



ISOLAR MULTIPACT®

Security glazing for protection of persons and property

**ISOLAR®
GLAS**

**MEHR
AUS
GLAS**

www.isolar.de

MULTIPACT® : Crystal-clear security for peace of mind

Glass and windows are the favourite areas when it comes to trying to forcibly enter a house or attack a building. Preventive protection with **MULTIPACT®** by **ISOLAR®** builds a base for security against uninvited guests and is more than only a precaution for an emergency. You live and work much more comfortably knowing that crystal-clear security is on your side.

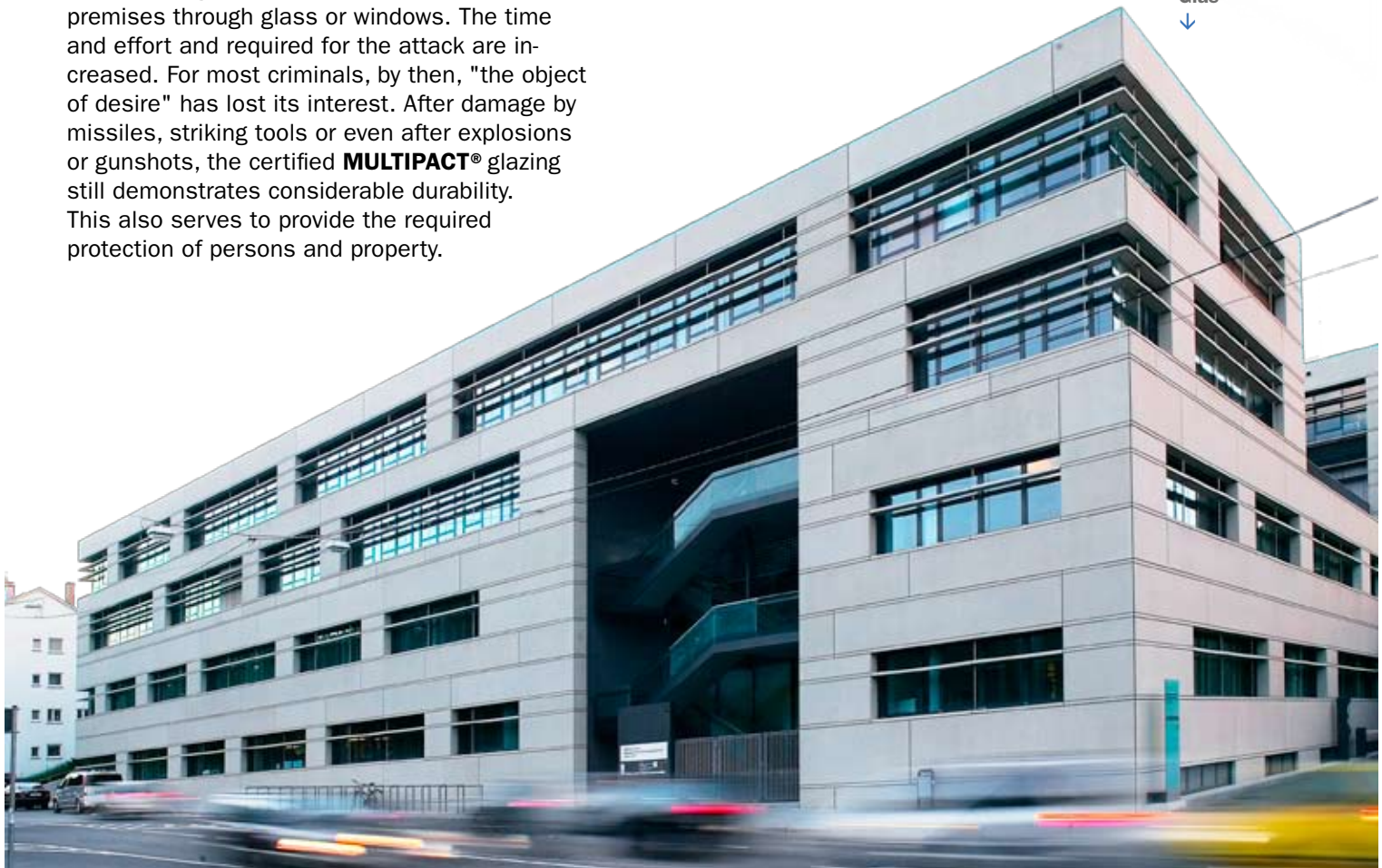
MULTIPACT® laminated safety glasses are bonded safety glass packages consisting of several panes with tough, enduring interlayers. In an autoclave, under heat and pressure laminated safety glass with high mechanical strength and excellent transparency is created. The number and sequence of glasses and interlayers, and thus the weight and thickness of the laminated safety glass panes, is matched to the individual requirements for different kinds of attack.

MULTIPACT® insulating glass with impact or penetration-resistant characteristics makes it difficult for burglars and violent attackers to enter premises through glass or windows. The time and effort and required for the attack are increased. For most criminals, by then, "the object of desire" has lost its interest. After damage by missiles, striking tools or even after explosions or gunshots, the certified **MULTIPACT®** glazing still demonstrates considerable durability. This also serves to provide the required protection of persons and property.

In interior construction, monolithic **MULTIPACT®** glazing provides the required protective function. In the facade, the desired protective function can be provided by one or several panes in the insulating glass. In the case of thicker glass packages, the inherent colour of glass becomes increasingly noticeable. Here, the use of glass products with low inherent colour (extra-clear glass) is available.



Education and
Supply Centre,
Stuttgart
Built with:
MULTIPACT®
advance //
Photo: © Arnold
Glas



The proper glass for every situation



← Campus,
Kronberg
Built with:
MULTIPACT®
Photo: ISOLAR®

When testing attack-blocking glazing, a distinction is made between four types of attack. This is why **MULTIPACT®** comes in four different standards:

- **MULTIPACT® PA**
with resistance to manual attack by missiles
- **MULTIPACT® PB**
with resistance to burglaries
- **MULTIPACT® BR/SG**
with resistance to bullets and gunshots
- **MULTIPACT® ER**
with resistance to explosives

The testing of the attack-blocking characteristics takes place in accordance with the European Standards EN 356 (resistance to missiles and forced entry) and EN 1063 (resistance to gunshots).

The testing procedure:

MULTIPACT® PA with resistance to manual attack by missiles is tested using ball-drop tests. The loads correspond to those created by the impact of heavy missiles. The division into classes P1A – P4A results from falls from different heights of the 4.11 kg metal ball, as well as the number of times the ball is dropped (P5A).

MULTIPACT® PB glazing with resistance to burglaries is tested with an axe machine. This test simulates the load in the event of an attack on glass with a striking tool with a cutting edge. The division into classes P6B – P8B results from the number of blows necessary to create an opening of 40 X 40 cm in the glass.

MULTIPACT® BR/SG with resistance to bullets and gunshots is tested by shots. In the procedure, a total of three shots are fired at each pane. The division into classes BR1 – BR7 and SG1 – SG2 results among other things from the differing weapons, calibre and distances.

MULTIPACT® ER explosion-resistant glazing serves to provide protection against explosions. In this case it is recommended to test the complete construction according to the designated standards and guidelines.

Technical Data ISOLAR MULTIPACT®

Glass type (MULTIPACT® mono types without coating)	U _g (DIN EN 673) ΔT = 15K in W/m²K	Resistance class		Thickness in mm Tolerance dependant on type	Weight in kg/m² (± 1,0)	Typical protection use
		(EN 356 EN 1063)	(EN 1627 EN 1522)			

MULTIPACT® advance P1A - P5A; Resistance against manual attack (DIN EN 356)

	advance //	mono					
8 P1A	-	5,7	P1A	-	8	20	Family and apartment houses in residential areas, remote individual houses, exclusive residential properties, holiday and weekend cottages.
8 P2A	-	5,7	P2A	-	8	20	
9 P3A	-	5,6	P3A	-	9	21	
9 P4A	-	5,6	P4A	RC 2	9	21	
10 P5A	-	5,6	P5A	RC 3	10	22	
27 P1A	1,1	-	P1A	-	27	31	
27 P2A	1,1	-	P2A	-	27	31	
28 P3A	1,1	-	P3A	-	28	32	
28 P4A	1,1	-	P4A	RC 2	28	33	
29 P5A	1,1	-	P5A	RC 3	29	33	

MULTIPACT® advance P6B - P8B; Resistance against manual attack (DIN EN 356)

	advance //	mono					
15 P6B	-	5,4	P6B	RC 4	15	34	Exclusive residential properties containing valuables, photo, electronic and video shops, IT installations, certain areas of department stores, antique shops, museums, art galleries, psychiatric facilities, furriers, jewellers, power plants, prisons, pharmacies, etc.
20 P7B	-	5,3	P7B	RC 5	20	45	
29 P8B	-	5,1	P8B	RC 6	29	67	
31 P6B	1,5	-	P6B	RC 4	31	49	
36 P7B	1,5	-	P7B	RC 5	36	60	
45 P8B	1,5	-	P8B	RC 6	45	82	

MULTIPACT® advance BR1 - BR7; Bullet resistance (DIN EN 1063)

	advance //	mono					
30 BR2-S	-	5,1	BR2-S+P6B+P7B	FB2	30	73	Buildings and facilities for police forces, the Army; politicians, members of the judiciary and business people at risk of attacks; banks and cash rooms, etc.
33 BR2-NS	-	5,0	BR2-NS	FB2	33	80	
31 BR3-S	-	5,1	BR3-S+P7B	FB3	31	74	
35 BR4-S	-	5,0	BR4-S	FB4	35	85	
46 BR4-NS	-	4,8	BR4-NS	FB4	46	110	
74 BR6-S	-	4,2	BR6-S	FB6	74	178	
24 BR1-S	1,5	-	BR1-S	FB1	24	35	
27 BR1-NS	1,5	-	BR1-NS	FB1	27	42	
34 BR2-S	1,5	-	BR2-S	FB2	34	56	
39 BR2-NS	1,5	-	BR2-NS	FB2	39	72	
33 BR3-S	1,5	-	BR3-S	FB3	33	53	
51 BR3-NS	1,5	-	BR3-NS	FB3	51	94	
41 BR4-S	1,5	-	BR4-S	FB4	41	73	
55 BR4-NS	1,5	-	BR4-NS	FB4	55	108	
44 BR5-S	1,5	-	BR5-S	FB5	44	81	
65 BR5-NS	1,5	-	BR5-NS	FB5	65	132	
52 BR6-S	1,5	-	BR6-S	FB6	52	97	
73 BR6-NS	1,5	-	BR6-NS	FB6	73	148	
88 BR7-S	1,5	-	BR7-S	FB7	88	183	
88 BR7-NS	1,5	-	BR7-NS	FB7	88	187	

MULTIPACT® advance SG1, SG2; Bullet resistance (DIN EN 1063)

	advance //						
45 SG1-S	1,5	SG1-S	-	45	82	ISOLAR MULTIPACT® SG1-SG2: Bullet-resistant, tested according to DIN EN 1063 S = no penetration, splinters NS = no penetration, no splinters	
63 SG1-NS	1,5	SG1-NS	-	63	122		
52 SG2-S	1,5	SG2-S	FSG	52	93		
84 SG2-NS	1,5	SG2-NS	FSG	84	180		

All attack-blocking ISOLAR MULTIPACT® glasses, are available as MULTIPACT® advance as well as with other coatings for heat insulation or for solar control. All monolithic types come without coating. Glazings of classes PA and PB are available also as triple glazings. On request all ISOLAR MULTIPACT® double and triple glazings can also be fitted with thermally improved edge seal system (warm edge). Alarm triggering by alarm-fitted thermally toughened safety glass according to VdS approvals is available in the both models: ISOLAR MULTIPACT® alarm covered and ISOLAR MULTIPACT® alarm visible.

The above-mentioned types and values are based on the specifications in the ISOLAR® 2015 programme. Please see the most recent issue! The indicated performances have been determined according to the relevant test standards and legal rules for the test dimensions and test conditions required or described therein. Deviating dimensions and combinations as well as glass thickness adjustments resulting from static requirements, for example, may lead to changes in individual characteristics. Indicated values only refer to glass elements. The performances of building elements depend to a large extent on the construction of the frame. U_g values are calculated according to DIN EN 673 for vertical installations. Due to tolerances of input parameters, a deviation of up to 0,1 W/m²K from calculated value is possible. Please also note our Technical Data Sheet!

The special requirements of property insurers

When taking out burglary insurance, property insurers frequently expect the insurance applicant to take particular preventive measures, such as the use of certain tested glass products, or they offer a reduction in the fees on the existing insurance for these protective measures in the building.

Tested glazing

In both cases it is obligatory to use attack-blocking glazing which fulfils the requirements of the VdS Schadenverhütung GmbH. The glazing types are tested according to the particular criteria of VdS Schadenverhütung GmbH and classified as types EH 01 - EH 02 with resistance to manual attack

by missiles and EH 1 - EH 3 with resistance to burglaries. It is urgently recommended to clarify the requirements on protection against burglaries with the property insurers beforehand.

MULTIPACT® EH glazing, apart from the relevant tests, in addition possesses the necessary approval by VdS Schadenverhütung GmbH for additional alarm triggering. Besides the requirements on attack-blocking characteristics according to European Standards, there are a number of further specifications designated for special purposes. Examples of such special types are summarised under the designation **MULTIPACT® S**.

Technical Data ISOLAR MULTIPACT® EH and special glazing

Glass type (MULTIPACT® mono types without coating)	U _g (DIN EN 673) ΔT = 15K in W/m ² K	Resistance class (DIN 52 290)	Thickness in mm Tolerance dependant on type	Weight in kg/m ² ± 1,0	Typical protection use
MULTIPACT® S, Special glazing, mono					
Post office 19 C1	5,2	C1 SA	19	45	Special glazing for post offices and bank tellers
Bank teller 26 B2 C2	4,9	B2/C2 SA	26	63	
Bank teller 24 B2 C2	4,8	B2/C2 SA	24	55	
protection against climbing over 14 A2	5,4	A2	13	32	
protection against climbing over 17 A2	5,3	A2	17	41	
MULTIPACT® EH 01, EH 02, EH1 - EH3; Classification in accordance with VdS					
	advance //	mono			
11 EH 01	-	5,7	-	10	Similar to ISOLAR MULTIPACT® PA or PB. Need for application depending on insurance cover as per the security guidelines of insurance companies. All EH types are approved by VdS.
12 EH 02	-	5,7	-	11	
24 EH 1	-	5,2	-	24	
23 EH 2	-	5,2	-	23	
40 EH 3	-	4,8	-	40	
30 EH 01	1,1	-	-	29	
31 EH 02	1,1	-	-	30	
38 EH 1	1,6	-	-	38	
37 EH 2	1,6	-	-	37	
54 EH 3	1,6	-	-	54	

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The above-mentioned types and values are based on the specifications in the **ISOLAR® 2015 programme**. Please see the most recent issue! The indicated performances have been determined according to the relevant test standards and legal rules for the test dimensions and test conditions required or described therein. Deviating dimensions and combinations as well as glass thickness adjustments resulting from static requirements, for example, may lead to changes in individual characteristics. Indicated values only refer to glass elements. The performances of building elements depend to a large extent on the construction of the frame. U_g values are calculated according to DIN EN 673 for vertical installations. Due to tolerances of input parameters, a deviation of up to 0,1 W/m²K from calculated value is possible. Please also note our Technical Data Sheet!

Security needs to be designed

The security of every house starts already at the planning stage. Fitting attack-blocking glazing on glass and window areas is merely a part (although an important one) of an overall plan. In a comprehensive safety design of this kind, the demands on glass and window areas for protection against break-ins and attacks must be sensibly integrated into the whole plan. This often also includes electronic monitoring and a burglar alarm system. For this purpose all **MULTIPACT®** glazing can be equipped with reliable alarm triggering.



It is worth discussing this with the police or a security specialist. The official crime prevention offices will be pleased to help in choosing all building products which offer preventive protection against burglaries.

MULTIPACT® alarm

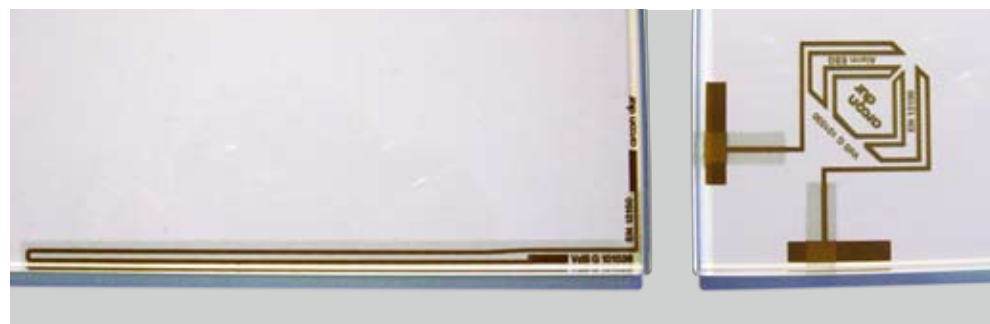
To trigger the alarm a conductor loop is applied to the surface of a single pane of safety glass. Even the first hard blow shatters the glass over the whole surface and so breaks the conducting circuit. This trips a signal to the alarm system. The alarm system itself and the connection of the glazing to the alarm system may only be installed by authorised specialist firms while complying with the relevant guidelines, for example of the VdS Schadenverhütung GmbH.

In principle **MULTIPACT® alarm** is equipped with two triggering systems ensuring correct functioning. An alarm conductor tape ensures visible security by being placed in a visible spot on the glass surface near a corner. An alarm conductor tape ensures invisible security by being placed near the edge of the pane so that when assembling the glazing it is concealed in the glazing rebate or under the glazing bar.

↑ Family home
Built with:
MULTIPACT®
advance //
Photo: ISOLAR®

Positive features of MULTIPACT®

- Crystal-clear security for peace of mind
- The proper glass for every attack situation
- Can be flexibly combined with other functions
- Quality and safety thanks to quality control by **ISOLAR®**



← Window alarm conductor loop designs:
MULTIPACT® alarm
On the left:
concealed alarm conductor loop
On the right:
visible alarm conductor loop

Quality and security with ISOLAR® glass

The production of **MULTIPACT®** attack-blocking, insulating glazing is subject to comprehensive supervision by the manufacturing facility and the **ISOLAR®** Group in accordance with the specifications of EN 1279. Numerous manufacturing facilities are additionally monitored by the Institut für Fenstertechnik in Rosenheim, as well as by other independent Institutes in Europe. For exclusive retailers or similar, additionally equipping with low-reflection coatings is recommended which make the glasses appear more transparent.

Production of **MULTIPACT® BR/SG** with resistance against bullets and gunshots is additionally subject to specified certification by a notified body.

MULTIPACT® EH and **MULTIPACT® alarm** are properly approved by the VdS Schadenverhütung GmbH.

The characteristics of **MULTIPACT®** attack-blocking glazing can be combined with those of other specialised glazing:



NEUTRALUX®

Save energy by heat insulation using glass



AKUSTEX®

Sound-insulating glass – added comfort through soundreduction



SOLARLUX®

Sun control glass – energy-saving and aesthetic design



DEKOREX®

Glazing for design purposes



VACUREX®

Optimum heat insulation with vacuum technology



ORNILUX®

Glass architecture and bird protection – not a contradiction



VISOREX®

Glazing with light-diffusing and light-directing characteristics as well as switchable glazing



← Family home
Built with:
MULTIPACT®
advance //
Photo: ISOLAR®



ISOLAR MULTIPACT®



Hellabrunn Zoo,
Munich
Built with:
MULTIPACT® multiple laminated glass
Photo: © Arnold Glas

We will be pleased to advise you

ISOLAR®, your expert partner in everything to do with glass: We provide innovative, customized solutions for the widest range of different requirements.

Just ask us!



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