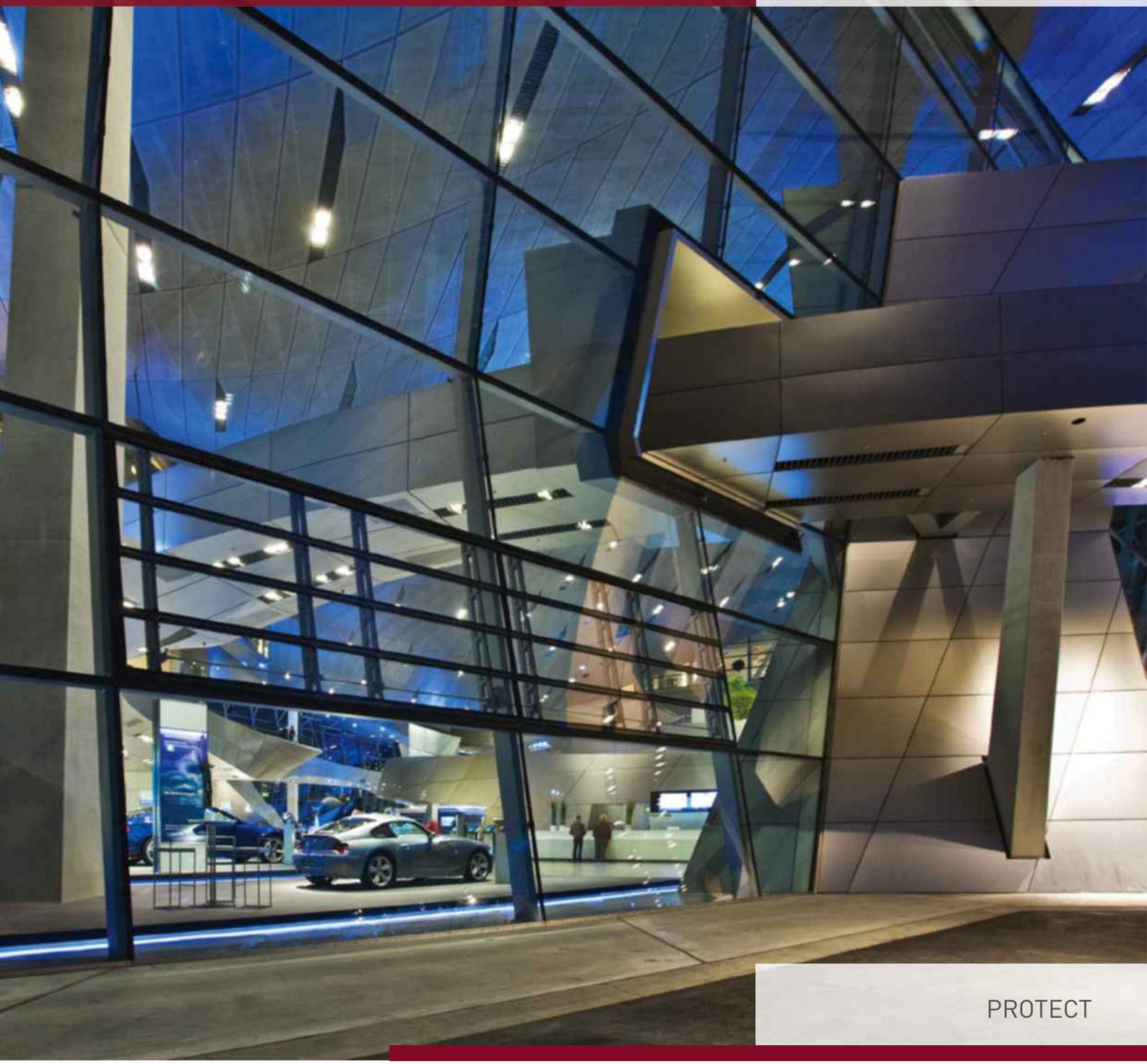
STADIP
STADIP PROTECT
STADIP ULTIMAX
STADIP SENTRY GLASS PLUS

Safety glass/
ballistic resistant glass/
blast resistant glass
in compliance with
CE certification AoC1 level



PROTECT

GLASSOLUTIONS
SAINT-GOBAIN

STADIP
STADIP PROTECT
STADIP ULTIMAX
STADIP SENTRY GLASS PLUS

A range of effective glass types for security purposes

Description

Architecture is increasingly opening buildings up to light, but light is not the only benefit that glass can offer a building - other spectacular features are also available. Security and protection against gunshots and explosions are a good example.

Applications

The performance level offered by STADIP, STADIP PROTECT, STADIP ULTIMAX and STADIP SENTRY GLASS PLUS is all top of the range: protection against gunshots and explosions.

Range

STADIP and STADIP PROTECT are a group of laminated products which make exclusive use of selected PVB (Polyvinyl Butyral) and sodium-calcium glass.

STADIP ULTIMAX is a group of laminated products using selected PVB and PU with sodium-calcium glass and specially treated polycarbonate.

STADIP, STADIP PROTECT, STADIP ULTIMAX and STADIP SENTRY GLASS PLUS meet the requirements of the CE stamp, AoC1 level, together with additional in-house standards.

The stipulations of the standards which have been in force since March impose fresh obligations on the marketing of these products. Performance levels, checks and process management are now very closely linked.

Since Glassolutions had been expecting the introduction of these new obligatory requirements for a long time, they have already installed new methods for validating the mechanical performance and durability of their glass products at their production sites. Their goal is to ensure that these performance levels can be reproduced. Bullet-proof and blast-proof glasses are required to achieve CE Level 1 Certification CE level 1 (AoC1), under the Construction Products Directive (DPC).

Installation

The direction for installation is generally included in the delivery documentation. Failure to comply with this direction may threaten the entire performance level of the product. Please check with our technical section.

Performances

A range of in-house ballistic tests, supported by performance research systems, were used as a basis for developing the new CE Certified AoC1 range.

STADIP
STADIP PROTECT
STADIP ULTIMAX
STADIP SENTRY GLASS PLUS

Standards and classification for STADIP and STADIP PROTECT glass					
Type of protection and risks	**Laminated glass**	**EN 12600**	**EN 356**	**EN 1063**	**EN 13541**
Injuries resulting from impacts	STADIP	2B2			
Falling glass fragments (sloping walls, roofs, glass roofs)	STADIP	2B2			
People falling from heights	STADIP PROTECT	1B1			
Protection against vandalism and break-ins	STADIP PROTECT		P1A to P4A		
Reinforced protection against vandalism and break-ins	STADIP PROTECT SP		P5A to P8B		
Gunshots: - handguns, military calibre guns	STADIP PROTECT HN			BR1 to BR7	
- hunting rifles	STADIP PROTECT UJ			SG1 to SG2	
- handguns, military calibre guns and hunting rifles	STADIP PROTECT JH		P5A to P8B	BR1 toBR7 SG1 to SG2	
Detonations	STADIP PROTECT BS				ER1 to ER4

Protecting property and people (standards EN 12600 and EN 356)

STADIP PROTECT: Glass and PVB assembly					
Standard	Protection	Classification	Type	Thickness (mm)	Weight (Kg/m²)
EN 12600		2B2	STADIP 22.1	4	11
		2B2	STADIP 33.1	6	16
		1B1	STADIP PROTECT 33.2	7	16
		1B1	STADIP PROTECT 44.2	9	21
EN 356		P1A	STADIP PROTECT 33.2	7	16
		P2A	STADIP PROTECT 44.2	9	21
		P3A	STADIP PROTECT 44.3	9	21
		P3A	STADIP PROTECT 666.2	19	46
		P4A	STADIP PROTECT 33.4	8	17
		P4A	STADIP PROTECT 44.4	10	22
		P5A	STADIP PROTECT SP510	10	23
		P6B	STADIP PROTECT SP615	15	34
		P6B	STADIP PROTECT SP615B	15	34
		P7B	STADIP PROTECT SP722	22	50
		P8B	STADIP PROTECT SP827	27	58
		P6B	CLIMALIT PROTECT SP615B/10/SP44.2	34	54
		P7B	CLIMALIT PROTECT SP615B/10/SP510	35	56

STADIP
STADIP PROTECT
STADIP ULTIMAX
STADIP SENTRY GLASS PLUS

Protection against gunshots (standards EN 1063)

STADIP PROTECT: Glass and PVB assembly					
Standard	Protection	Classification	Type	Thickness (mm)	Weight (Kg/m²)
EN 1063	Spall	BR1-S	STADIP PROTECT HN 110-S	10	22
		BR1-S	STADIP PROTECT HN 112-S	12	27
		BR1-S	STADIP PROTECT HN 113-S	13	32
		BR1-S	STADIP PROTECT HN 120-S	20	47
		BR1-S	STADIP PROTECT HN 119-S	19	46
		BR1-S	STADIP PROTECT JH 610.15-S	15	33
		BR1-S	STADIP PROTECT JH 610.21-S	21	45
		BR2-S	STADIP PROTECT HN 222-S	22	49
		BR2-S	STADIP PROTECT HN 226-S	26	62
		BR2-S	STADIP PROTECT HN 226HS-S	26	62
		BR3-S	STADIP PROTECT HN 323-S	23	54
		BR3-S	STADIP PROTECT CP SP615B/8/SP615B	38	67
		BR3-S	STADIP PROTECT CP SP615B/8/88.2	40	74
		BR3-S	STADIP PROTECT JH 630.28-S	28	68
		BR4-S	STADIP PROTECT HN 432-S	32	75
		BR4-S	STADIP PROTECT JH 740.39-S	39	94
		BR4-S	STADIP PROTECT JH 840.40-S	40	94
		BR5-S	STADIP PROTECT HN 540-S	40	95
		BR5-S	STADIP PROTECT HN 542-S	42	100
		BR5-S	STADIP PROTECT HN 536-S	36	85
		BR6-S	STADIP PROTECT HN 650-S	50	117
		SG1-S	STADIP PROTECT UJ 132-S	32	75
		SG1-S	STADIP PROTECT JH 801.32-S	32	72
		SG2-S	STADIP PROTECT UJ 250-S	50	117
		BR4-S/SG1-S	STADIP PROTECT JH 841.35-S	35	80
		BR5-S/SG1-S	STADIP PROTECT JH 851.36-S	36	85
		BR5-S/SG2-S	STADIP PROTECT JH 052.44-S	44	104
		BR5-S/SG2-S	STADIP PROTECT JH 852.36-S	36	85
		BR6-S/SG2-S	STADIP PROTECT JH 862.51-S	51	121
EN 1063	Non-spall	BR2-NS	STADIP PROTEC HN 231-NS	31	74
		BR3-NS	STADIP PROTEC JH 830.44-NS	44	105
		BR4-NS	STADIP PROTEC HN 454-NS	54	129
		BR4-NS	STADIP PROTECT CP JH 840.52-NS	52	82
		BR4-NS	STADIP PROTECT JH 840.54-NS	54	129
		BR5-NS	STADIP PROTECT HN 558-NS	58	139
		BR6-NS	STADIP PROTECT HN 673-NS	73	175

STADIP
STADIP PROTECT
STADIP ULTIMAX
STADIP SENTRY GLASS PLUS

EN 1063	Non-spall	BR6-NS	STADIP PROTECT HN 675-NS	75	181
		BR6-NS	STADIP PROTECT CP HN 671.NS	71	127
		BR7-NS	STADIP PROTECT HN 785-NS	85	206
		BR7-NS	STADIP PROTECT HN 781-NS	81	196
		BR7-NS	STADIP PROTECT HN 788-NS	88	212

Explanatory note:
- splitting: on impact, the risk of the projection of glass splinters on the protected side;
- non-splitting: on impact, no projection of glass splinters on the protected side.

STADIP ULTIMAX Glass and Polycarbonate assembly					
Standard	Protection	Class	Type	Thickness (mm)	Weight (Kg/m²)
EN 1063	Non-spall	BR1-NS	STADIP ULTIMAX HP 118-NS	18	34
		BR4-NS	STADIP ULTIMAX HP 440-NS	40	75
		BR4-NS	STADIP ULTIMAX HP 421-NS	21	43
		BR5-NS	STADIP ULTIMAX HP 532-NS	32	69
		BR5-NS	STADIP ULTIMAX HP 534-NS	34	75
		BR6-NS	STADIP ULTIMAX HP 650-NS	50	99
		BR6-NS	STADIP ULTIMAX HP 637-NS	37	83
		BR4-NS/SG1-NS	STADIP ULTIMAX UP 841.21-NS	21	44
		BR6-NS	STADIP ULTIMAX UP 860.37-NS	37	84
		BR6-NS/SG2-NS	STADIP ULTIMAX UP 862.38-NS	38	85
		BR4-NS/SG2-NS	STADIP ULTIMAX UP 042.37-NS	37	78
		BR4-NS/SG2-NS	STADIP ULTIMAX UP 042.34-NS	34	75
		BR4-NS	STADIP ULTIMAX UP 040.25-NS	25	53

Protection against explosions (standards EN 13541)

In general, preventing the consequences of an accidental, or even criminal, explosion calls for the use of STADIP PROTECT BS glass.

STADIP PROTECT: Glass and Polycarbonate assembly					
Standard	Protection	Class	Type	Thickness (mm)	Weight (Kg/m²)
EN 13541	Spall	ER1-S	STADIP PROTECT BS 110-S	10	22
		ER2-S	STADIP PROTECT BS 218 B-S	18	43
		ER2-S	STADIP PROTECT BS 218-S	18	39
		ER3-S	STADIP PROTECT BS 331-S	31	73
		ER4-S	STADIP PROTECT BS 427-S	27	58
	Non-spall	ER1-NS	STADIP PROTECT BS 118-NS	18	43
		ER2-NS	STADIP PROTECT BS 226-NS	26	63
		ER4-NS	STADIP PROTECT BS 433-NS	33	79

STADIP
STADIP PROTECT
STADIP ULTIMAX
STADIP SENTRY GLASS PLUS

Detail of European standards

Standard EN 356 (anti break-in glass)		
Standard EN	Test description	Energie (joules)
Classes P1A to P5A: impact from balls Normal protection		
P1A	3 concussions from balls at a height of 1.5 m	161
P2A	3 concussions from balls at a height of 3 m	362
P3A	3 concussions from balls at a height of 6 m	724
P4A	3 concussions from balls at a height of 9 m	1,086
P5A	3 concussions from balls at a height of 9 m	3,258
Classes P6B to P8B: blows from hammers and hatchets Reinforced protection		
P6B	30 to 50 hammer and hatchet blows	-
P7B	51 to 70 hammer and hatchet blows	-
P8B	Over 70 hammer and hatchet blows	-

Standard EN 1063 (protection against gunshots)				
Standard EN	Calibre	Weapon	Speed on impac	Shot number
BR1	0.22 long rifle	Long Rifle	360 m/s	3
BR2	9 mm parabellum	Luger, Uzi	400 m/s	3
BR3	0.357 magnum	Magnum	430 m/s	3
BR4	0.44 magnum	Magnum	440 m/s	3
BR5	5,56 x 45 mm	M16	950 m/s	3
BR6	7,62 x 51 mm soft core	Fal/Winchester	820 m/s	3
BR7	7,62 x 51 mm hard core	Fal	830 m/s	3
SG1	12/70	Riotgun	420 m/s	1
SG2	12/70	Riotgun	420 m/s	3

STADIP
STADIP PROTECT
STADIP ULTIMAX
STADIP SENTRY GLASS PLUS

Standard EN 13541 (protection against explosions)		
Standard EN	Maximum positive high pressure of the reflected shock wave Pr (kPa)	Duration of the period of positive pressure t+ (Ms)
ER1	50 ≤ Pr ≤ 100	≥ 20
ER2	100 ≤ Pr ≤ 150	≥ 20
ER3	150 ≤ Pr ≤ 200	≥ 20
ER4	200 ≤ Pr ≤ 250	≥ 20

Standard EN 12600 (protection against falling persons, falling glass fragments and injuries in case of impact)			
Standard EN	Height of fall	Mass	Impact number
3B3	190 mm	50 Kg	1
2B2	450 mm	50 Kg	1
1B1	1,200 mm	50 Kg	1

STADIP
STADIP PROTECT
STADIP ULTIMAX
STADIP SENTRY GLASS PLUS

Installation

The installation of all the products quoted is undertaken in compliance with standard NF DTU 39 and the specific fitting instructions. To guarantee reinforced protection against vandalism, break-ins, gunshots or explosions, the STADIP PROTECT glass products should be used with frames of the appropriate performance level. Installation directions as instructed must be observed for bullet-proof and blast-proof products.

Regulation

The products in the STADIP and STADIP PROTECT range are compliant with standards EN 12543 and EN 14449.

These products bear the CE stamp. Bullet-proof and blast-proof glasses are required to carry CE Level 1 Certification (AoC1) under the Construction Products Directive (89/106/CEE). This certification is awarded only following an extremely strict validation procedure.

By Muchimuchi - Saint-Gobain Glass Solutions France – RCS Nanterre 447768169 - June 2011 – May be subject to change

GLASSOLUTIONS
SAINT-GOBAIN

For Glassolutions contact details by country, please refer to the last page.

www.glassolutions.co.uk

Distributor