

TEMPERED GLASS

Tempered glass is a type of safety glass processed by controlled thermal treatment to increase its strength compared with normal glass. Tempering puts the outer surfaces into compression and the interior into tension.

PRODUCTION PROCESS

A toughness is achieved by heat treatment of the glass, which is carried out by first heating the two outer surfaces of the glass to a certain temperature, and then rapidly cooling them down. Because of the specific thermal conductivity, the outer layers of the glass quickly shrink and toughen, thereby preventing the shrinkage of the middle layer. This results in an increased density of molecules on the outer surfaces and rarer in the middle of the glass. In this way, the tempered glass gets its significant distribution of the tension. Molecules on the surface are exposed to the pressure, while the molecules inside to the tensile stresses. These tensions must be in balance, as this is the condition for a stability that ensures the appropriate safety features of tempered glass.

CHARACTERISTICS

Such tension distribution gives the tempered glass **following characteristics**:

- **increased impact resistance**; punching test according to EN 12600
- **increased mechanical strength**; the measured value > 120 N/mm², the calculation value 50 N/mm² (for normal glass only 30 N/mm²)
- **resistance to high temperature**; up to 250°C
- **increased resistance to temperature changes**; the temperature difference between two points on the surface of the glass may be 200°C, by a normal float glass only 40°C.

Protection against damage is also an important safety feature of tempered glass. The tempered glass, when broken, crumbles into small granular chunks instead of splintering into jagged shards as ordinary glass does. The granular chunks are less likely to cause injury.

Although tempered glass has higher strength and thermal resistance than ordinary glass, it is **not completely scratch-resistant** and can be damaged by improper use and cleaning. But if you take good care and follow the care instructions for tempered glass, you can prolong its lifetime and great appearance. You should avoid putting sharp objects onto the glass surface and scrolling them along the surface.



CARE TIPS

To clean tempered glass use liquid soap, non-abrasive glass cleaners, soft cloths. Rub the cleaner gently on the glass. Use another clean cloth to dry the glass. Alternatively, use a soap with lukewarm to clean the glass. Do not forget to completely rinse off the soap from the glass if you use food in direct contact with the glass. Never try to clean tempered glass with abrasive cleaners or abrasive cleaning tools.

