



sedak

sedak
bullet-resistant
glass

data sheet

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 × 20m.

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 × 20m
- › 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's 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 isosecure®

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

sedak secuprotect®

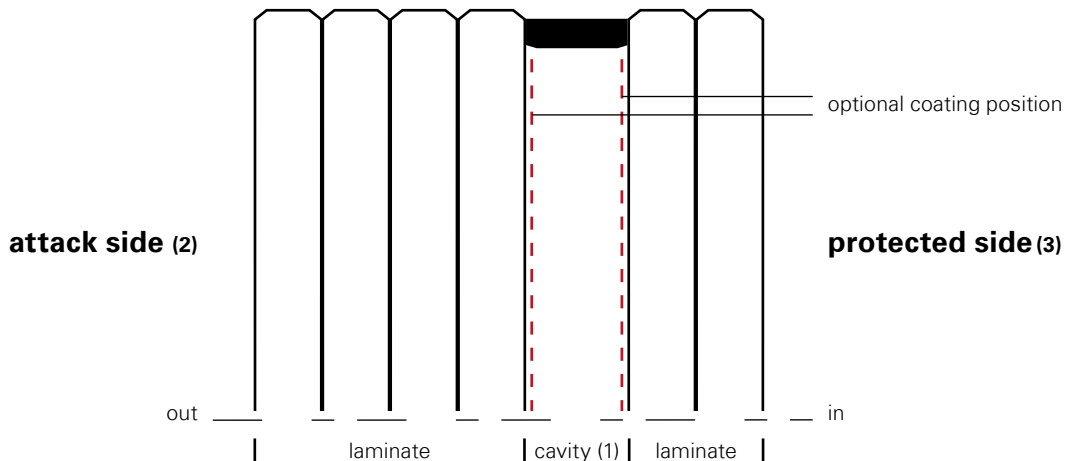
bullet-resistant laminate system is for high-performance security applications. It is certified as a non-splintering solution from BR3 NS to BR7 NS and is additionally rated to STANAG 4569 Level 3. Its symmetrical design provides equal resistance from both attack directions and can also be produced in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

sedak 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	53mm	16mm	89kg/m ²	82%
BR3 NS	flat	57mm	16mm	99kg/m ²	81%
BR4 NS	flat	64mm	16mm	115kg/m ²	81%
BR4 NS	curved 1m to ∞	64mm	16mm	115kg/m ²	81%
BR5 NS	flat	71mm	16mm	131kg/m ²	80%
BR6 NS	flat	79mm	16mm	150kg/m ²	80%
BR6 NS	curved 1m to ∞	79mm	16mm	150kg/m ²	80%
BR7 NS	flat	100mm	16mm	200kg/m ²	78%
BR7 NS	curved 1m to ∞	100mm	16mm	200kg/m ²	78%
HMG NS	flat	116mm	16mm	229kg/m ²	77%
HMG NS	flat	126mm	16mm	229kg/m ²	77%

sedak secuprotect®

bullet-resistant laminate glazing

class	geometry	total thickness	cavity	weight	light transmittance
BR3 NS	flat	45mm	—	109kg/m ²	88%
BR4 NS	flat	52mm	—	125kg/m ²	87%
BR4 NS	curved 1m to ∞	52mm	—	125kg/m ²	87%
BR5 NS	flat	60mm	—	145kg/m ²	87%
BR6 NS	flat	71mm	—	171kg/m ²	86%
BR6 NS	curved 1m to ∞	71mm	—	171kg/m ²	86%
BR7 NS	flat	82mm	—	196kg/m ²	85%
BR7 NS	curved 1m to ∞	82mm	—	196kg/m ²	85%
STANAG Level 3	flat	84mm	—	200kg/m ²	85%

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

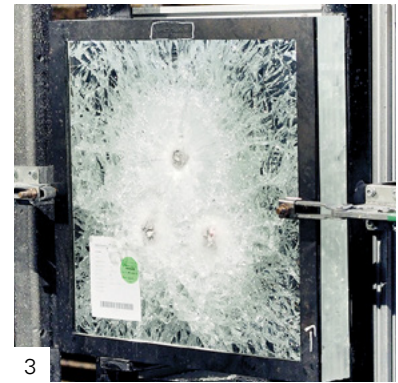
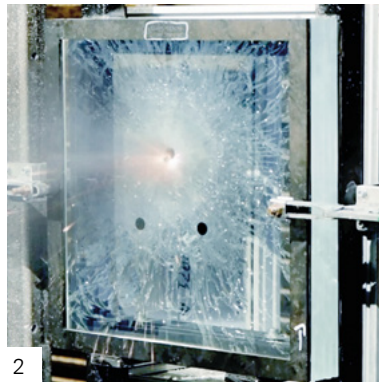
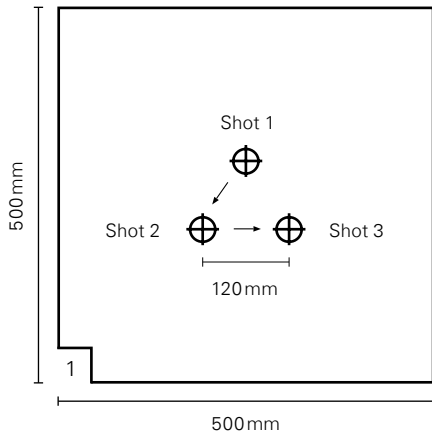
testing procedure

sedak's 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 the successfully passed test.



Ammunition overview

The graphics shown illustrate representative 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 typ*	projectile mass	bullet velocity	energy	shot distance
BR1	long rifle	.22lr	L/RN	2,6gr	360 m/s	168J	10m
BR2	handgun	9mm Luger	FMJ/RN/SC	8gr	400m/s	689J	5m
BR3	handgun	.357 Magnum	FMJ/CB/SC	10,2gr	430m/s	943J	5m
BR4	handgun	.44 Magnum	FMJ/FN/SC	15,6gr	440m/s	1510J	5m
BR5	long rifle	5,56 × 45mm	FMJ/PB/SCP	4gr	950m/s	1805J	10m
BR6	long rifle	7,62 × 51 mm	FMJ/PB/SC	9,5gr	830m/s	3289J	10m
BR7	long rifle	7,62 × 51 mm	FMJ/PB/AP	9,6gr	820m/s	3261J	10m
HGM	heavy long rifle	12,7 × 99mm	FMJ/PB/API	42,2gr	827m/s	14700J	10m

NATO AEP-55 STANAG 4569

test level	type of weapon	calibre designation	projectile typ*	projectile mass	bullet velocity	energy	shot distance
level 3	long rifle	7,62 × 54mm R	FMJ/PB/API	10,4gr	854m/s	3846J	10m
level 3	long rifle	7,62 × 51 mm	FMJ/PB/WC	8,4gr	930m/s	3633J	10m

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

Level 1	≈ Corresponds almost exactly to BR2 NS
Level 2	≈ Corresponds almost exactly to BR3 NS
Level 3	≈ Corresponds almost exactly 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 with Incendiary, WC tungsten carbide core

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