



# clear-PEP<sup>®</sup> Panels

**Inspired Solutions.**



# clear-PEP<sup>®</sup> Panels

## The clear-PEP<sup>®</sup> 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<sup>®</sup> 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

## clear-PEP<sup>®</sup> 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<sup>®</sup> 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<sup>®</sup> UV PC color

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

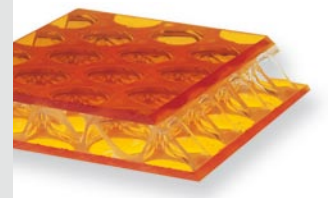
Standard colors on stock:

- orange
- green
- light blue
- dark blue

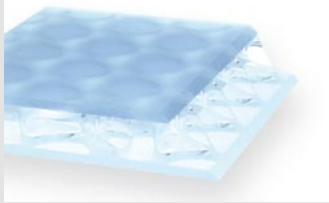
Special colors on request

### 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<sup>®</sup> Panels



## clear-PEP<sup>®</sup> UV satin

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

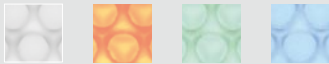
Standard colors on stock:

- 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



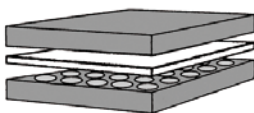
## clear-PEP<sup>®</sup> UV PC stage

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.

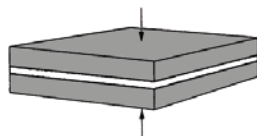
### Special properties

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

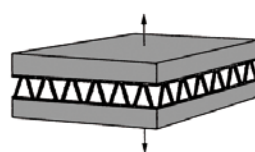
## TRICore production



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 ①                         | +2/-2                             | +2/-2                             | +2/-2               | +2/-2                             |
| Width (mm)   | +5/-5 ①                           | +1/-2                             | +1/-2                             | +1/-2               | +1/-2                             |
| Thickness (mm)   | +0/-1                             | +0/-1                             | +0/-1                             | +2/-2               | +0/-1                             |
| <b>Dimensions max. ②</b>                                   |                                   |                                   |                                   |                     |                                   |
|  | ④                                 | ③                                 | ④                                 | ③                   | ③                                 |
| 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                     |

① untrimmed

② with core joint—panels with thickness > 80 mm edges untrimmed

③ minimum order quantity per special dimension: 200 m<sup>2</sup>

④ minimum order quantity per special dimension: 400 m<sup>2</sup>

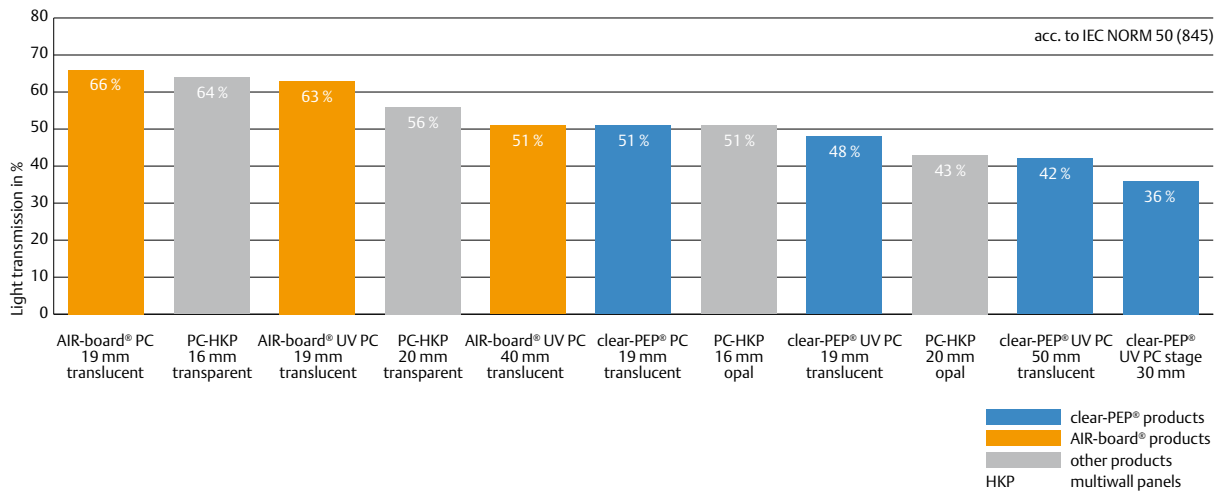
|   | clear-PEP® PC | clear-PEP® UV PC | clear-PEP® UV PC color | clear-PEP® UV satin | clear-PEP® UV PC stage |      |
|---|---------------|------------------|------------------------|---------------------|------------------------|------|
| <b>Weight per unit area (kg/m<sup>2</sup>)</b>        | 16 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         | 2,6              | 2,8                    | 2,8                 | 2,9                    | –    |
|   | 19 mm         | 2,6              | 2,7                    | 2,7                 | 2,8                    | –    |
|   | 25 mm         | 2,5              | 2,5                    | 2,5                 | 2,6                    | –    |
|   | 30 mm         | 2,3              | 2,4                    | 2,4                 | 2,4                    | 2,4  |
|   | 40 mm         | 2,1              | 2,1                    | 2,1                 | 2,1                    | 2,1  |
|   | 50 mm         | 1,8              | 1,9                    | 1,9                 | 1,9                    | 1,9  |
|   | 80 mm         | 1,4              | 1,4                    | 1,4                 | 1,4                    | –    |
|   | 150 mm        | 0,9              | 0,9                    | 0,9                 | 0,9                    | –    |
| <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> ) |    |    |     |     |     |    |     |
|----------------|---|----|----|-----|-----|-----|----|-----|
| Thickness (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,<br>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

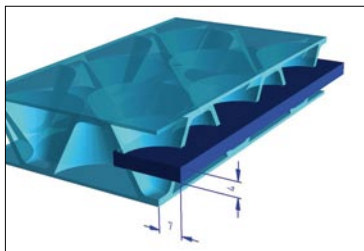
## Load capacity

| clear-PEP® UV PC stage                      | Support distance<br>500 mm |       |       | Support distance<br>750 mm |       |       | Support distance<br>1000 mm |       |       |
|---|----------------------------|-------|-------|----------------------------|-------|-------|-----------------------------|-------|-------|
|   | 30 mm                      | 40 mm | 50 mm | 30 mm                      | 40 mm | 50 mm | 30 mm                       | 40 mm | 50 mm |
| <b>Deflection in mm, two-sided support</b>  |                            |       |       |                            |       |       |                             |       |       |
| 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   | -                           | -     | -     |
| <b>Deflection in mm, four-sided support</b> |                            |       |       |                            |       |       |                             |       |       |
| 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

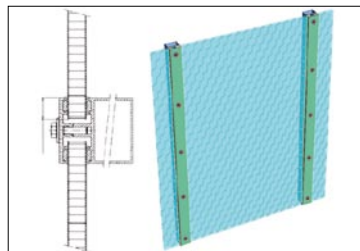
### Concealed plug-in connection system



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

Appropriate for interior applications

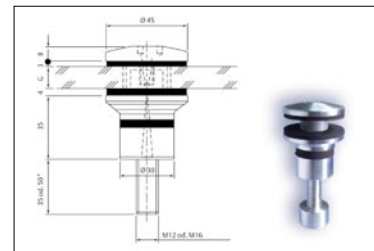
### Visible clamping profile system



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

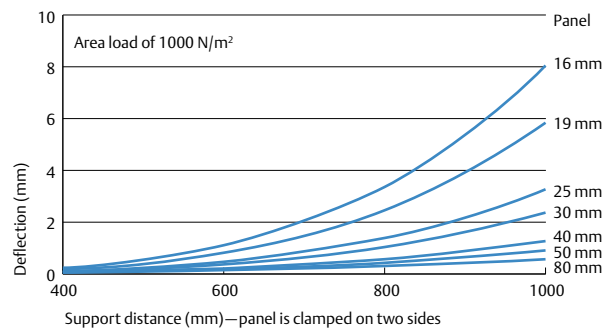
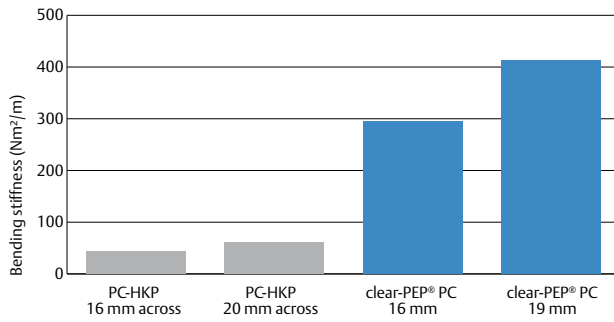
### Important advices concerning exterior applications:

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

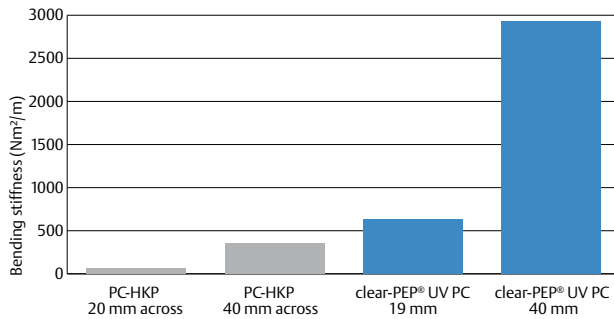
# clear-PEP® Panels

## Details on load—deflection and bending stiffness

### clear-PEP® PC

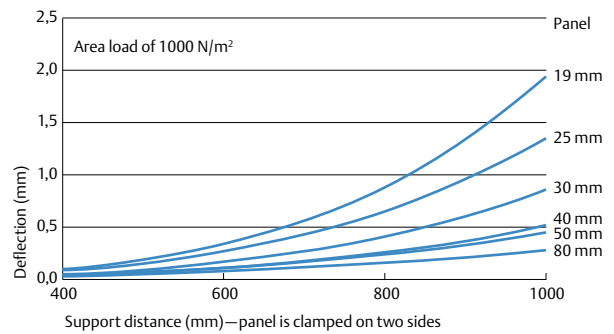
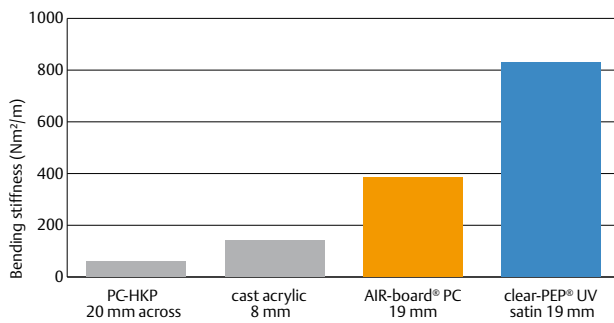


### clear-PEP® UV PC, clear-PEP® UV PC color



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

