



# clear-PEP<sup>®</sup> Panels

**Inspired Solutions.**

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composite

[www.design-composite.com](http://www.design-composite.com)

# clear-PEP® Panels

## The clear-PEP® panels

Our state-of-the-art gluing technology bonds our rigid translucent TRlcore honeycomb cores with transparent thermoplastic top sheets resulting in a panel with exceptional optical features.

The 5 types of the clear-PEP® series mainly differ in top sheet material and its structure, dimensions and colors. You will find all product details in this data sheet or online at [www.design-composite.com](http://www.design-composite.com).

## Common properties

- innovative translucent optics
- excellent light scattering
- outstanding thermal insulation
- high impact resistance
- exceptional stiffness
- low weight
- patented PC TRlcore honeycomb core
- easy to handle and process
- compatible with standard profile systems
- flat applications only

## clear-PEP® PC

Lightweight construction with excellent stiffness, using high transparent 1 mm non UV-protected PC top sheets.

### Special properties

- light weight
- high impact resistance
- excellent bending strength
- only for interior applications



## clear-PEP® UV PC

This panel combines unique optical features with the best thermal insulation. Highly transparent UV-protected thermoplastic 2 mm PC top sheets and our 10 year's warranty enable a lasting exterior application.

### Special properties

- excellent UV and weather resistance
- high impact and hail resistance
- outstanding stiffness
- panel size up to 7800 x 2020 x 150 mm
- easy to install



## clear-PEP® UV PC color

Exclusive sandwich panels by applying translucent and colored UV-protected 2 mm PC top sheets.

Standard colors on stock:

- orange
- green
- light blue
- dark blue

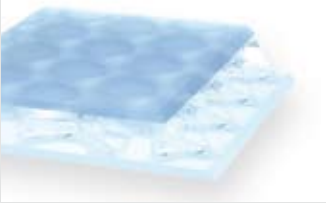
Special colors on request

### Special properties

- excellent UV and weather resistance
- high bending strength
- good hail resistance
- both sides usable
- large sizes available
- flexible in core thickness



# clear-PEP® Panels



## clear-PEP® UV satin

Panels with unique light scattering by using translucent satined colored 3 mm PMMA UV-protected top sheets.

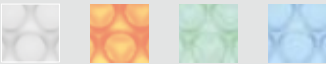
Standard colors on stock:

- opal
- orange
- glass green
- ice blue

Special colors on request

### Special properties

- velvety scratch resistant top surface
- pleasant haptics
- no visible fingerprints
- both sides usable
- physiological unobjectionable



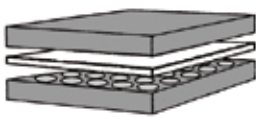
## clear-PEP® UV PC stage

2 mm UV-protected PC top sheets enable the panel translucent optical features as well as an anti-slip surface. Appropriate for raised and illuminated floors with high load bearing capacity.

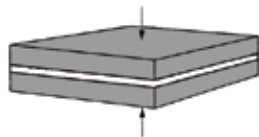
### Special properties

- improved scratch resistance
- light weight by high stiffness
- excellent UV and weather resistance
- anti-slip surface

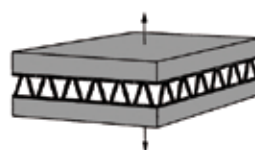
## TRCore production



Plastic sheet is placed between heated moulds



Moulds close and heat up the plastic sheet



Process of expanding



Partially cooled core is removed from the mould

# clear-PEP® Panels

## Dimensions, mechanical and physical data

	clear-PEP® PC	clear-PEP® UV PC	clear-PEP® UV PC color	clear-PEP® UV satin	clear-PEP® UV PC stage
<b>Standard</b>					
Length (mm)	2550	3020	3020	3020	2000
Width (mm)	1050	1220	1000	1000	1000
Thickness (mm)	16/19	19	19	19	40
<b>Tolerances of standard dimensions</b>					
Length (mm)	+10/-10 **	+2/-2	+2/-2	+2/-2	+2/-2
Width (mm)	+5/-5 **	+1/-2	+1/-2	+1/-2	+1/-2
Thickness (mm)	+0/-1	+0/-1	+0/-1	+2/-2	+0/-1
<b>Dimensions max. *</b>					
Length (mm)	7800	7800	7800	3020	7800
Width (mm)	1420	2020	2020	2020	1420
Thickness (mm)	150	150	150	150	150
Fire class	B2 <sup>1</sup> , 1Y <sup>3</sup>	B1 <sup>2</sup> , 1Y <sup>3</sup>	B1 <sup>2</sup> , 2Y <sup>3</sup>	B2 <sup>1</sup>	B1 <sup>2</sup> , 2Y <sup>3</sup>
<sup>1</sup> DIN 4102					
<sup>2</sup> ÖNORM B 3800					
<sup>3</sup> BS 476 Part 7					
Coefficient of thermal expansion (1/K) acc. to DIN 53752-A	6,5x10 <sup>-5</sup>	6,5x10 <sup>-5</sup>	6,5x10 <sup>-5</sup>	7x10 <sup>-5</sup>	6,5x10 <sup>-5</sup>
Service temperature (°C)	-30 up to +80	-30 up to +80	-30 up to +80	-30 up to +80	-30 up to +80

\* with core joint—minimum order quantity per special dimension: 200 m<sup>2</sup>; panels with thickness > 80 mm edges untrimmed

\*\* untrimmed

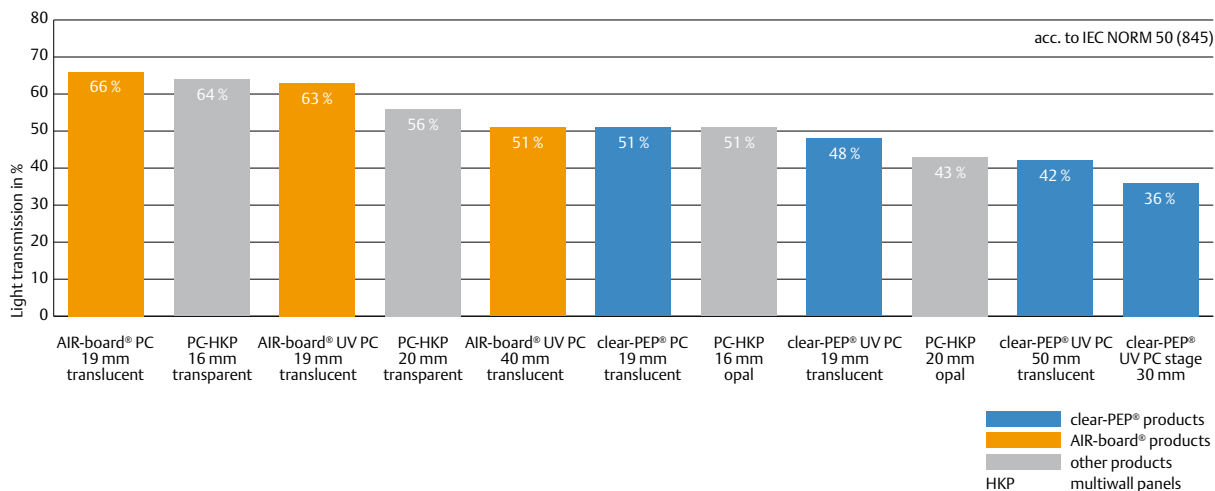
	clear-PEP® PC	clear-PEP® UV PC	clear-PEP® UV PC color	clear-PEP® UV satin	clear-PEP® UV PC stage	
<b>Weight per unit area (kg/m<sup>2</sup>)</b>	16 mm	6,1	8,5	8,5	10,8	–
	19 mm	6,1	8,5	8,5	10,8	–
	25 mm	6,1	8,5	8,5	10,8	–
	30 mm	7,3	9,7	9,7	12,0	9,7
	40 mm	7,3	9,7	9,7	12,0	9,7
	50 mm	8,5	10,9	10,9	13,2	10,9
	80 mm	8,5	10,9	10,9	13,2	–
	150 mm	8,5	10,9	10,9	13,2	–
<b>Thermal insulation U-value (W/m<sup>2</sup>·K)</b>	16 mm	3,2	3,3	3,3	3,4	–
	19 mm	2,9	3,0	3,0	3,0	–
	25 mm	2,5	2,5	2,5	2,6	–
	30 mm	2,2	2,2	2,2	2,3	2,2
	40 mm	1,8	1,8	1,8	1,9	1,8
	50 mm	1,5	1,5	1,5	1,6	1,5
	80 mm	1,0	1,1	1,1	1,1	–
	150 mm	0,6	0,6	0,6	0,6	–
<b>Sound insulation R<sub>w</sub> (dB)</b>	16 mm	22	24	24	26	–
	19 mm	22	24	24	26	–
	25 mm	22	24	24	26	–
	30 mm	23	25	25	27	25
	40 mm	23	25	25	27	25
	50 mm	24	26	26	28	26
	80 mm	24	26	26	28	–
	150 mm	–	–	–	–	–

All statements and data correspond with our current know-how and are subject to changes. Though a legally binding assurance of certain characteristics or suitability of any product type for a special purpose can not be derived. Any indication is only a non-binding recommendation. Subject to changes.

# clear-PEP® Panels

## Light transmission

Comparison of PC multiwall sheets (in short PC-HKP) with clear-PEP® PC and clear-PEP® UV PC



### clear-PEP® UV PC 19

	TSET-value (total solar energy transmittance)			
Sun elevation angle	0°	30°	45°	60°
	0,62	0,58	0,55	0,43

## Mechanical data

		clear-PEP® PC	clear-PEP® UV PC	clear-PEP® UV PC color	clear-PEP® UV satin	clear-PEP® UV PC stage
Modulus of elasticity (N/mm <sup>2</sup> )	16 mm	860	1400	1400	1750	-
	19 mm	720	1100	1100	1450	-
	25 mm	560	950	950	1150	-
	30 mm	450	750	750	800	750
	40 mm	370	550	550	600	550
	50 mm	260	390	390	420	390
	80 mm	110	140	140	150	-
	150 mm	10	11	11	12	-
Bending strength (N/mm <sup>2</sup> )*	16 mm	20	33	33	49	-
	19 mm	17	30	30	43	-
	25 mm	14	23	23	28	-
	30 mm	11	20	20	22	20
	40 mm	8	11	11	13	11
	50 mm	5	5	5	6	5
	80 mm	1	1	1	1	-
	150 mm	-	-	-	-	-
Bending stiffness (Nm <sup>2</sup> /m)	16 mm	294	478	478	597	-
	19 mm	412	629	629	829	-
	25 mm	729	1237	1237	1497	-
	30 mm	1013	1688	1688	1800	1688
	40 mm	1973	2933	2933	3200	2933
	50 mm	2708	4063	4063	4375	4063
	80 mm	4693	5973	5973	6400	-
	150 mm	2813	3094	3094	3375	-

\* Values determined with the three-point bending test according to ISO 178: test sample width 80 mm / support distance 250 mm

### clear-PEP® UV PC stage

	Compressive strength (N/mm <sup>2</sup> )							
mm	16	19	25	30	40	50	80	150
	-	-	-	3,0	2,8	1,0	-	-

# clear-PEP® Panels

## Maximum support distances for fixing with profile systems or point fixings

clear-PEP® UV PC, clear-PEP® UV PC color	Load in N/m <sup>2</sup>									
	600	800	1000	1200	1400	1600	1800	2000	2500	3000
16 mm	1650	1520	1430	1350	1300	1250	1210	1160	1100	1040
19 mm	1860	1720	1620	1530	1470	1410	1360	1320	1240	1180
25 mm	2000	2000	1880	1780	1710	1640	1580	1540	1450	1370
30 mm	2000	2000	2000	2000	1940	1860	1810	1750	1640	1560
40 mm	2000	2000	2000	2000	2000	2000	2000	2000	1950	1850
50 mm	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
80 mm	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
150 mm	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000

clear-PEP® UV satin	Load in N/m <sup>2</sup>									
	600	800	1000	1200	1400	1600	1800	2000	2500	3000
19 mm	2000	2000	1870	1780	1690	1640	1590	1540	1440	1380
25 mm	2000	2000	2000	2000	2000	1970	1910	1850	1730	1640
30 mm	2000	2000	2000	2000	2000	2000	2000	2000	1940	1860
40 mm	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
50 mm	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
80 mm	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
150 mm	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000

- data in mm
- calculated values based on the assumption of fixing with profiles at two sides or with point fixings and considering a safety factor of 1,5
- load capacity values include the maximum force and the corresponding panel weight per m<sup>2</sup>
- in case of using a profile fixing system: minimum of 20 mm clamped on two sides
- 2000 mm— maximum support distance caused by available width of top layer

## Load capacity

clear-PEP® UV PC stage	Support distance 500 mm			Support distance 750 mm			Support distance 1000 mm		
	30 mm	40 mm	50 mm	30 mm	40 mm	50 mm	30 mm	40 mm	50 mm

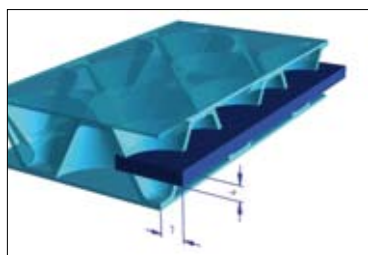
Deflection in mm, two-sided support									
Load of 2500 N/m <sup>2</sup>	1,0	0,6	0,4	4,7	2,6	1,7	14,5	8,1	5,1
Load of 3500 N/m <sup>2</sup>	1,4	0,8	0,5	6,6	3,7	2,4	-	11,3	7,2
Load of 5000 N/m <sup>2</sup>	2,0	1,1	0,8	9,4	5,3	3,4	-	-	-

Deflection in mm, four-sided support									
Load of 2500 N/m <sup>2</sup>	0,6	0,3	0,2	1,9	1,1	0,7	4,3	2,5	1,6
Load of 3500 N/m <sup>2</sup>	0,8	0,5	0,3	2,6	1,5	2,0	6,0	3,4	2,3
Load of 5000 N/m <sup>2</sup>	1,2	0,7	0,5	3,8	2,2	1,5	8,6	4,9	3,3

- calculated data with safety factor  $\geq 2,0$

## Installation systems for all clear-PEP® panels

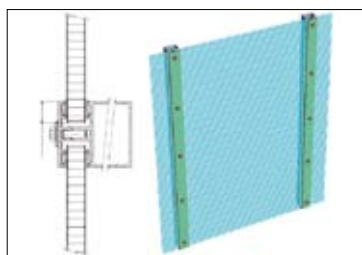
### Concealed plug-in connection system



This installation system is specially designed for standard aluminium exhibition construction profiles.

Appropriate for interior applications

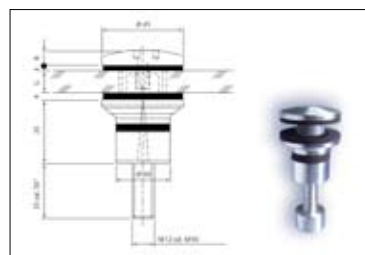
### Visible clamping profile system



Example of a typical aluminium fixing system for exterior glazing— compatible with all clear-PEP® panels.

Appropriate for exterior applications

### Point fixing system



Our panels with sealed edge bending are suitable for curtain walls by using all available (spider) point fixed systems.

Appropriate for exterior applications

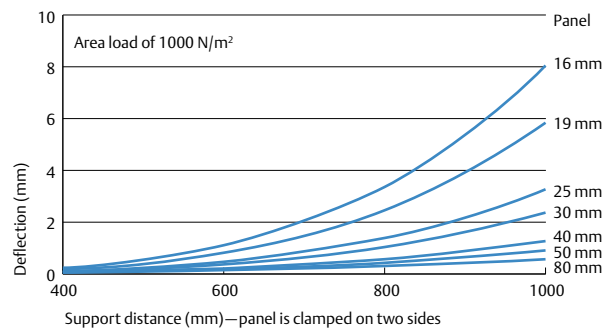
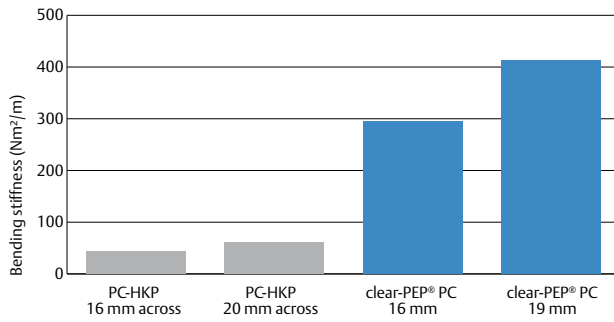
Important advices concerning exterior applications:

- panel edges have to be protected against penetrating moisture
- in case of horizontal installation: angle for installation  $\geq 5^\circ$

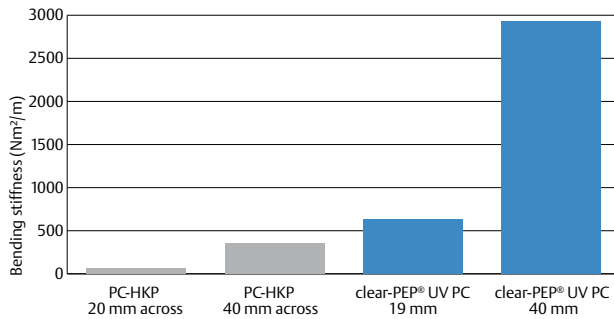
# clear-PEP® Panels

## Details on load—deflection and bending stiffness

### clear-PEP® PC

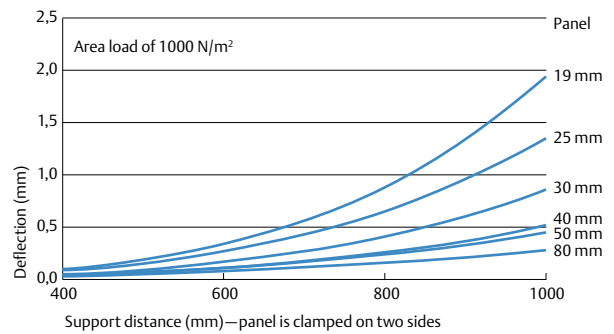
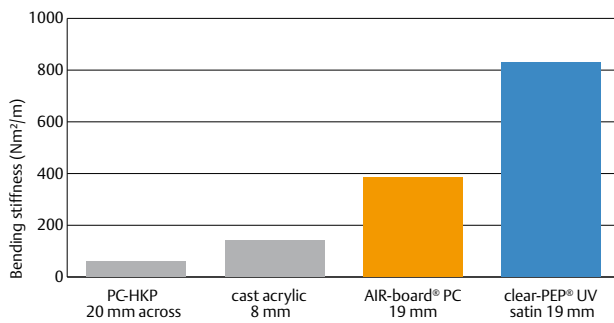


### clear-PEP® UV PC, clear-PEP® UV PC color

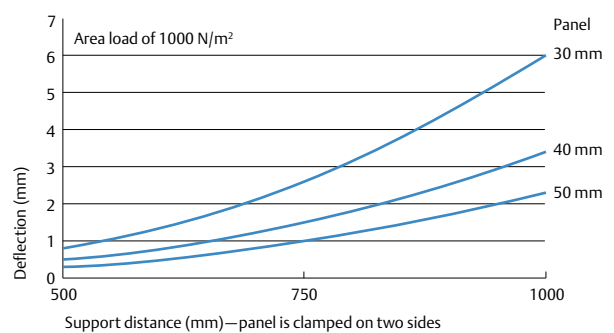
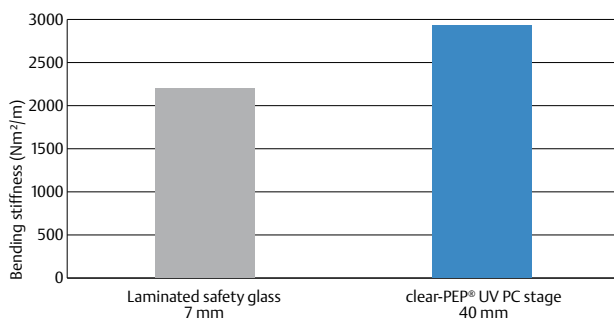


Please refer to the table on the left for further details on load capacity of clear-PEP® UV PC.

### clear-PEP® UV satin



### clear-PEP® UV PC stage



## Applications of clear-PEP® panels

The range of applications for clear-PEP® panels is almost unlimited and we are constantly developing new solutions together with our customers.

architecture  
design elements  
exhibition booths  
shop design  
stage setting  
interior design

displays  
illuminated advertising  
dispenser  
point-of-sales  
shop window decorations  
décor items

shelves  
luminaries  
illuminated ceilings  
furniture  
partitions  
sliding doors

raised floors  
balustrade glazing  
facades  
canopies  
...and many more!



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