

AVON TUFF

CREATING BETTER TOMORROW







At Avon Tuff Glass, we understand the need for not just state of the art quality construction but the 'big picture' that our consumer dreams of and expects from us. That is why, we specialise in the manufacture of a product which is not only strong and durable quality wise, but which is capable of beautifying a structure a hundred times more than one can imagine. We're talking about tempered glass that we manufacture using the latest technology thus ensuring that our customer has nothing but the best.

Due to our association with Glaston (Tamglass & Bavelloni,) Lisec - Austria & Bassra- U.K, we are equipped with technology that will meet, satisfy and sustain the Architectural Glass needs of our valued clients.

Our management comprises of a panel of experts who are capable of envisioning the market demand for Architectural glass and accordingly and consistently improving our supply, quality, design and technology.

With Avon Tuff Glass, every client will receive the best of services and every structural design will be the next landmark.





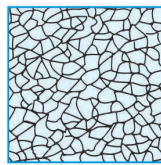
Tempered / Toughened Glass

Designed to be the ultimate safety glass for all your needs, tempered glass is manufactured by rapidly heating and then cooling glass thus making it four or five times stronger than standard glass. It is ideal for home fittings as it does not break into sharp shards if damaged but into small pieces, thus making it more user-friendly.

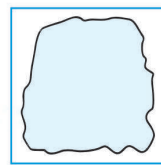
Heat Strengthened Glass

Heat-strengthened glass is glass that has been heat treated to induce surface compression however it is not as strong as toughened glass. It is made from float glass using a temperature cycle similar to toughened glass.

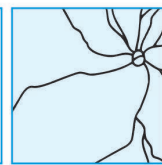
Glass Type	Typical Break Pattern & Safety Performance
Float Glass (including clear, tinted & reflective float glass)	Breaks into sharp pieces with high risk of cutting & piercing injuries. Generally float glass is not safety glass.
Heat Strengthened Glass	Breaks into sharp pieces with high risk of cutting & piercing injuries. The pieces tend to be smaller than float glass. Generally float glass is not safety glass.
Toughened Glass	Breaks into small dice like particles with low risk of cutting & piercing injuries. Toughened glass is a safety glass.



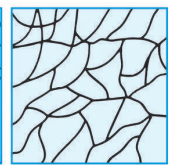
Typical Tempered Glass Fracture



Picture Framing

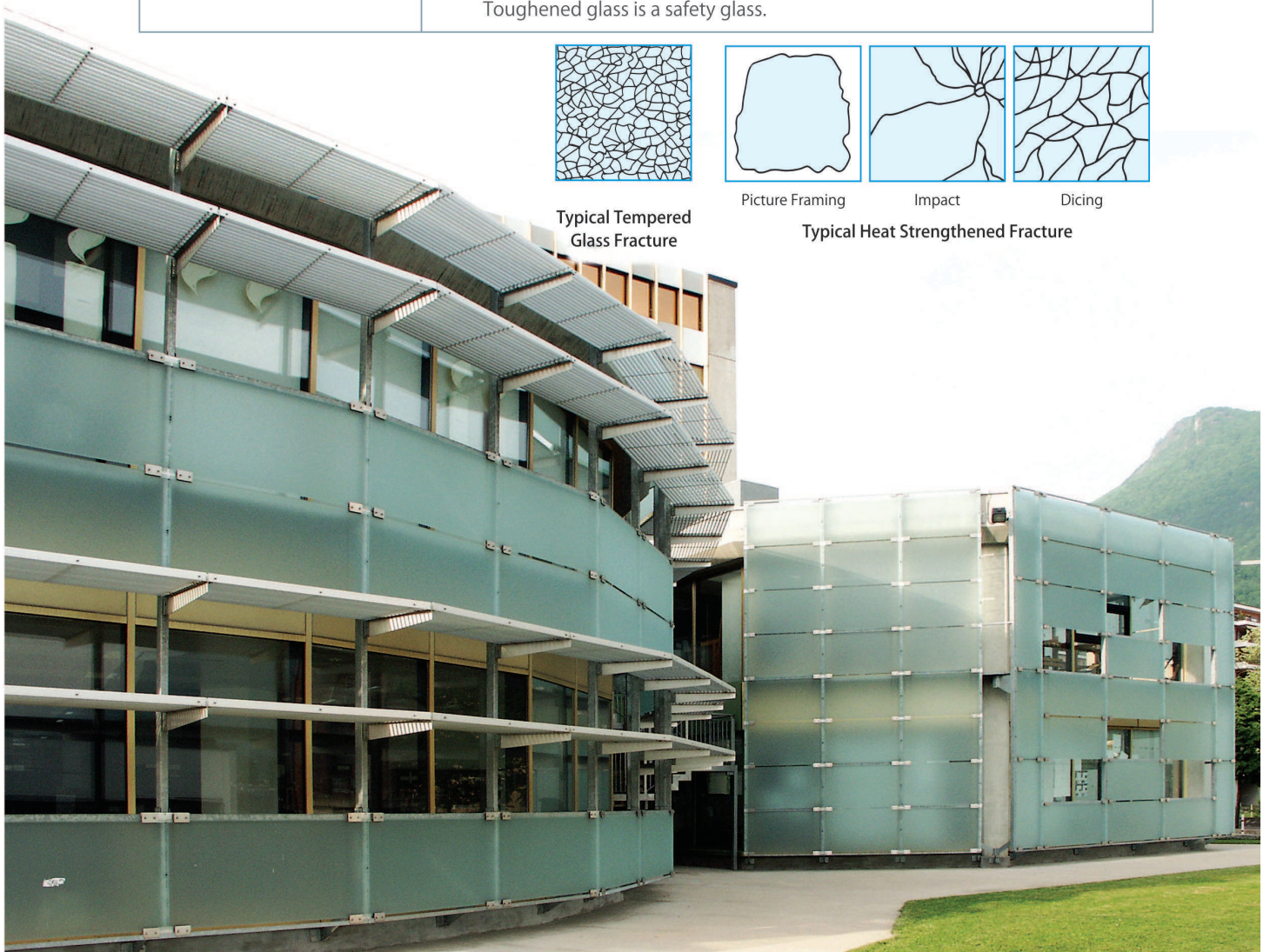


Impact



Dicing

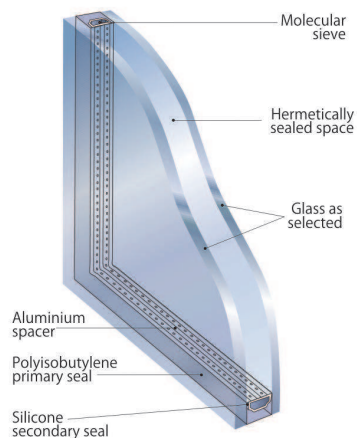
Typical Heat Strengthened Fracture





Insulated Glass

Insulated glass units create a dead airspace between two panes of glass, thus slowing down the rate of heat exchange between ambient hot and cold air masses. The reduction of ambient heat transfer through the glazing in modern building designs is of vital importance in minimizing the capital cost and subsequent operating cost of heating or cooling equipment. Room interior comfort levels are also significantly improved, summer and winter through the use of insulated glass.



IGUs work on the principle of reducing conduction and convection heat transfer across the unit.

Dry air is a poor conductor of heat. Due to the air-gap, the conducted heat through glass is reduced significantly as it reaches the second pane.





DEFINATION OF LIGHT AND ENERGY TERMS SPECTROPHOTOMETRIC AND THERMAL INSULATION CRITERIA

VISIBLE LIGHT

Visible light represents 53% of the solar spectrum and has a wavelength of 380 to 780 nanometers. Light passing through the eye causes the brain to experience the sensation of light within these wavelengths. The measurement of daylight has been standardized by the International Lighting committee using the D65 Illuminant described in the ISO Dp9050.

LIGHT TRANSMISSION – LT %

Light Transmission is the percentage of visible light transmitted through the glass, compared to the total visible light reaches the glass at 90° angle.

EXTERNAL LIGHT REFLECTION – LR_{OUT} %

External Light Reflection is the percentage of visible light reflected away from the outer surface of the glass, compared to the total visible light that reaches the glass at 90° angle.

INDOOR LIGHT REFLECTION – LR_{IN} %

Indoor Light Reflection is the percentage of visible light reflected away from the inner surface of the glass, compared to the total visible light that reaches the glass at 90° angle in accordance with the criteria contained in the ISO 9050-1990 Standard.

SOLAR ENERGY

The solar energy is the made up of all three wavelengths of energy within the solar spectrum:

Ultraviolet light (UV)	300 to	380 nanometers	1%
Visible light (LT)	380 to	780 nanometers	53%
Infrared radiation (IR)	780 to	2150 nanometers	46%

The standard parameters for the calculation of the energy values takes into consideration all three wavelengths from 300 to 2150 nanometers, with the sun at 30 degrees above the horizon, a clear sky and the sun-strike perpendicular to the glass surface.

ENERGY REFLECTION – ER %

Energy Reflection is the percentage of the solar energy reflected away from the outer surface of the glass, compared to the total incident solar energy.

ENERGY ABSORPTION – EA %

Energy Absorption is the percentage of the solar energy absorbed by the glass body, compared to the total incident solar energy.

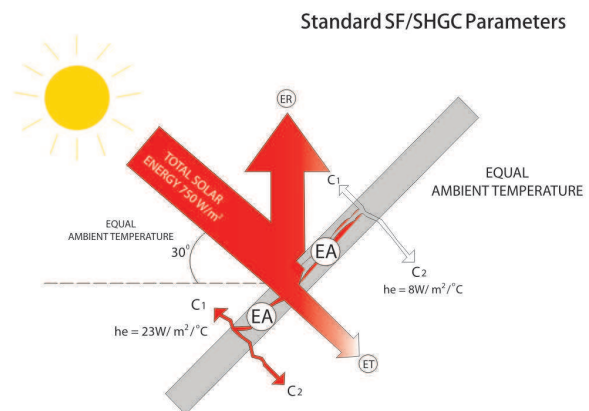
ENERGY TRANSMISSION – ET %

Energy Transmission is the percentage of the solar energy transmitted through the glass, compared to the total incident solar energy.

SOLAR FACTOR – SF

Solar Factor, a term commonly used in Europe and the Middle East, is the same as Solar Heat Gain Coefficient (SHGC), commonly used in the USA.

The Solar Factor is the ratio of the total solar energy entering through the glass compared to the incident solar energy. This total energy is the sum of the solar energy entering by direct transmittance and the part of the energy absorbed by the glass and re radiated to the inside. The SF/SHGC is denoted by ET + C2 in the following diagram.



SHADING COEFFICIENT (SC)

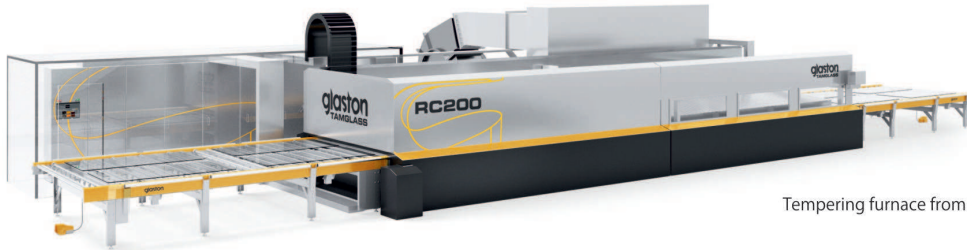
The Shading Coefficient is the ratio of the Total Energy Transferred through a specific glass to the Solar Heat entering a room through 3mm clear float glass, which is the thinnest commercial glass used in building and has a TET of 87%, that is to say, a Solar Factor of 87.

Example: SF of a specific glass = 30
SF of 3mm glass = 87

Therefore, the SC of the specific glass is $\frac{30}{87} = 0.35$

The lower the SC the better is the glass performance.

Machines



Tempering furnace from Glaston Tamglass Finland.

Straight Line Edging Machine from Glaston Bavelloni Italy.



Cutting Table from Lisee Austria.

Insulating glass production line from Lisee Austria





Toughened Glass | Insulated Glass | Beveling | Sandblasting | Bent Glass | Stained Glass

Glass Blocks | Fusion Glass | Shower Cubicles | Glass Furniture



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