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Technical Information Sheet 3

Safety Glass

OVERVIEW

Safety Glass is any glass product that has been successfully tested to 'break in a safe way', and will therefore minimise the risk to persons from broken glass fragments. The method of testing used is a weighted pendulum which is impacted with a test panel of glass, and then the breakage is assessed and categorised in accordance with BS EN 12600. These products will generally fall into one of three main categories which are wired, laminated and toughened. Each of these types has their own properties and will vary in the method used to achieve their safety rating. All safety glass can be identified by a permanent mark that will be etched either into the surface (usually in one of the corners) or the edge of the glass to identify the glass type and its respective safety rating.

LAMINATED GLASS

Laminated glass is manufactured by sandwiching one or more Poly Vinyl Butyl (PVB) interlayers in between two or more sheets of glass. When the glass breaks, the PVB holds all of the fragments together and although the glass will show obvious signs of the breakage, there is virtually no danger caused by broken fragments as these are held in place. Ranging in thickness from 4.4mm to well over 50mm for special situations, there are a wide range of products available to meet most requirements where safety and security glass's would be required.

WIRED SAFETY GLASS

Wired Safety glass's are manufactured by inserting a wire mesh into the molten glass during manufacture and for the most part are generally around 6 or 7mm thick. By using the correct type of wire combined with glass thickness some wired products will meet the safety requirements when tested to BS EN 12600. It is important to check when ordering wired glass where a safety rating is required that a safety wired product is supplied as not all wired glass's meet the safety requirements.

TOUGHENED SAFETY GLASS

Toughened Safety glass is normal glass which has been specially heat treated after cutting in a toughening plant. After rapid heating and cooling, the glass is under stress and when broken it shatters into very tiny and relatively harmless pieces. Once toughened, the glass cannot be further cut or processed as this will cause the stressed glass to shatter in the same way as when it breaks. Toughened glass is generally four times stronger than the equivalent float glass thickness. Most single glass products can be toughened including float and low E glass's, patterned glass and low iron glass's. Toughened glass can also be laminated after being toughened to offer the best safety features and strengths of both products.

SPECIALIST SAFETY GLASS PRODUCTS

N&C Glass also stock a range of specialist safety glass products such as Anti Bandit Laminates, Bullet Resistant and Fire Resistant glass's. We also stock safety glass products that can be used for sound control as well as safety backed mirrors which we process at our London factory. We can also offer insulated glass units incorporating all types of safety glass from our sealed unit plant in Fareham.

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PRODUCTS

The tables below lists some of the safety glass's available from N&C Glass along with their safety and acoustic ratings and approximate weight per square metre:

Thickness	Safety Rating To BS EN 14449	Weight (Kg / m2)	Acoustic Rating (Rw dB)
Laminated Safety Glass			
4.4mm	2 (B) 3	10.20	28 dB
6.4mm	2 (B) 2	15.40	32 dB
8.8mm	1 (B) 1	20.80	33 dB
10.8mm	1 (B) 1	25.80	34 dB

Thickness	Safety Rating To BS EN 14449	Weight (Kg / m2)	Acoustic Rating (Rw dB)
Laminated Anti Bandit Glass (Also conforms to BS 5544 – Resistance To Manual Attack)			
7.5mm	1 (B) 1	18.75	32 dB
9.5mm	1 (B) 1	23.75	33 dB
11.5mm	1 (B) 1	28.75	34 dB

Thickness	Safety Rating To BS EN 14449	Weight (Kg / m2)	Acoustic Rating (Rw dB)
Wired Safety Glass			
7mm Pyrostem Safety Clear	3 (B) 3	18.00	31 dB

Thickness	Safety Rating To BS EN 14449	Weight (Kg / m2)	Acoustic Rating (Rw dB)
Toughened Safety Glass			
4mm	1 (C) 1	10.00	29 dB
6mm	1 (C) 1	15.00	31 dB
8mm	1 (C) 1	20.00	32 dB
10mm	1 (C) 1	25.00	33 dB
12mm	1 (C) 1	30.00	34 dB

CLASSIFICATIONS

Definitions of the safety rating codes shown in the table above :

First number – denotes height of drop test and at which height the glass broke to classification A or B

1 – 190mm & 450mm & 1200mm, 2 – 190mm & 450mm, 3 – 190mm

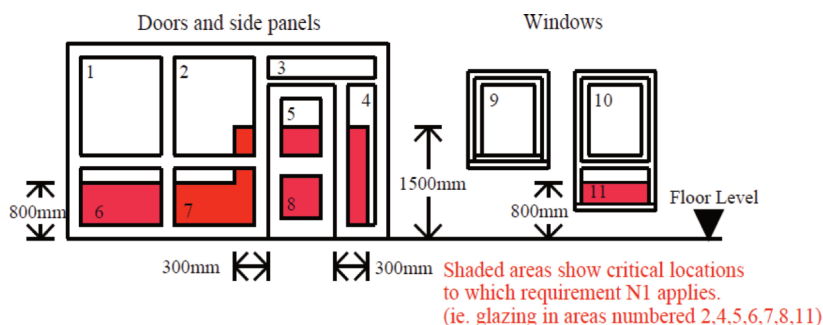
The letter denotes the breakage characteristics :

'A' – Breaks like ordinary annealed glass: 'B' – Breaks like laminated glass: 'C' – Breaks like toughened glass

The second number denotes the height of the drop test at which the glass did not break.

CRITICAL LOCATIONS

There are situations where safety glass must be installed in accordance with Approved Document N, such as in and around doors and low level windows. The diagram below offers guidance on these critical locations (Shaded areas indicate critical locations).



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