sedak

sedak bullet-resistant glass

data sheet

sedak bullet-resistant glass is available in curved configurations and combines certified ballistic protection with architectural freedom for security-critical architecture.

product description

sedak bullet-resistant glass combines certified ballistic resistance with architectural freedom. Developed for high-security applications, the system supports large glass dimensions, curved geometries, and high visual quality for façades and special glazing projects.

Polycarbonate-free principle
sedak bullet-resistant glass does not rely on polycarbonate. This supports:
› durable glass surfaces with higher scratch resistance
› no yellowing over time
› compatibility with solar control, thermal insulation, and anti-reflective coatings
› improved design integration for insulating glass units

Oversized dimensions
The certified build-ups are not limited by certificate size, enabling production in **sedak**'s maximum manufacturable dimensions of 3.6 × 20 m.

Flat & curved certified solutions
The certified glass build-up is also available in curved form, supporting ballistic protection in architecturally demanding geometries.

Coating freedom
Solar control, heat-control and anti-reflective coatings can be integrated, subject to format and bending feasibility.

Structurally relevant glass construction
Certified constructions use heat-strengthened glass and interlayers. This enables structural assessment with shear transfer for oversized glazing. Substitute thickness values can be provided for static calculation.

key benefits

› polycarbonate-free
› max. formats 3.6 × 20 m
› flat & curved
› long-lasting, no yellowing
› non-splintering (NS) certified
› full coating freedom
› fritting on all positions

applications

› government buildings & embassies
› financial and cultural institutions
› private residences & villas
› airports & transportation hubs

product specification

Transparency and security are no longer opposing requirements. **sedak bullet-resistant glass** combines certified ballistic protection with architectural freedom, enabling generous formats, refined aesthetics, and even curved designs without compromising performance. **sedak** offers two product families:

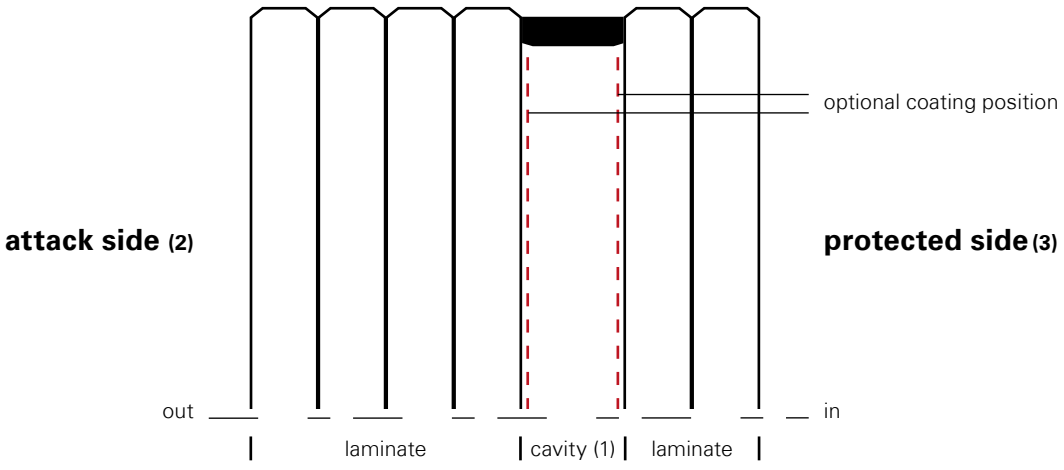
sedak isosecure®
bullet-resistant insulating glazing is for high-security architectural applications. The system is certified as non-splintering in accordance with DIN EN 1063 for classes from BR2 NS to BR7 NS. Curved variants are also available for projects with demanding geometry or design requirements.

sedak secuprotect®
bullet-resistant laminate system is for high-performance security applications. It is certified as a non-splintering solution from BR3 NS to BR7 NS and is additionally rated to STANAG 4569 Level 3. Its symmetrical design provides equal resistance from both attack directions and can also be produced in curved geometries.

sedak isosecure®	
type	bullet-resistant IGU
application	façade, exterior envelope
certification scope	BR2 NS to BR7 NS, HMG as applicable
geometry	flat & curved

sedak secuprotect®	
type	bullet-resistant laminate
application	Internal, special assemblies, high-threat use cases
certification scope	BR3 to BR7 NS, STANAG 4569 Level 3
geometry	flat & curved

Example: ballistic protection in an insulating glass configuration
In a bullet-resistant insulating glass unit, the ballistic laminate is combined with an insulating cavity (1) and additional glass layers. In the event of impact, any splintering generated by the strike (2) is retained within the system while the protected-side pane (3) remains intact.



performance values

sedak isosecure®
bullet-resistant insulating glazing

class	geometry	total thickness	cavity	weight	light transmittance*
BR2 NS	flat	53 mm	16 mm	89 kg/m²	82%
BR3 NS	flat	57 mm	16 mm	99 kg/m²	81%
BR4 NS	flat	64 mm	16 mm	115 kg/m²	81%
BR4 NS	curved I 1m to ∞	64 mm	16 mm	115 kg/m²	81%
BR5 NS	flat	71 mm	16 mm	131 kg/m²	80%
BR6 NS	flat	79 mm	16 mm	150 kg/m²	80%
BR6 NS	curved I 1m to ∞	79 mm	16 mm	150 kg/m²	80%
BR7 NS	flat	100 mm	16 mm	200 kg/m²	78%
BR7 NS	curved I 1m to ∞	100 mm	16 mm	200 kg/m²	78%
HMG NS with steel core (type M33)	flat	116 mm	16 mm	229 kg/m²	77%
HMG NS armor-piercing incendiary (type API-M8)	flat	126 mm	16 mm	265 kg/m²	76%

sedak secuprotect®
bullet-resistant laminate glazing

class	geometry	total thickness	cavity	weight	light transmittance
BR3 NS	flat	45 mm	—	109 kg/m²	88%
BR4 NS	flat	52 mm	—	125 kg/m²	87%
BR4 NS	curved I 1m to ∞	52 mm	—	125 kg/m²	87%
BR5 NS	flat	60 mm	—	145 kg/m²	87%
BR6 NS	flat	71 mm	—	171 kg/m²	86%
BR6 NS	curved I 1m to ∞	71 mm	—	171 kg/m²	86%
BR7 NS	flat	82 mm	—	196 kg/m²	85%
BR7 NS	curved I 1m to ∞	82 mm	—	196 kg/m²	85%
STANAG Level 3	flat	84 mm	—	200 kg/m²	85%

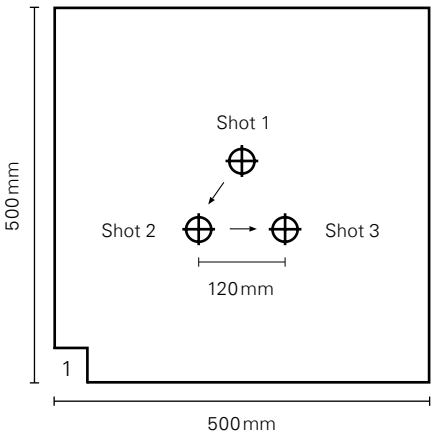
Certified glass build-ups are tested according to DIN EN 1063. Curved glass is certified with radii of 1 m and 3 m.
Final build-up selection should be confirmed during quotation and project engineering. * IGU without coating.

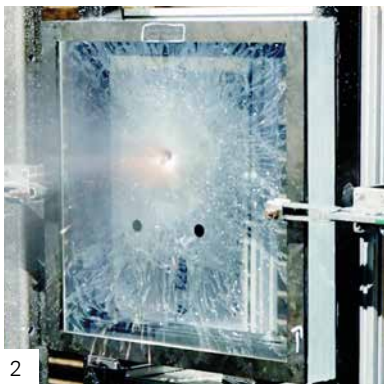
testing procedure

sedak bullet-resistant glass is rigorously tested by independent, accredited laboratories. Each solution is engineered and manufactured to meet the specific requirements of the designated resistance class, ensuring reliable performance and certified protection.

Ballistic testing according to DIN EN 1063
Testing is carried out on three specimens of the same build-up, each measuring 500 × 500 mm and conditioned at 21°C. Each specimen is subjected to the specified three-shot pattern in a triangular arrangement with 120 mm spacing between impacts (1).

The specimen passes if no projectile penetrates. For NS classification, no splinters may detach from the protected side. Image 3 shows a successfully passed test.




2


3

Ammunition overview
The illustrations shown represent typical ballistic projectiles used for testing purposes. For detailed information and project-specific data, please contact **sedak** directly.

Disclaimer: This illustration is for general reference only and should not be directly equated with the original.

testing levels

The following overview summarizes the ammunition, projectile types, bullet mass, velocity, impact energy, and shot distance associated with the relevant ballistic test classes.

DIN EN 1063

test level	type of weapon	calibre designation	projectile type*	projectile mass	bullet velocity	energy	shot distance
BR1	long rifle	.22 lr	L/RN	2.6 gr	360 m/s	168 J	10 m
BR2	handgun	9 mm Luger	FMJ/RN/SC	8 gr	400 m/s	689 J	5 m
BR3	handgun	.357 Magnum	FMJ/CB/SC	10.2 gr	430 m/s	943 J	5 m
BR4	handgun	.44 Magnum	FMJ/FN/SC	15.6 gr	440 m/s	1,510 J	5 m
BR5	long rifle	5.56 × 45 mm	FMJ/PB/SCP	4 gr	950 m/s	1,805 J	10 m
BR6	long rifle	7.62 × 51 mm	FMJ/PB/SC	9.5 gr	830 m/s	3,289 J	10 m
BR7	long rifle	7.62 × 51 mm	FMJ/PB/AP	9.6 gr	820 m/s	3,261 J	10 m
HMG	heavy long rifle	12.7 × 99 mm	FMJ/PB/API	42.2 gr	827 m/s	14,700 J	10 m

NATO AEP-55 STANAG 4569

test level	type of weapon	calibre designation	projectile type*	projectile mass	bullet velocity	energy	shot distance
level 3	long rifle	7.62 × 54 mm R	FMJ/PB/API	10.4 gr	854 m/s	3,846 J	10 m
level 3	long rifle	7.62 × 51 mm	FMJ/PB/WC	8.4 gr	930 m/s	3,633 J	10 m

Simple and quick reverse comparison of: UL 752 Level with DIN EN 1063 BR standards

Level 1	Corresponds directly to BR2 NS
Level 2	Corresponds directly to BR3 NS
Level 3	Corresponds directly to BR4 NS
Level 4, 5, 6	Closely correspond to BR5 NS
Level 7	Can be classified as slightly below BR6 NS
Level 8	Can be classified as slightly below BR7 NS
Level 9	Correspond approximately to BR7 NS
Level 10	Corresponds very closely to protection against .50 BMG API (**sedak** HMG standard)

DIN EN 1063 and UL 752 differ in ammunition type, projectile design, impact energy, and shot pattern. Protection classes should therefore not be treated as directly equivalent. Final specification must always be based on project-specific threat assessment and required certification.

Disclaimer regarding the table: EN 1063 and UL 752 are based on different test methods and should not be directly equated. The comparison is for general orientation only.

*L Lead, FMJ Full Metal Jacket, RN Round Nose, CB Coned Bullet, FN Flat Nose, PB Pointed Bullet, SC Soft Core, SCP Soft Core with steel Penetrator, AP armor-piercing, API armor-piercing incendiary, WC tungsten carbide core

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