

## Forced entry

Comparison of the safety glass for - burglar resistance -								
Glass type	Resistance class according to DIN 52290	Resistance class according to EN 356	Resistance class according to VdS	Additional achievement	Sample applications:	Typ of the test (steel ball approx. 4,1kg)	app. glass thickness (mm) app. glass weight (kg/m <sup>2</sup> )	
							mono	Iso 10mm
P1A	-	P1A	-	-	Single- and multi-family houses in housing developments	3xsteel ball drop from 1,5m height	8/20	24/35
A1	A1	P2A	-	-	Single- and multi-family houses in housing developments	3xsteel ball drop from 3,5m (3m) height	8/20	24/35
A2	A2	P3A	-	-	Remote houses, also with private use	3xsteel ball drop from 6,5m (6m) height	9/21	25/36
A3	A3	P4A	-	-	Exclusive houses, mansions and holiday houses	3xsteel ball drop from 9,5m (9m) height	9/21	25/36
EH01	A3	P4A	EH01	-	Exclusive houses, mansions and holiday houses	3xsteel ball drop from 9,5m (9m) height	10/22	26/37
EH02	DH4	P5A	EH02	-	Schools, kindergartens, exclusive houses, mansions and holiday houses	9xsteel ball drop from 12,5m (9m) height	11/23	27/38
B1	B1	P6A	EH1	BR2S	Photo and video business, pharmacies, subranges of department stores, computing centre	30-50 axe impacts with 2kg axe	16/35	32/50
B2	B2	P7B	~EH2	BR3S	Galleries, museums, antique business, department stores, psychiatric institutes	30-50 axe impacts with 2kg axe	23/51	39/66
B3	B2	P8B	~EH3	BR4S	Juweliere, law execution institutes	30-50 axe impacts with 2kg axe	29/67	45/82

Testing method IAW EN356 A: Ball drop test: each glass must withstand the threefold impact of the approximately 4,1 kg heavy steel ball (height of fall = value in parentheses). (IAW DIN 52290 T4; difference in height of fall) Testing method IAW EN 356B: Test is conducted with a standardized machine and fixed testing methods, which simulates the attack with a heavy hand guided ax (2kg). Determination is made how many ax impacts are necessary for a break through opening of 400 mm x 400 mm.

With all mentioned glass types a combination with other functional glass is possible. The U-value with heat insulation glass amounts to, at the indicated values, with the SZR of 10mm U=1,8 W/m<sup>2</sup> (official arithmetic procedure) but can be further improved through a larger SZR and use of coated glass. Based on the high areal weight this glass possesses high noise insulation. In accordance with the thickness of the glass and the number of intermediate layers the color effect can be affected. This effect is reduced by build up of white glass. In the higher resistance classes smaller glass inclusions are possible, which can be seen in extreme light or at close observation. In addition to the glass types specified above, it is possible to equip the glass with alarm glass. Conduit circuits burned into glass or alarm wiring between glass and foil cause alarm when the an interruption of the circuits due to breakage of the window has occurred. Basis glass is always an ESG glass, which is specifically manufactured for the individual element. The electrical connection of this glass must be installed by a professional company.