excellent transmission*

## Description

Varying locations and lighting conditions often pose problems with viewing consistency on many types of displays and other surfaces. Optiguard AR Anti-Reflection Coating from Panel Graphic can offer a solution for a wide variety of applications.

Optiguard AR Coating reduces specular reflections where they make viewing difficult. Using patented technology, the coating offers low reflectivity and an easy-to-clean hydrophobic surface that repels dirt.

Applications for Optiguard AR Coating can vary from reducing front surface glare on your handheld device to minimizing reflections on ATM screens, monitors or instrument panels in automotive applications with the hardcoated surface helping to ensure durability.

Optiguard AR can be used to enhance the following display types:  
**LCD, CRT, LET, EL, PDP, VFD, FED & Bar Code Scanners.**

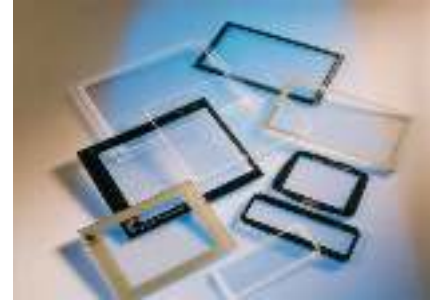


# Optiguard AR™

## Anti-Reflection Coating

### Optiguard AR Properties

Properties	Method	Unit	Value
Specific Gravity	ASTM D-792		1.19
Elongation	ASTM D-638	%	5
Flexural Rupture Strength	ASTM D-790	kg/cm <sup>2</sup>	800
Heat Distortion Temperature	ASTM D-648	°C	110
Maximum Recommended Continuous Temperature		°C	80
Coefficient of Thermal Expansion	ASTM D-696	cm/cm/°C	7 x 10 <sup>-5</sup>
Heat Resistance	80°C x 100hr		No Change
Cold Resistance	-40°C x 100hr		No Change
Humidity Resistance	40°Cx90%x100hr		No Change
Thermal Cycle (10 cycles)	-40°C <=> 80°C		No Change
Sunshine Weather Meter	100 hr		No Change
Pencil Hardness			6H ~ 8H
Shed Water (Touch Angle)			114°



The technical data for the product is typical, based on information accumulated during product life, and are not to be used in the generation of purchase specifications, which define property limits rather than typical performance.

### How it works

When light reaches an interface between two media it is either transmitted, reflected, or lost to absorption or scattering. The fraction of light that is reflected (R) is dependent upon the relative refractive indices (n) of the two media, which are related to the velocity of light in each of the two media.

$$R = [(n_{air} - n_{acrylic}) / (n_{air} + n_{acrylic})]^2$$

When light traveling in air strikes acrylic, for example, its velocity decreases and a significant amount of light is reflected away from the acrylic surface. If this acrylic is the front surface of a display then the light available to read the display is reduced and the reflected light diminishes the contrast ratio and the readability of the display image. This process is repeated at every optically dissimilar interface in the light path, resulting in a cumulative transmission loss that reduces image contrast as seen by the viewer.

Applying a specially designed coating layer to the acrylic surface can reduce the amount of light reflected at an air/acrylic interface. The amount of reflected light of wavelength is minimized if the coating layer has an optimum refractive index (n) and is coated at an optimum thickness (z).

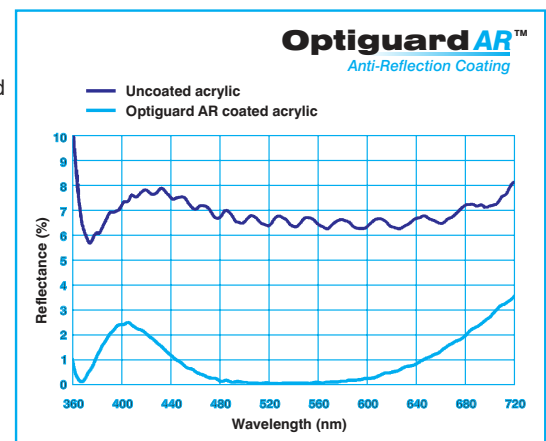
$$z = \lambda / 4n$$

Optiguard AR coatings are specially engineered to reduce reflection and increase transmission of light at air/optical surface interfaces. This increases contrast ratio in displays and increases transmission through the display window. In addition to this optical engineering, a final AR layer is added incorporating a low surface energy component, creating an easily cleaned surface known as the AFP (Anti-Finger Print) layer.

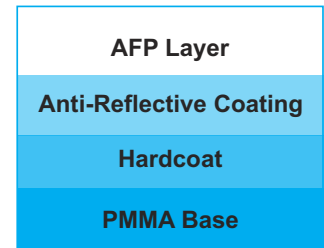
Optiguard AR can often be identified by a faint blue/purple colouring of the surface. This residual or reflex colour can be selected or altered by the number and thickness of layers of metal oxides applied.

### Reflectance Spectrum

Optiguard AR coatings can be used in a wide variety of applications where reduction of first surface reflectance is important. The graph on the right shows the reflectance spectrum.



Light Transmission	99%
Reflectance	1%
Hardness	6-8 H



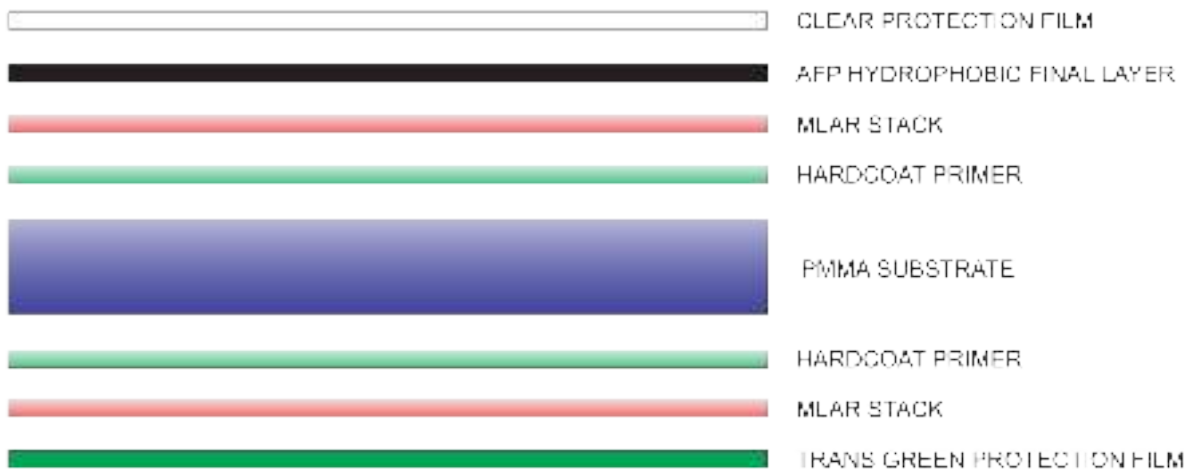
# Optiguard AR™

Anti-Reflection Coating

## MATERIAL PRESENTATION

### Optiguard AR™

2 SIDES AR / 1 SIDE AFP



### Optiguard AR™

2 SIDES AR / 2 SIDES AFP

