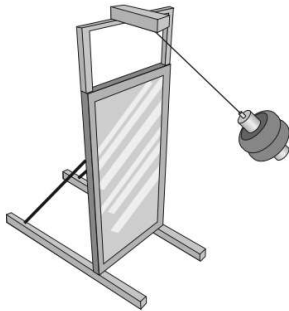


SECURITY GLASS CLASSIFICATION

EN 12600 Glass in building



The Pendulum Test
50 kg impactor
(2 × pneumatic tyres)
Comprises 3 × drop height
In accordance with EN 12600

Pendulum Test – Impact test method and classification for flat glass

The Pendulum Test is the standard for classifying flat glass products by performance under impact and by mode of breakage. It is similar to the previously used swing bag test whereby a weight cushioned with two rubber tires is allowed to swing at the glass from 3 heights.

Class 1,

1200mm drop height, is for testing glass for critical applications.

Class 2,

450mm drop height, is equivalent to rather more than an adult walking into a glass door, but less than a determined attempt to force a way through by running at it.

Class 3,

190mm drop height, is equivalent to an adult pushing hard against the glass or a child running into it.

Type of glass breakage	A	Glass breaks up into multiple different-sized sharp-edged pieces. This feature of glass breakage is typical of the ordinary glass hardener thermally and chemically.
	B	Glass can crack or break, but glass pieces remain stuck to the film. This feature of glass breakage is typical of laminated glass covered with films and wire grid.
	C	Glass breaks into multiple small pieces which are relatively harmless. This feature of glass breakage is typical of thermally hardened glass.

Glass classification according to BS 6206 / EN 12600 Standard

Marking of laminated glass according to the classification by standard BS 6206 / EN 12600:2003.

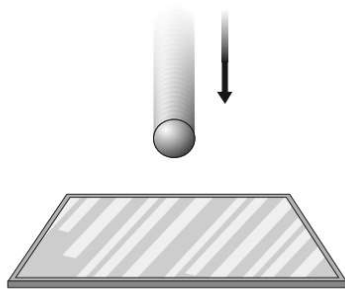
PVB film thickness	Total glass thickness	Class according to BS 6206 /EN 12600
0.38 mm	6.4 mm	2(B)2
0.38 mm	8,4 mm	2(B)2
0.38 mm	10,4 mm	1(B)1
0.76 mm	6,8 mm	1(B)1
0.76 mm	8,8 mm	1(B)1
1.52 mm	9,5 mm	1(B)1
2.28 mm	10,3 mm	1(B)1
0,76 mm	10,8 mm	1(B)1
0,76 mm	12,8 mm	1(B)1
0,76 mm	16,8 mm	1(B)1

Marking of tempered glass in accordance with the classification of standard BS 6206 / EN 12600:2003.

Thickness of tempered glass	Class according to EN 12600
4 mm	1(C)2
6 mm	1(C)2
8 mm	1(C)2
10 mm	1(C)1
12 mm	1(C)1

EN 356 Glass in building –

Security glazing – Testing and classification of resistance against manual attack



This specifies the requirements and test methods for glass designed to be resistant to manual attack. The glass is subjected to impact from a steel ball with a mass of 4.11 kg.

Hard Body Drop Test
 4.11 kg steel sphere
 (100 mm diameter)
 Comprises 4 × drop heights
 In accordance with EN 356

Glass classification according to EN 356 standard

Marking of safety glass according to EN 356:2002, Resistance against hand stroke *

Thickness of laminated glass	Weight (kg/m ²)	Class according to EN 356	Fall Height	Number of throws*
6.4 mm	16	-		
6,8 mm	16	P1A	1500 mm	3
8,4 mm	21	-		
8,8 mm	21	P2A	3000 mm	3
7,5 mm	17	P4A	9000 mm	3
9,5 mm	22	P4A	9000 mm	3
10,3 mm	22	P5A	9000 mm	3x3
13,5 mm	32	P5A	9000 mm	3x3

*Test with steel ball of 4.1 kg.