

Acrylic Sheet in Building Industry

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Acrylic Sheet is characterised by outstanding weathering characteristics and excellent optical properties. These superior properties are coupled with various other properties:

1. Light in weight :

Polymethyl Methacrylate Sheet (sp. gravity; 1.19) is less than half the weight of glass (sp. gr. 2.5).

2. Optical :

Colourless acrylic sheet is as transparent as the finest optical glass. Its light transmission rate of 93% makes it clearest plastic material available in the market. Transparency is not jeopardized by increasing thickness of the sheets. Colourless acrylic sheet has haze average only 1% and refractive index 1.49. When light rays are emitted from acrylic sheet into the atmosphere and when the angle of incidence is larger than $42^{\circ} 10'$ full reflection occurs. This is applied for edge-lighting.

3. Weather Resistance :

Acrylic sheet is extremely resistant to sunlight, weather and low temperatures. It will not show significant yellowing or change in physical properties or loss of light transmittance over long periods of time.

4. Impact Resistance :

Acrylic sheet has more than 10 times impact strength to that of inorganic glass. The self destructive phenomenon as seen in tempered glass does not occur. Unlike glass any breakage that might occur are confined locally with no formation of sharp splinters.

5. Easy Formability :

Due to its thermal moulding

characteristics, panels of desired shapes can be engineered from acrylic sheet. Panels may be flat or with a radius, or of shapes such as circle, square or spheres with a high degree of safety.

6. Thermal Conductivity :

The thermal conductivity of acrylic sheet is only onesixth of that of glass.

7. Thermal Expansion :

Like most thermoplastics, acrylic sheet has relatively large coefficient of thermal expansion. Therefore, adequate provisions must be made for expansion and contraction of the material, especially when it is used in very large parts or under temperature extremes.

8. Electrical :

Acrylic sheet possesses good electrical insulation properties having dielectric strength of 20 kv/mm.

9. Colour Variety :

A complete range of standard transparent, translucent and opaque colours are available.

10. Finishing and Decoration :

Decorative coatings can be applied by spraying, silk-screening hot stamping, vacuum metallizing or plating. Parts may be joined by cementing, spin welding, snap fitting or mastio attachments.

Further more, acrylic sheet has an advantage of ease of application and can be mounted on more simple frame structure. Because of superior mechanical properties can be used at reduced thickness. The material can be readily turned, milled, drilled etc. with the tools normally used for soft metals and requires no special precautions.

Thus acrylic sheet infact, offers as compared with traditional materials, a combination of properties and characteristics of great value for architects, builders and interior decorators. Moreover it offers the designer a high freedom in his choice of shapes and forms, for which it is possible to create and put into practise new, more rational, more efficient and very often, more economic solution.

Various Building Industry Applications :

Acrylic sheet has a glossy appearance, both in clear and in coloured grades. It exhibits excellent colour fastness and can thus be used under the most diverse climatic conditions. Outstanding amongst the many virtues of Acrylic Sheet is its transparency. This super transparency, allied with toughness, ease of fabrication and lightness are responsible for replacing glass in almost all building applications.

Long laboratory and practical tests have shown that properties discussed earlier, combined with excellent resistance to mechanical stresses, remain unaltered over time, for which reason, acrylic sheet finds ideal employment for both indoor and outdoor building applications.

Acrylic sheet is finding use increasingly in large area enclosures for swimming pools, shopping centres, restaurants and botanical gardens. In such applications acrylic sheet offers a combination of transparency, light weight, resistance to breakage, excellent weatherability, ease of maintenance and design flexibility.