

COMPACT POLYCARBONATE DOMES

Technical Data Sheet

PRODUCT DESCRIPTION

Shams compact polycarbonate domes are manufactured from solid polycarbonate, a thermoplastic material that combines very high impact resistance and excellent weatherability with high light transmission. Shams compact polycarbonate domes provide UV protection on both faces.

The impact resistance of compact polycarbonate is approximately 250 times higher than that of glass of the same thickness. For this reason it is widely used in the building and construction sector for safety and security glazing applications.

Shams compact polycarbonate domes are available in clear and opal colours, helping to reduce the discoloration of sensitive materials. They can be combined with Shams upstands (PVC, FRP and steel) as well as with the full range of Shams frames and opening systems.

FIRE CLASSIFICATION

According to the European standard UNE-EN 13501-2:2009+A1:2010, which specifies the classification of construction products and building elements based on their fire performance, Shams compact polycarbonate domes are classified as:

Euroclass B-s1, d0: Combustible – very limited contribution to fire; low smoke production; no flaming droplets/particles.

MECHANICAL PROPERTIES

- Tensile strength: 65 MPa (ASTM D638)
- Impact strength E50: 158 J (ISO 6603/1)
- Abrasion: 10–15 mg/1000 cycles (ASTM D1044)
- Flexural strength: 100 MPa (ASTM D790)
- Flexural modulus: 2600 MPa (ASTM D790)
- Rockwell hardness: 125R / M70, R-scale (ASTM D785)
- Elongation at yield: 6 % (ASTM D638)
- Elastic modulus: 2300 MPa (ASTM D638 / ISO 527)
- Elongation at break: > 90 % (ASTM D638)

PHYSICAL PROPERTIES

- Density: 1.2 g/cm³ (ASTM D792 / ISO 1183)
- Water absorption (24 h): 0.1 % (DIN 53472)

THERMAL PROPERTIES

- Specific heat: 1200 J/(kg·K)
- Coefficient of linear thermal expansion: 6.5×10^{-5} cm/cm·°C (ASTM D696)
- Thermal conductivity: 0.21 W/m·K (ASTM C177)

OPTICAL PROPERTIES

- Haze: < 0.5 % (ASTM D1003)
- Yellowness index: < 1 (ASTM D1925)
- Light transmission – clear: 84 % (ASTM D1003)
- Light transmission – ice: 58 % (ASTM D1003)
- Refractive index: 1.584–1.586 (Na D yellow line, λ = 589.6 nm, ASTM D542)

SOLAR AND OPTICAL PERFORMANCE

Clear domes: luminous transmission 87–91 %, solar reflection 9 %, solar absorption 9 %, direct solar transmission 82 %, total solar transmission 84 %, shading coefficient 0.97.

Ice domes: luminous transmission 50 %, solar reflection 20 %, solar absorption 29 %, direct solar transmission 51 %, total solar transmission 58 %, shading coefficient 0.67.

THERMAL INSULATION CHARACTERISTICS

- Solar factor – clear and ice domes: 63–84 % (UNE-EN 1873:2015+A1:2016)
- U-value (thermal transmittance) – single-wall dome: 5.24 W/m²·°C (UNE-EN 1873:2015+A1:2016)
- U-value (thermal transmittance) – double-wall dome: 2.97 W/m²·°C (UNE-EN 1873:2015+A1:2016)
- U-value (thermal transmittance) – triple-wall dome: 1.89 W/m²·°C (UNE-EN 1873:2015+A1:2016)

ACOUSTIC INSULATION CHARACTERISTICS

- Sound reduction index – single-wall dome: 12 dB
- Sound reduction index – double-wall dome: 20 dB
- Sound reduction index – triple-wall dome: 22 dB

The values shown are based on the technical data provided by the raw material supplier and correspond to tests carried out under standard conditions. Shams reserves the right to introduce modifications derived from product development and improvement.