

Duglass

Tempered glass

Duglass tempered glass is safe because in case of breakage, it will shatter into small fragments with a minimum cutting capacity which is why it is recommendable in applications where there is a risk of breakage (automotive, sports, furniture, shower screens, etc.).

Properties

The main characteristics of Duglass tempered glass are:

- Higher resistance to thermal shock.
- Higher mechanical resistance to compression, bending and torsion.
- Higher mechanical resistance to impact.

One of the consequences of using the tempering process on glass is that once it is warm, it can't be cut or mechanised. Therefore all the work carried out on the glass should be done before the thermal process. However, tempered glass admits other types of transformations such as: laminating, solar control and low emissivity treatments, assembling in double glazing.

The value of the mechanical resistance of Duglass tempered glass is 120 N/mm^2 , taking into account short term quasi-static charges and a breakage probability of 5%. For calculation purposes we can assume the maximum work tension of the Duglass tempered glass to be is 50 N/mm^2 .

Regarding fracture properties, Duglass glass breaks into numerous small fragments whose shape and form depend on the thermal process. The UNE-EN 12150 norm "*Glass in building. Thermally toughened soda lime silicate safety glass*" determines the criteria of minimum fragmentation of the products used for construction while the specifications or particular norms define the fragmentation of tempered glass for its use as material in the railway sector, mobile material or furniture.

Duglass tempered glass exceeds the requirements of the standard UNE-EN 12600 regarding soft body pendulum impact, and achieves a 1C1 level of protection with tempered glass of 4mm thickness.

Optical distortions

The surface of the glass could be affected in its planimetry by the tempering process and suffer small deformations that provoke a certain degree of optical distortions in the final product. This distortion is more noticeable in the images formed by reflection and depend to a great extent on the objects reflected and the geometry of the observation (it will be more noticeable if the objects have rectilinear geometric shapes). The choice of dimensions of the glass plays an important role in these deformations.

Moreover, tempered and hardened glass in certain conditions of observation show signs of tenuous shadows, on occasion iridescent, due to the internal tensions created during the tempering process. These prints are more evident at those times of the day when the light is more polarized (at dawn or dusk and when light is reflected by the clouds) and happen in all glass that have been correctly tempered.

Applications

- When there are high temperature differences on the surface of the glass (sun-shade).
- In areas where they are exposed to strong winds.
- In snow ploughs and situations where glass is fitted in inclined planes.
- Mechanical shocks in general.
- When the air conditioning and the heating is directly projected onto the glass.

Given its safety characteristics, the Duglass tempered glass is indispensable for determined applications both on the exterior and the interior.

On the facades of non-residential buildings we often find Duglass glass in areas of vision incorporated into the Ambience insulating glass or in opaque areas or in opaque areas as spandrels.

Other applications on the exterior are: awnings, telephone cabins, advertising panels, sports tracks.

In the interior, the applications are very varied: furniture, internal doors, partitioning, front panels for cupboards, shower curtains, fridge trays etc.