

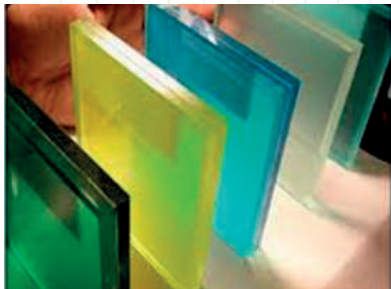


AKOS

GLASS

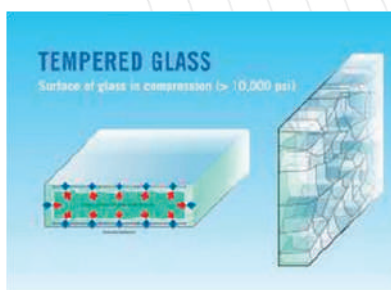


Use of glass panels in AKOS installations A wide range of glass panels can be integrated with AKOS system, in various thicknesses and characteristics according to specifications. There are two main categories according to EN12543 and EN12600 specified by the European Union concerning the thermal treatment of the glass. More specifically, EN12543 specifies the use of tempered and laminated glass with the insert of PVB membranes.



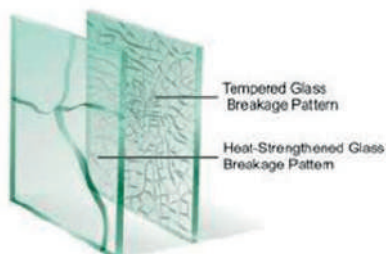
This type of glass panels has the following qualities:

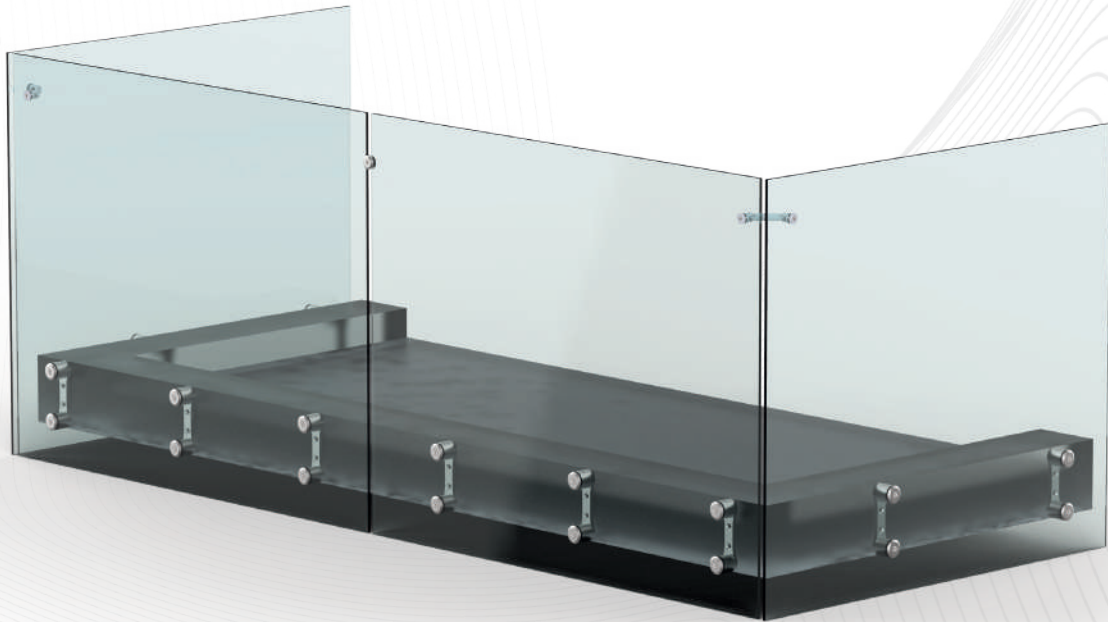
a) In case of breakage, they do not break in large and sharp pieces.



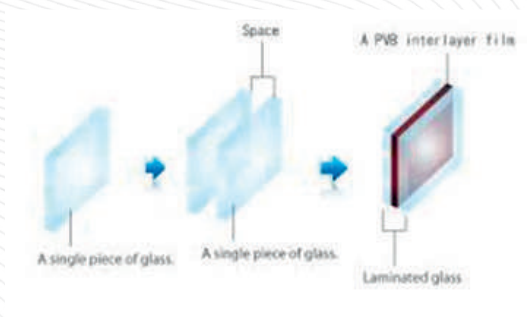
Laminated Glass TRIPLEX glass with PVB membrane

a) Even in case of such breakage, the broken glass pieces remain attached on the PVB surface without putting in danger the safety of nearby persons. The fabrication of these tempered and laminated glass panels is being carried out by thermal treatment of ordinary glass which is afterwards sandwiched together with the PVB membranes to give the various grades and thickness of laminated glass panels.

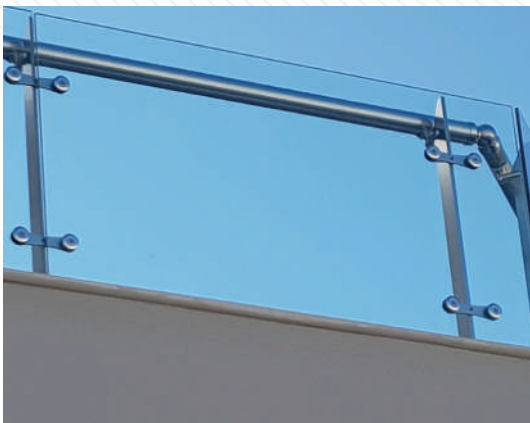




(PVB), placed in layers between the glass.
Rollers press the layers together to expel any air pockets.



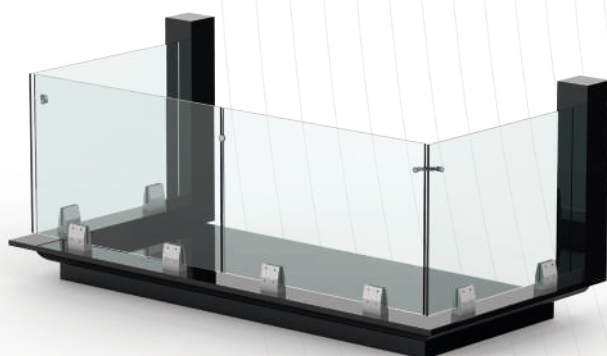
Toughened Glass Thermally Toughened glass



In the following pictures show the different types of breakage:

- a) Tempered and laminated glass, and,
- b) Ordinary tempered glass.

PVB films the common characteristics amongst the two categories mentioned previously, are the use of the PVB interlayer films.



The glass is then heated to 700 C in a pressurized oil bath to permanently bond all layers together. Typically, the thickness of each PVB film is 0,38 mm, additional layers of glass and PVB film increase the strength of the material. Applying two interlayers of film, the thickness becomes 0,78 mm, with three at 1,14 mm and so on. Apart from the different thickness of glass and PVB, a wide range of colored PVB, for example grey, blue green or yellow is available, offering a particular esthetique to modern buildings.

According to European Norms (EN 12600) the minimum number of films required is two, however AKOS recommends the use of glass with four PVB films for maximal security. Even in the event that the glass breaks, the two layers are held together by the PVB, allowing the sheet as a whole to bend and absorb the impact. This characteristic is especially important for places where safety or security are paramount. Types of security glasses the most common type Triplex glass consists of the combination of Heat Strengthened Glass – PVB – Heat Strengthened Glass. The result of a Heat Strengthened glass panel will resist two times stronger than ordinary glass, where a unified static force has been applied (EN 12543), to one of the same thickness. The second type of Triplex glass, and the one which meets the safety criteria is Thermally Toughened Glass, and its combination with PVB, known as toughened glass. Toughened Glass is manufactured by subjecting the finished glass size to a heating and cooling treatment which set up high compressive stresses at the surface, and balancing tensile stresses in the center of the glass, thus increasing its strength. The result is a glass that is 5 times stronger than ordinary glass. Heat strengthened glass is produced by a similar process to toughened glass, however, the strength developed is about half that of toughened glass, and its breakage resembles that of annealed glass. AKOS strongly recommends the use of Heat Strengthened Glass with the installation of any type of AKOS system.

- NOTE: Also; AKOS can do some mechanical operations on the glass in the direction of the customer's request. Connection holes, rodaj etc.

- Please contact us regarding Glass and PVB colours.

- The loads are made with wooden boxes for minimal deformation. The weights given are the weight of wooden boxes.

4 + 4 mm Laminated Glass

90 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]	100 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]	110 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]
9010-8	100	8	(41,52-4)	1,8	10010-8	100	8	(41,52-4)	2	11010-8	100	8	(41,52-4)	2,2
9020-8	200	8	(41,52-4)	3,6	10020-8	200	8	(41,52-4)	4	11020-8	200	8	(41,52-4)	4,4
9030-8	300	8	(41,52-4)	5,4	10030-8	300	8	(41,52-4)	6	11030-8	300	8	(41,52-4)	6,6
9040-8	400	8	(41,52-4)	7,2	10040-8	400	8	(41,52-4)	8	11040-8	400	8	(41,52-4)	8,8
9050-8	500	8	(41,52-4)	9,0	10050-8	500	8	(41,52-4)	10	11050-8	500	8	(41,52-4)	11
9060-8	600	8	(41,52-4)	10,8	10060-8	600	8	(41,52-4)	12	11060-8	600	8	(41,52-4)	13,2
9070-8	700	8	(41,52-4)	12,6	10070-8	700	8	(41,52-4)	14	11070-8	700	8	(41,52-4)	15,4
9080-8	800	8	(41,52-4)	14,4	10080-8	800	8	(41,52-4)	16	11080-8	800	8	(41,52-4)	17,6
9090-8	900	8	(41,52-4)	16,2	10090-8	900	8	(41,52-4)	18	11090-8	900	8	(41,52-4)	19,8
90100-8	1000	8	(41,52-4)	18,0	100100-8	1000	8	(41,52-4)	20	110100-8	1000	8	(41,52-4)	22
90110-8	1100	8	(41,52-4)	19,8	100110-8	1100	8	(41,52-4)	22	110110-8	1100	8	(41,52-4)	24,2
90120-8	1200	8	(41,52-4)	21,6	100120-8	1200	8	(41,52-4)	24	110120-8	1200	8	(41,52-4)	26,4

6 + 6 mm Laminated Glass

90 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]	100 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]	110 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]
901012	100	12	(61,52-6)	2,7	1001012	100	12	(61,52-6)	3	1101012	100	12	(61,52-6)	3,3
902012	200	12	(61,52-6)	5,4	1002012	200	12	(61,52-6)	6	1102012	200	12	(61,52-6)	6,6
903012	300	12	(61,52-6)	8,1	1003012	300	12	(61,52-6)	9	1103012	300	12	(61,52-6)	9,9
904012	400	12	(61,52-6)	10,8	1004012	400	12	(61,52-6)	12	1104012	400	12	(61,52-6)	13,2
905012	500	12	(61,52-6)	13,5	1005012	500	12	(61,52-6)	15	1105012	500	12	(61,52-6)	16,5
906012	600	12	(61,52-6)	16,2	1006012	600	12	(61,52-6)	18	1106012	600	12	(61,52-6)	19,8
907012	700	12	(61,52-6)	18,9	1007012	700	12	(61,52-6)	21	1107012	700	12	(61,52-6)	23,1
908012	800	12	(61,52-6)	21,6	1008012	800	12	(61,52-6)	24	1108012	800	12	(61,52-6)	26,4
909012	900	12	(61,52-6)	24,3	1009012	900	12	(61,52-6)	27	1109012	900	12	(61,52-6)	29,7
9010012	1000	12	(61,52-6)	27	10010012	1000	12	(61,52-6)	30	11010012	1000	12	(61,52-6)	33
9011012	1100	12	(61,52-6)	29,7	10011012	1100	12	(61,52-6)	33	11011012	1100	12	(61,52-6)	36,3
9012012	1200	12	(61,52-6)	32,4	10012012	1200	12	(61,52-6)	36	11012012	1200	12	(61,52-6)	39,6

8 + 8 mm Laminated Glass

90 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]	100 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]	110 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]
901016	100	16	(81,52-8)	3,6	1001016	100	16	(81,52-8)	4	1101016	100	16	(81,52-8)	4,4
902016	200	16	(81,52-8)	7,2	1002016	200	16	(81,52-8)	8	1102016	200	16	(81,52-8)	8,8
903016	300	16	(81,52-8)	10,8	1003016	300	16	(81,52-8)	12	1103016	300	16	(81,52-8)	13,2
904016	400	16	(81,52-8)	14,4	1004016	400	16	(81,52-8)	16	1104016	400	16	(81,52-8)	17,6
905016	500	16	(81,52-8)	18	1005016	500	16	(81,52-8)	20	1105016	500	16	(81,52-8)	22
906016	600	16	(81,52-8)	21,6	1006016	600	16	(81,52-8)	24	1106016	600	16	(81,52-8)	26,4
907016	700	16	(81,52-8)	25,2	1007016	700	16	(81,52-8)	28	1107016	700	16	(81,52-8)	30,8
908016	800	16	(81,52-8)	28,8	1008016	800	16	(81,52-8)	32	1108016	800	16	(81,52-8)	35,2
909016	900	16	(81,52-8)	32,4	1009016	900	16	(81,52-8)	36	1109016	900	16	(81,52-8)	39,6
9010016	1000	16	(81,52-8)	36	10010016	1000	16	(81,52-8)	40	11010016	1000	16	(81,52-8)	44
9011016	1100	16	(81,52-8)	39,6	10011016	1100	16	(81,52-8)	44	11011016	1100	16	(81,52-8)	48,4
9012016	1200	16	(81,52-8)	43,2	10012016	1200	16	(81,52-8)	48	11012016	1200	16	(81,52-8)	52,8

10 + 10 mm Laminated Glass

90 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]	90 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]	90 cm GLASS HEIGHT	LENGTH mm [W]	GLASS WIDTH [T]		WEIGHT [KG]
9010-20	100	20	-101,521	4,5	10010-20	100	20	-101,521	5	11010-20	100	20	-101,521	5,5
9020-20	200	20	-101,521	9	10020-20	200	20	-101,521	10	11020-20	200	20	-101,521	11
9030-20	300	20	-101,521	13,5	10030-20	300	20	-101,521	15	11030-20	300	20	-101,521	16,5
9040-20	400	20	-101,521	18	10040-20	400	20	-101,521	20	11040-20	400	20	-101,521	22
9050-20	500	20	-101,521	22,5	10050-20	500	20	-101,521	25	11050-20	500	20	-101,521	27,5
9060-20	600	20	-101,521	27	10060-20	600	20	-101,521	30	11060-20	600	20	-101,521	33
9070-20	700	20	-101,521	31,5	10070-20	700	20	-101,521	35	11070-20	700	20	-101,521	38,5
9080-20	800	20	-101,521	36	10080-20	800	20	-101,521	40	11080-20	800	20	-101,521	44
9090-20	900	20	-101,521	40,5	10090-20	900	20	-101,521	45	11090-20	900	20	-101,521	49,5
90100-20	1000	20	-101,521	45	100100-20	1000	20	-101,521	50	110100-20	1000	20	-101,521	55
90110-20	1100	20	-101,521	49,5	100110-20	1100	20	-101,521	55	110110-20	1100	20	-101,521	60,5
90120-20	1200	20	-101,521	54	100120-20	1200	20	-101,521	60	110120-20	1200	20	-101,521	66