

Rear Projection Screens made of PLEXIGLAS®

Overview

- Product Lines for Standard and High-End Use
- Several Products to perfectly match surrounding conditions of projection and setup (ambient light, strength of light engine, viewing angle)
- Robust: easy to clean resistant to scratches
- Very Homogeneous Image & Brightness Uniformity
- Anti-Glare Surfaces: No Ghost Images or Specular Reflexes
- Fire Class B2 → can be used in critical areas
- Customized Solutions can be realized
- Sizes:
 - Standard: 3050 mm x 2050 mm
 XXL: 6000 mm x 2050 mm
 - High-End Screens: 2200 mm x 1600 mm

Product description

The PLEXIGLAS® RP product line was developed in close cooperation with our customers to meet their high demands. We combine highly transparent PLEXIGLAS® with several micro lens systems to get a good balance between gain, contrast, high viewing angles and resolution for every application.

There is no hot-spots in the projection and the colours are constant from every viewing angle. There's only little tolerance in thickness (< 3%), which ensures a uniform projection & brightness distribution - also for large screens. The scattering of light is very homogeneous.

Both screen sides can be equipped with **antiglare surfaces** such that annoying reflexes (e.g. ghost images) do not occur. Also, these surfaces make the screens more resistant to scratches and are easy to be cleaned.

Our materials are **toxicologically safe**. In particular, PLEXIGLAS® does not „de-gas“, like some other plastic materials that contain low-molecular substances to modify their properties.

When burning there's hardly any smoke being produced. Fire classification B2 allows you to use this material in sensitive areas that are not suited for the use of other projection materials (e.g. PVC).

You constantly get a high quality material because Degussa is a fully-integrated producer all the way from the raw material to the semi-finished sheet. This is independent from the location of your production, your business partners or your customers since we offer a world-wide production and distribution network.

The founder of our company - Dr. Otto Röhm - invented the material Polymethylmethacrylate (= PMMA) which nowadays is often referred to as acrylic. Of commercially available polymers it has the highest degree of transparency and light transmission why it has been used for optical applications since its invention. Thus, there is decades of experience in handling and processing the material. We are able to consult in every aspect of the physical properties of the material. To get expert knowledge on how to machine and glue the material you can take part in seminars.

Your special requirements to a screen can be achieved by developing a **customized solution** since we have a high-level knowledge base in lighting and long-year experience in light scattering. Our R&D is continuously advancing the products to live up to the increasing expectations of our Rear Projection customers.

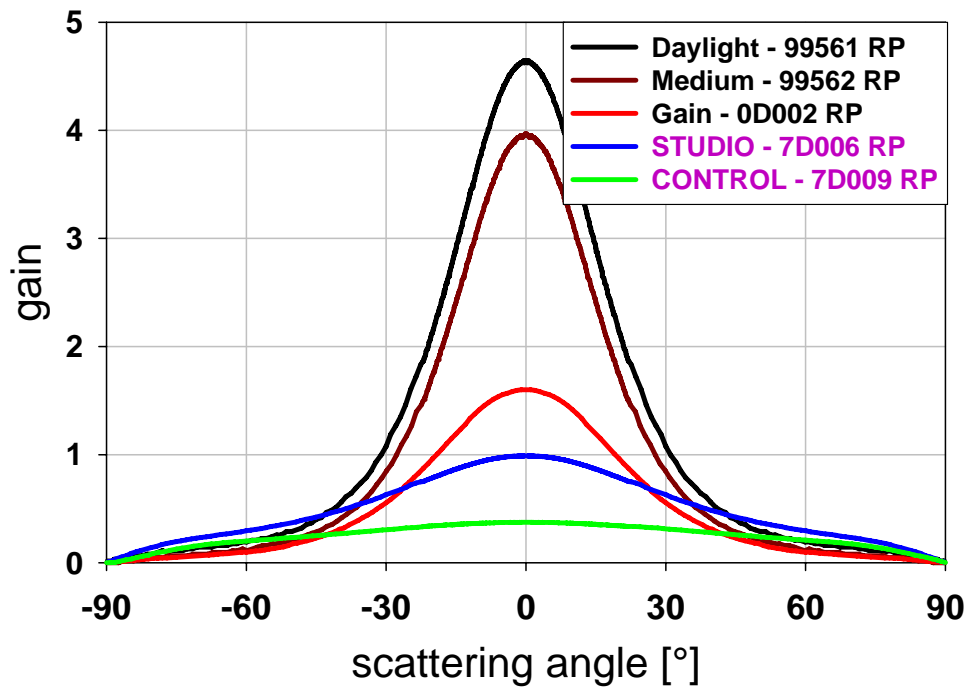
The Standard Series for Rear Projection

PLEXIGLAS® RP	Product	Application	grade
Properties: Robust and easy-to-care 3 mm-sheet; three variations to accommodate ambient light conditions	Daylight	High contrast in bright environment	99561
	Medium	High gain with good contrast	99562
	Gain	Maximum Gain	0D002

Optical Properties

PLEXIGLAS®	RP	Gain	Medium	Daylight
	grade	0D002	99562	99561
Application	ambient light	dark	normal	daylight
	thickness [mm]	3		
Performance	Gain	4.6	4	1.6
	half-gain [°]	±19	±18	±24
Light transmission T [%]		89	68	42
Colour		white	light grey	anthracite
	L*	95	86	71
	a*	0	0	0
	b*	2	1	0
Gloss	R(20°)	3	4	2
	R(60°)	22	24	14
	R(85°)	18	19	9

Gain charts



Physical Properties

Product		PLEXIGLAS® RP Screens	
Property			
thickness	3(5) mm ± 3%		
Surface			
roughness	R _a	2 µm	
	R _z	17 µm	
	R _{max}	21 µm	
Mechanics			
Charpy impact strength	17 kJ/m ²		
Notched impact strength	2 kJ/m ²		
Elastic Modulus	3300 MPa		
Tensile strength	72 MPa		
Elongation at break	4,8%		
Vicat softening temperature	106 °C		
Water uptake (24h)	38 mg		

Rear Projection Screens by Evonik Röhm GmbH

The Pro-Series for High-End Solutions

Many of our customers liked the optical performance of the High Resolution Film series. But at the same time they needed a stiff (i.e. thick) sheet material that can be used to install large-size screens and that does not bend - even if used in large formats.

This market need and the introduction of a new production technology were the initiators to manufacture the new series of RP screens that are particularly designed for professional applications.

The combination of high half-gain angles with a high image resolution is unusual for so-called "diffusion screens". So far, for the standard *diffusion screens* there has been the negative effect of a "blurry" image when increasing the half-gain angle.

We could overcome this problem by combining a set of newly developed optical additives in a thin functional layer.

The optical performance of these screens is getting close to the "optical screens" that have to use Fresnel lenses to achieve a uniform light distribution across a set of screens used in a typical cube setting.

	Professional Screens		
PLEXIGLAS®	Type	STUDIO	CONTROL
	Grade	7D006	7D009
Application	Ambient light	inside	daylight
	Resolution	High Definition	
	Thickness [mm]	5	
Performance	Gain	1.3	0.4
	Half-gain [°]	38°	65°
	Light transmission T [%]	45%	24%
Colour		light grey	anthracite
Surface finish		Both sides matte	One matte, one glossy

Available sizes: 2.20 m x 1.60 m

With those screens we can achieve high brightness uniformity - also from large viewing angles at a high image resolution.

Achieving the optical performance of "optical screens" the Pro-Series offers the following

Advantages over optical screens:

- Price-Performance Ratio
- Robustness / Easy to Clean
- NO Fresnel lens necessary: Variable projector distance / not limited to focus width of Fresnel lens
 - ➔ No more calculations necessary to order and set up screens

Summary of Optical Properties for all Screens

		3 mm Screens			5 mm Screens	
PLEXIGLAS®	RP	Gain	Medium	Daylight	STUDIO	CONTROL
		1	2	3	4	5
	grade	0D002	99562	99561	7D006	7D009
Application	ambient light	dark	normal	daylight	normal	daylight
	resolution	Normal			High Resolution	
	thickness [mm]	3			5	
Performance	Gain	4.6	4	1.6	1.0	0.4
	half-gain [°]	±19	±18	±24	±38	±67
Light transmission T [%]		89	68	42	45	25
Colour		white	light grey	anthracite	light grey	anthracite
	L*	95	86	71	73	55
	a*	0	0	0	0	1
	b*	2	1	0	3	4
Gloss	R(20°)	3	4	2	1	1
	R(60°)	22	24	14	9	8
	R(85°)	18	19	9	12	11

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® = registered trademark

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Certified to DIN EN ISO 9001 (quality) and DIN EN ISO 14001 (environment)

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