

Polycarbonate multilayered sheets:

- The polycarbonate multilayered sheets produced in Polymer Talayi Yazd Company are protected a
- Because of the special structure of these sheets , they became the first choice in light transmission
- Some other advantages of these sheets are high flexibility , easy usage and installation and highly
- These sheets are generally used for ceiling and pedestrian bridges, factory buildings and particula
- The sheets are made and supplied in dimension of 600x 210 centimeters variety of colors.

The usage fields: :

- Construction
- Transportation industry
- In glass usages
- Safety glass function
- Sunroofs partitions , decorative dooms, cabin making
- Indoor or outdoor stadiums
- Covered corridors and patio ceilings

Technical Specifications

No. Characteristics

**Unit
Typical Values**

**1
Light Transmission
%
88**

**2
Specific Gravity
g/cm³
1,2**

**3
Coefficient of Thermal Expansion
m/m*°C
6.5 x 10E-5**

**4
Service Temperature
°C
-40°C to +120°C**

**5
Thermal Conductivity
W/m °C
0.2**

**6
Tensile Strength
Mpa
>60**

**7
Flexural Strength
N/mm²
>95**

**8
Modulus of Elasticity
Mpa
2350-2400**

9

Tensile Stress at Break

Mpa

>60

10

Elongation at Break

%

>70

11

Specific Heat

J/kg.K

1,17

12

Heat Deflection Temperature

°C

>135

13

Vicat Softening Temperature

°C

>145

14

Water Absorption(after storage in standard climate 23 °

%

0.15

15

Tensile strength at yield

MPa

>60

16
Refractive Index
 N_D^{20}
1.585

Ultra violet radiation

Comparing the thermal transmission in multilayered , float sheets and glass

The table below shows the comparison of the total coefficient of thermal transmission and weight per m² (square meter) of flat sheets of polycarbonate.

U-Value is the total coefficient of the transmission . this coefficient was calculated by ASTM C1363 standard , it is good to be mentioned that the figures of air film thermal resistance (used in the formula) for the moving air condition achieved from Iranian building code of energy saving.

More total coefficient of thermal transmission means more thermal transmission per m²

Example : as it can be seen the total coefficient of thermal transmission of PMMA is almost %16.5 less than that of glass with the same thickness , while its weight is about half of glass weight and it is much more durable and resistant.

Example2: comparison between the 6mm thick two layered sheet and the 50 micron Polyethylene Nylon using on agriculture green houses.

It can be seen that replacing the 6mm two layered

sheets , the energy consumption becomes half and this is the best way to reduce the total costs of green house products . more over Polycarbonate sheets are more durable and resistant than polyethylene . the maximum longevity of nylon is 3 years where as polycarbonate sheets have more than 10 years longevity. Polymers can be destroyed when expose to UV radiation and lose their function easily whereas polycarbonate sheets are covered 50 micron UV protection layer in the production process.

This layer protects the sheets and the plants form harmful sun radiation it can be easily calculated that by using 10mm three layered sheets energy cost decreases to 1/3 (one third) moreover maintains or replacement costs of polyethylene nylons are much more than that of polycarbonate sheets. It is good to be mentioned that there is no need to use special columns or supports , as these tow layered sheets are very light the sheets can be washed easily with a water hose. If some plants are sensitive to direct sunlight , semi opaque white polycarbonate sheets can be used to reduce the amount of passing light . the green house owners usually do this by scattering solon nylons

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Thickness(mm)

2-walls

3-walls

4-walls

4

4.5

6

8

10

16

20

Hollow PC

U-Value(W/m² .k)

4

3.9

3.6

2.9

2.5

2.1

2.09

Area Weight(kg/m)

0.8
1
1.3
1.5
1.7
2.7
3

Thickness(mm)

2
3
4
5
6
8
10
12

Solid PC

U-Value($\text{W}/\text{m}^2 \cdot \text{k}$)

5.56

5.41

5.26

5.13

5.00

4.76

4.55

4.35

Area Weight(kg/m^2)

2.4

3.6

4.8

6

7.2

9.6

12

14.4

Glass

U-Value²(W/m.k)

5.83

5.80

5.78

5.75

5.73

5.68

5.63

5.58

Area Weight)(kg/m

5

7.5

10

12

15

20

24.9

29.9

