



SECURITY GLASS SOLUTIONS

Delivering Bent & Specialist Glass with Excellence



Armour Shield®

POLY-COMPOSITE SECURITY GLASS - BY GLASSHAPE

glasshape.com



SECURITY GLASS SOLUTIONS

Australian Embassy
Jakarta, Indonesia



Glasshapes world-leading **security glass solutions** come in a wide variety of forms and options.





AUSTRALIAN EMBASSY

In situations where security is a primary consideration, the difficulty between maximising space and light without compromising security, is amplified. Our experience in this field has meant we can respond to clients' designs and dreams with workable solutions – in many cases having to innovate and invent to meet the brief.



LOCATION: Australian Embassy, Jakarta, Indonesia

GLASS MAKE UP: Custom developed AmmoShield® 62mm thick. Max size window 3200 x 2200mm

QUANTITY: 3100m² Bullet, Blast, Intruder Resistant

HIGHLIGHT:

The Australian Embassy in Jakarta is a prime example of delivering on excellence. The tropical, humid climate brought specific challenges when designing a building that requires high levels of security. Allowances had to be made to ensure operational functionality whilst addressing the client's desire for national expression. This had to be achieved without compromising an extremely challenging security and thermal resistance requirement.

We were able to design, test and manufacture an innovative, certified solution that spanned the large windows in the design and met the clients' demands in terms of blast, intruder and ballistic attack resistance. At more than 60mm thick and weighing up to 1000kg per window, no other supplier in the global tender was able to deliver. In the words of the architects Denton Corker Marshall, "The design is bold, elegant, innovative, practical and dignified." We're naturally humbled that our glass has played such a pivotal role in this project.



Auckland Museum
New Zealand

Overview

With our large range of security glass products, Glasshape® can provide a solution to cover all threat levels from break-in and theft to firearms and explosives. Glasshape® can develop a custom glass solution to meet your particular requirements whether it is intruder, bullet, blast or fire resistance, or a combination of these properties, we are able to provide the level of protection you require.

Flag Ship High Security Glass Projects

- Australian Embassy : Jakarta, Indonesia : 3100m2 of Bullet, Blast & Intruder Resistant glass
- High Security Prison : Wiri, New Zealand : 1000m2 of Intruder Resistant Glass
- Medium Security Prison : Mt Eden, New Zealand : 600m2 of Intruder Resistant Glass
- Special Intelligence Building : Wellington, New Zealand : 700m2 of Intruder Resistant Glass
- USA Embassy : Fiji Islands : Bullet Resistant Glass
- Japanese Embassy : Samoa, Pacific Islands : Bullet Resistant Glass
- German Embassy : Wellington, New Zealand : Bullet Resistant Glass
- Australian High Commission : Tonga, Pacific Islands : Intruder Resistant Glass
- Sir Charles Gardiner Hospital : Perth, Australia : 400m2 CareShield Mental Health Glass



Complete Security Glass Solutions

When it comes to security glass, Glasshape® understand that quality, performance, durability, safety standards and security ratings are paramount to achieving the best solution for Architects, Designers and Specifiers when creating safe and secure environments.

Combining nearly 30 years of industry knowledge and technical capability, Glasshape® have developed unique proprietary manufacturing processes in order to provide premium security glass solutions that address the specific needs of the security sector.

Glasshape® provide glass solutions that are specifically designed to protect embassies, residential properties, commercial buildings and retail outlets in the event of an attack from intruders; and provide a safe environment for staff and detainees in prisons, remand centres, police stations and courtrooms.

At Glasshape®, we take a customised approach. We work with clients to confirm their needs and establish the appropriate glass solutions. Our complete service includes consultation, digital site measurement, CAD design, certification, manufacturing, and review audit. With Glasshape® tailored approach; clients are assured their glass solutions are fulfilled.



Mt Eden Prison
Auckland, New Zealand

What is Security Glass?

Security glass is specifically designed to provide additional safety for personnel and protect critical areas in buildings, safe houses, detention centres, prisons and marine vessels. Even when broken, the tough inner-core of poly-composite will lock the exterior glass layers to enable greater attack resistance. Ideal for doors and windows that maintain the appearance of normal glass. It is specially designed and constructed to remain resistant under attack. This attribute causes attack weapons to simply bounce off the security window, making penetration all but impossible.

Our custom laminated range of security glass is available in a large number of different compositions for protection from deliberate attack, ranging from low level smash and grab through to ballistic and blast protection. Toughened (tempered), annealed, toughened and annealed poly-composite layers, and varying glass and interlayer thicknesses all provide the perfectly specified solution. In many cases, bent options are available too.

A customised approach to meet our Clients' needs.

At Glasshape® we take a customised approach. We work with clients to confirm their needs and establish the appropriate glass solutions. Selecting and specifying the correct security glass product to suit your requirements is important to ensure that the performance expectations of the glass are met. Our experienced team can help you make the right decision with our fully certified range.

Our products have many years of proven effectiveness in embassies, residential properties, commercial buildings, retail outlets, prisons, remand centres, police stations and courtrooms. We can develop a custom glass solution to meet your particular requirements whether it is intruder, bullet, blast or debris impact resistance.



 **BanditShield®**
ANTIBANDIT GLASS - BY GLASSHAPE

BanditShield® - Low risk anti-bandit glass solution providing up to one minute intruder resistance to deter smash and grab thieves.

 **BanditShieldUltra®**
ULTRA ANTIBANDIT GLASS - BY GLASSHAPE

BanditShield Ultra® - Low risk anti-bandit glass solution providing up to two minutes intruder resistance to provide increased security.

 **ArmourShield®**
POLY-COMPOSITE SECURITY GLASS - BY GLASSHAPE

ArmourShield® - High risk intruder resistant glass solution providing up to 30 minutes resistance e.g. prisons, banks.

 **AmmoShield®**
BULLET RESISTANT GLASS - BY GLASSHAPE

AmmoShield® - Bullet resistant glass solution providing protection from threats from hand guns through to military rifles.

 **BlastShield®**
BLAST RESISTANT GLASS - BY GLASSHAPE

BlastShield® - Blast resistant glass solutions custom designed to meet specified threat levels.

 **CareShield®**
SECURE HEALTHCARE SAFETY GLASS - BY GLASSHAPE

CareShield® - Safe and reliable secure healthcare glass solutions for use in mental health facilities.

Risk Analysis of Security Areas

Areas Of Use:

- Low Risk Smash & Grab
- Front of Store Displays
- High End Luxury Homes
- Liquor Store Windows
- Low Security Detention Centres
- Pharmacies



**Threat:
Intrusion**

Up to **2** Minutes Intruder Resistance

Rocks
Screw Drivers
Hammers

Crowbars
Baseball Bats
Small Hand Tools



Recommended Product:



Areas Of Use:

- Museums, Art Galleries
- Medium Risk Offenders Cell Vision Panels
- Court Houses
- Customs Detention Rooms
- High Risk Mental Health Wards
- Police Station Public Areas



**Threat:
Planned Intrusion**

Up to **30** Minutes Intruder Resistance

Hammers
Axes
Crowbars

Baseball Bats
Chisels
Bolt Cutters



Recommended Product:



Areas Of Use:

- Medium and Maximum Security Prisons
- Youth Detention Centres
- Government Intelligence Offices
- Police Station - Cell Windows, Bail Cells
- Court House - Cells
- Staff Attack Retreat Rooms

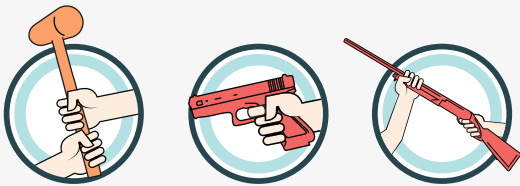


Threat:
Equipped with Heavy Tools

Up to **60** Minutes Intruder Resistance

Sledgehammers
Axes
Crowbars

Picks
Chisels
Bolt Cutters



Recommended Product:



Areas Of Use:

- Panic Room - Refuge Rooms
- Foreign Embassies
- Cash Handling - Banks, Foreign Exchange
- Courtrooms
- Armoured Vehicles
- VIP and Diplomat Housing

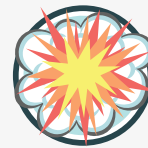


Threat:
Equipped with Firearms
& Explosives

Up to **60** Minutes Intruder Resistance

Multiple Attackers
Pistols
Shotguns

Shotguns (slugs)
Rifles
Explosives



Recommended Product:



Anti-Bandit Glass Solutions

BanditShield® has been specifically developed to resist manual attack and delay access to protected areas such as jewellery stores where items of high value can be easily accessed. Unlike standard laminated glass, the BanditShield® Anti-Bandit Glass range does not fall away when broken, preventing access. With the BanditShield® range, the bonded glass and laminate make it challenging and time consuming to smash through. The laminate holds on to the broken layers of glass making separation a difficult process.

The extra time and noise generated whilst attempting to create a suitable opening usually attracts the attention of neighbours or inhabitants in the area, this serves as a deterrent and thwarts further attempts of would-be burglars or opportunist smash and grab criminals.

Area Specific Requirements

Smash & Grab

Slowing or delaying an intruder who is attempting this will deter them from successfully taking any goods

Front of Store Display (Retail)

Preventing quick entry will deter criminal from successfully stealing goods

High Class Luxury Homes

Delaying or forcing the intruder to make more noise can deter them from ever entering and gives you more time to escape or alert authorities

Liquor Store

Preventing quick entry will deter criminal from successfully stealing liquor

Low Security Detention Centres

Slowing an attempt to break out can give staff the time needed to respond to the incident

Pharmacies

Protecting drugs from opportunist smash and grab burglars



Attack Resistance

BanditShield® Anti-Bandit Glass has been specially designed and constructed from incredibly robust laminated glass to achieve a higher level of resistance to physical attack in low risk security situations.

Under attack with common hand tools such as hammers, pliers, screwdrivers, axes and bricks, BanditShield® will resist penetration for up to 1 minute. Where a greater level of security is required we would recommend using or specifying BanditShield Ultra® or ArmourShield®

Low Risk Intruder Resistant Glass Solutions

BanditShield Ultra® has been specifically developed for when greater attack resistance over and above BanditShield® Anti-Bandit Glass is required.

Ideal for high-end residential homes, luxury retail display windows and mental health facilities, BanditShield Ultra® is designed to resist an attack long enough for an opportunist attacker to give up their efforts after realising BanditShield Ultra® is not standard glass.

Area Specific Requirements

Smash & Grab

Slowing or delaying an intruder who is attempting this will deter them from successfully taking any goods

Front of Store Display (Retail)

Preventing quick entry will deter criminal from successfully stealing goods

High Class Luxury Homes

Delaying or forcing the intruder to make more noise can deter them from ever entering and give you more time to escape or alert authorities

Mental Health Units

Slowing an attempt to break out can give staff the time needed to respond to the incident

Low Security Police Detention Centres

Slowing an attempt to break out can give staff the time needed to respond to the incident

Pharmacies

Protecting drugs from opportunist smash and grab burglars



Attack Resistance

BanditShield Ultra® is a specially designed triple laminated glass to achieve a higher level of resistance to physical attack in low risk security situations.

Under attack with common hand tools such as hammers, pliers, screwdrivers, axes and bricks, BanditShield Ultra® will resist penetration for up to 2 minutes. Where a greater level of security is required, we would recommend using ArmourShield® which provides longer resistance times.

High Risk Intruder Resistant Glass Solutions

ArmourShield® is specifically designed to provide additional safety for personnel and protect critical areas in buildings, safe houses, detention centres, prisons and marine vessels. ArmourShield® slows down and restricts intruder entry. Even when broken, the tough inner-core of poly-composite will lock the exterior glass layers to enable greater attack resistance. Ideal for doors and windows that maintain the appearance of normal glass, ArmourShield® is specially designed and constructed to remain resistant under attack. This attribute causes attack weapons to simply bounce off the ArmourShield® window, making penetration all but impossible.

Area Specific Requirements

Medium and Maximum Prison Security

Prevention of break-out and protecting wardens from attack.

Youth Detention Centres

Prevention of escape and protecting staff from attack.

Intelligence Offices

To create a secure facility that can't be penetrated, protecting internal information and staff.

Guard House

Provide protection against attack from assailants with hand weapons.

Police Station

Used in external windows of facilities to protect police and in high risk containment cells to resist attempts to escape.

Courthouse

Prevention of attempted escape from commonly perceived lower security facility.



Testing and Certification

ArmourShield® comes in a range of thicknesses to provide the required protection from physical attack for up to 30 minutes (as detailed under AS3555.1 Level 2) when used in an approved framing system.

The table on page 121 provides a guide to which thickness may best suit your requirements, or you can contact our product specialists who will help you select the correct product for your application.

Tested and certified in independent laboratories, ArmourShield® has passed the requirements of AS3555.1 Level 2 in a number of approved framing systems to provide specifiers with solutions that meet their requirements.

Bullet Resistant Glass Solutions

AmmoShield® is specifically designed for use in areas of high risk or where the threat of firearms is prevalent. AmmoShield® bullet resistant glass encapsulates exceedingly high velocity projectiles without allowing penetration through the panel. AmmoShield® is a special glass poly-composite panel, custom-constructed to meet clients specified level of protection. Levels of protection include gunfire, bomb-blast and physical attack with tools and equipment.

Area Specific Requirements

Cash Handling - Banks, Foreign Exchange

Protect staff and assets from the threat of armed robbery.

Panic Room - Personal Protection, Refuge Rooms

Secure rooms in luxury homes or buildings in high risk areas to protect the occupants from armed attack.

Foreign Embassies

Protect staff and information in the event of a terrorist attack.

Courtooms - Judges Chambers, Witness Boxes

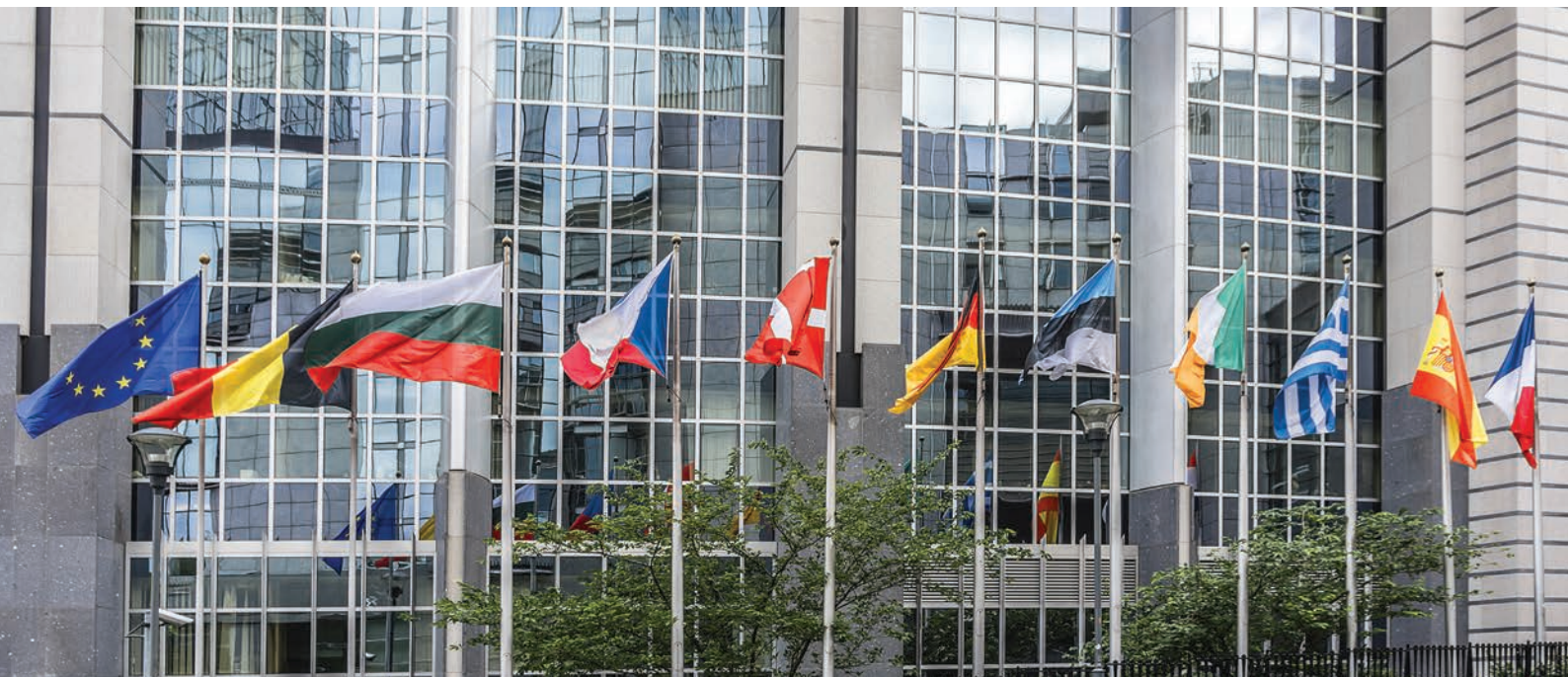
Provide protection in the event of attack with firearms.

VIP and Diplomat Housing

Protect VIPs from armed robbery or terrorist attack.

Armoured Vehicles (certified for road use)

Protection of operators in cash handling, police or military operations.



AmmoShield® Range

AmmoShield® is manufactured in a range of thicknesses and make-ups to meet the specified threat level and conditions required. Our range includes glass designed to stop bullets from hand guns through to high powered rifles and shotguns.

AmmoShield® has been tested in NATA accredited laboratories to cover all the requirements of AS/NZS2343:1997 and NIJ0108.01:1985, and we can test customised glass make-ups to these standards or other applicable standards if required.

Blast Resistant Glass Solutions

BlastShield® has been specifically designed to reduce the risk of injury in the event of a blast attack. BlastShield® blast resistant glass typically uses a multiple layered combination of incredibly robust laminated glass and poly-composites to reduce the risk of flying glass debris in the event of an explosion.

BlastShield® unique design allows the flexibility of the interlayer and the adhesion between layers of laminated glass to continue to resist blast after the glass layers fracture. This gives protection from significantly higher blast loads when compared to a monolithic pane of glass.

Area Specific Requirements

Foreign Embassies

Protect staff and information in the event of a terrorist attack.

VIP and Diplomat Housing

Protect occupants from armed robbery or terrorist attack.

Military

Protection of military facilities from attack.

Guard House

Provide protection against attack from terrorists.

BlastShield® Range

BlastShield® thicknesses range from 22mm to over 65mm depending on the level of blast being protected against. Full-scale open-air blast tests are rarely performed these days, so the use of latest technology in blast modelling is used to determine the performance of different make-ups of BlastShield® being designed for specific projects.

Foreign Embassy Solutions

With buildings such as embassies and other government buildings, there is often a requirement for the glass to be able to resist multiple threats, such as intruder, bullet and blast, which requires a specialised solution for each application.

Glasshape® have designed, tested and certified customised glass solutions which incorporate the unique properties of ArmourShield®, AmmoShield® and BlastShield® to provide an answer to these specific requirements. A fine example of our customised approach was the recently completed Australian Embassy in Jakarta, Indonesia.



Australian Embassy
 Jakarta, Indonesia

Mental Health Facilities Solutions

With CareShield®, gone is the possibility of patients harming themselves with glass if a window is broken. Families are assured their loved ones are in a safe zone where self-harm is all but eliminated. CareShield® has a glass exterior surface that is glazed to the staff side, or the outside of the building, to provide a tough glass exterior for weathering. If glazed in a passageway, it provides an easy-to-clean surface. The interior surface is a hardened poly-composite, providing a safe surface on the patients side, greatly reducing the risk of patients injuring themselves.



Corrections, Holding and Detention Facility Solutions

When designing correctional institutions and specifying security glass, there are a large number of factors to consider to ensure that it meets the level of protection required. The weapons that may possibly be available to assailants, staff response times, and risk to staff or others are all important factors in selecting glass which can resist attack for the time required to respond to the incident.

Other areas, such as holding cells in police stations and courthouses, are areas commonly overlooked, and security can be compromised if the glass specification does not provide sufficient protection.

Glasshape® has extensive experience in working with architects, correction departments and security window manufacturers to provide solutions which meet the specific requirements of each physical space within correctional facilities.

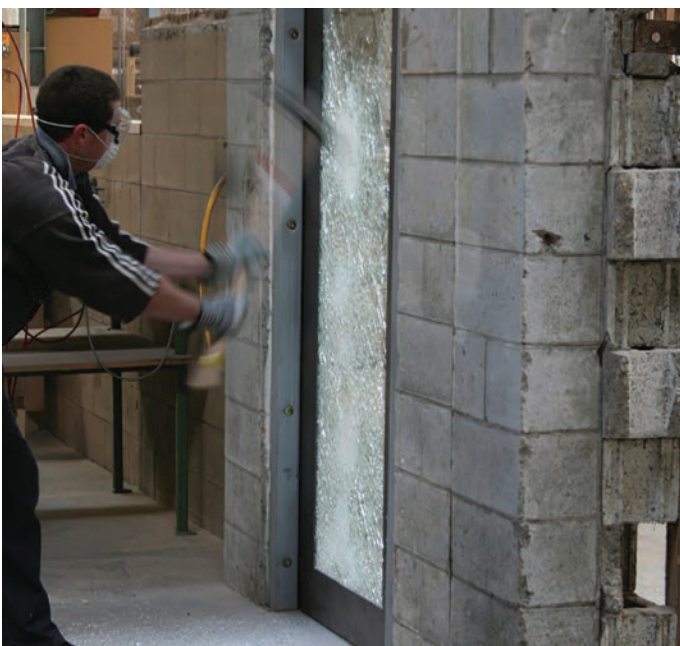


Testing of Security Glass

Intruder / Forced Entry Resistance Testing

Glasshape® have carried out extensive testing of our intruder resistant glass to AS3555.1 Level 2 in independent laboratories in both New Zealand and Australia.

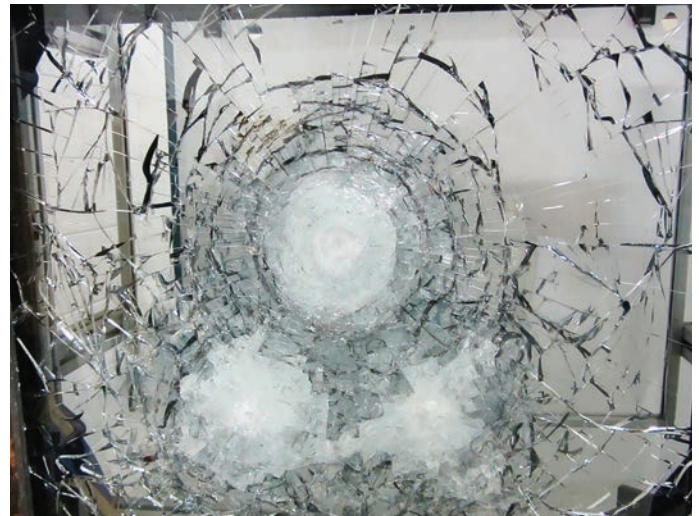
Testing to AS3555.1 Level 2 requires the glass to be attacked by two men using common hand tools, such as chisels, punches, wedges, screwdrivers, pliers, bolt cutters, hammers, axes, sledgehammers, pry bars and ripping tools—none of which exceeds 1.5m in length, nor 3.6kg in mass. The glass is then rated according to the time required to create an opening in it of no more than 620cm².



Bullet Resistance Testing

Glasshape® has carried out extensive testing of our AmmoShield® glass to both the AS/NZS2343:1997 and NIJ0108.01:1985 standards.

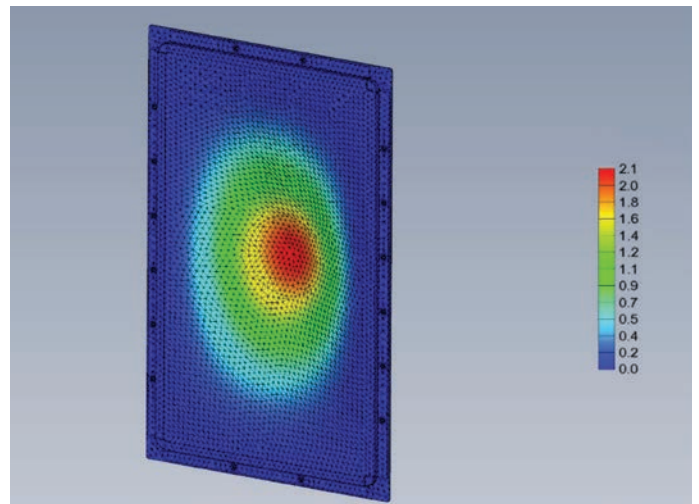
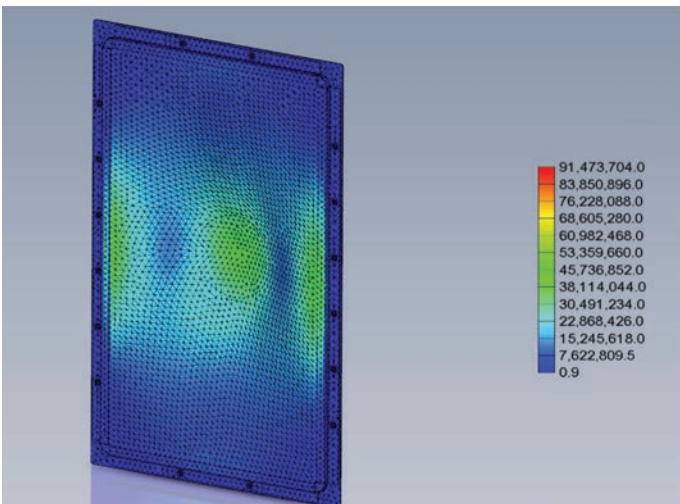
Testing to AS/NZS2343:1997 requires the test panel to be shot three times with the shot centres 100mm apart forming an equilateral triangle. A witness card is mounted 450mm from the rear of the glass and the glass panel is deemed to satisfy the ballistic classification if no projectile passes through and no particles from the panel or projectile perforate the witness card.



Blast Resistance Testing

Full-scale open-air blast tests are rarely performed these days, so the use of latest technology in blast modelling is used to determine the performance of different make-ups of BlastShield® being designed for specific projects.

Glasshapes technical team works with blast engineers on specific project designs to ensure that complete systems will withstand the required blast requirements.



Product Code	Description	Thickness	Weight m ²	Security Attack Rating* (Approx)	Light Trans. %	Reflect (out.) %	Reflect (in.) %	Solar Trans. %	Solar Reflect. %	SC	SHGC	U Value (W/m ² K) Summer	U Value (W/m ² K) Winter
					LIGHT			SOLAR		THERMAL			
BanditShield® Clear													
AB752	Annealed	7.52mm (1/4")	16kg	20 seconds	89	8	8	74	7	0.91	0.79	5.04	5.57
AB952	Annealed	9.52mm (3/8")	21kg	20 seconds	88	8	8	71	7	0.89	0.78	5	5.52
BS7ABG	Annealed	7.9mm (5/16")	17kg	30 seconds	89	8	8	73	7	0.91	0.79	4.99	5.52
BS9ABG	Annealed	9.9mm (3/8")	22kg	30 seconds	88	8	8	70	7	0.89	0.77	4.95	5.46
AB1352	Annealed	13.52mm (9/16")	31kg	50 seconds	87	8	8	66	7	0.86	0.74	4.9	5.41
BS11ABG	Annealed	11.9mm (7/16")	27kg	60 seconds	88	8	8	68	7	0.87	0.76	4.91	5.42
BS14TABG	Toughened	13.9mm (9/16")	32kg	60 seconds	87	8	8	66	7	0.86	0.74	4.89	5.40
BanditShield® Grey													
AB7ABG	Annealed	7.9mm (5/16")	17kg	30 seconds	43	5	5	47	5	0.71	0.62	4.99	5.52
AB9ABG	Annealed	9.9mm (3/8")	22kg	30 seconds	42	5	5	45	5	0.7	0.61	4.95	5.46
BS13ABG	Annealed	13.9mm (9/16")	32kg	60 seconds	87	8	8	65	7	0.85	0.74	4.86	5.36
BanditShield® Obscure													
BS70B	Annealed	7.9mm (5/16")	17kg	30 seconds	82	8	8	67	7	0.87	0.75	4.99	5.52
BS90B	Annealed	9.9mm (3/8")	22kg	30 seconds	82	8	8	65	7	0.85	0.74	4.95	5.46
AB1152	Annealed	11.52mm (11/16")	26kg	50 seconds	88	8	8	69	7	0.88	0.76	4.96	5.47
BanditShield Ultra® Clear													
BS15AUltra	Annealed	15.7mm (5/8")	33kg	60-120 seconds	87	8	8	63	7	0.84	0.73	4.72	5.2
BS15Ultra	Toughened	15.7mm (5/8")	33kg	60-120 seconds	87	8	8	63	7	0.84	0.73	4.72	5.2
BS16Ultra	Toughened	16.7mm (11/16")	36kg	60-120 seconds	86	8	8	62	6	0.83	0.73	4.7	5.17
BS18A Ultra	Annealed	18.04mm (11/16")	41kg	90-120 seconds	86	8	8	61	6	0.82	0.71	4.67	5.13
BanditShield Ultra® Grey													
BS15GRUltra	Toughened	15.7mm (5/8")	33kg	60-120 seconds	54	6	6	43	5	0.69	0.6	4.72	5.2
BS16GRUltra	Toughened	16.7mm (11/16")	36kg	60-120 seconds	54	6	6	43	5	0.69	0.6	4.7	5.17
BanditShield Ultra® Obscure													
BS150BUltra	Toughened	15.7mm (5/8")	33kg	60-120 seconds	80	8	8	59	6	0.81	0.7	4.72	5.2
BS160BUltra	Toughened	16.7mm (11/16")	36kg	60-120 seconds	80	8	8	58	6	0.8	0.69	4.7	5.17

* Attack rating is based on AS3555.1 level 1, attack conditions. Custom options available on all products for tints or additional features or specifications.

Product Code	Description	Thickness	Weight m ²	Attack Rating* (Approx)	AS 3555.1 Level 2 Pass	Light Trans. %	Reflect (out.) %	Reflect (in.) %	Solar Trans. %	Solar Reflect. %	SC	SHGC	U Value (W/m ² K) Summer	U Value (W/m ² K) Winter
				SECURITY		LIGHT		SOLAR		THERMAL				
ArmourShield® Clear (optional colour/tints on Custom Products)														
AS14T	Toughened	14.8mm (9/16")	28kg/m ²	Up to 5 minutes	PASS 5 minutes	84	7	7	66	6	0.87	0.75	4.33	4.73
AS17T	Toughened	17.9mm (11/16")	34kg/m ²	Up to 10 minutes	PASS 10 minutes	83	8	8	60	6	0.83	0.72	4.16	4.54
AS22T	Toughened	22.6mm (7/8")	44kg/m ²	Up to 15 minutes	PASS 10 minutes	80	8	8	56	6	0.8	0.69	3.99	4.34
AS26T	Toughened	25.6mm (1")	51kg/m ²	Up to 20 minutes	PASS 10 minutes	79	8	8	53	6	0.78	0.68	3.94	4.29

* Attack rating is based on AS3555.1 level 2, attack conditions. Custom options available on all products for tints or additional features or specifications.



Product Code	Description	Thickness	Weight m ²	AS/NZS 2343:1997	Other Standards	Light Trans. %	Reflect (out.) %	Reflect (in.) %	Solar Trans. %	Solar Reflect. %	SC	SHGC	U Value (W/m ² K) Summer	U Value (W/m ² K) Winter
				SECURITY		LIGHT		SOLAR		THERMAL				
AmmoShield® Clear (optional colour/tints on Custom Products)														
AS20P	Glass, Poly-composite	20.4mm (13/16")	40kg/m ²	G0 9mm Handgun	NIJ 0108.01	80	7	7	57	6	0.81	0.7	4.1	4.45
AS24P	Glass, Poly-composite	24.4mm (15/16")	50kg/m ²	G1 357 Magnum	-	78	7	7	53	6	0.78	0.68	4.04	4.38
AS25P	Glass, Poly-composite	25.5mm (1")	54kg/m ²	G2 44 Magnum	-	81	7	7	52	6	0.77	0.67	3.95	4.28
AS37	All Glass	37.0mm (1 7/16")	84kg/m ²	G2 44 Magnum	-	76	8	9	41	6	0.69	0.6	4.22	4.58
AS44P	Glass, Poly-composite	44.5mm (1 3/4")	97kg/m ²	R1 5.56mm Rifle R2 7.62mm Rifle S1 12gauge Shotgun-slug	NIJ 0108.01 Level 3	76	6	6	40	5	0.7	0.61	3.58	3.85



Product Code	Description	Thickness	Weight m ²	Security Attack Rating* (Approx)	Light Trans. %	Reflect (out.) %	Reflect (in.) %	Solar Trans. %	Solar Reflect. %	SC	SHGC	U Value (W/m ² K) Summer	U Value (W/m ² K) Winter
					LIGHT		SOLAR		THERMAL				
CareShield® Clear													
CS10CL	Standard	10.5mm (7/16")	17kg	5 minutes	86	7	7	71	6	0.9	0.78	4.61	5.04
CS12CL	Standard	12.5mm (1/2")	22kg	5 minutes	85	7	7	68	6	0.88	0.77	4.57	4.99
CS14CL	Standard	14.5mm (9/16")	27kg	10 minutes	84	7	7	65	6	0.86	0.77	4.53	4.95
CS24CLCP	Low-E DGC	24.5mm (15/16")	27kg	5 minutes	73	16	15	55	15	0.77	0.67	1.96	1.89
CS25CLCP	Low-E DGC	25.5mm (1")	29kg	5 minutes	72	16	15	54	15	0.77	0.67	1.96	1.88
CS26CLCP	Low-E DGC	26.5mm (1 1/16")	32kg	10 minutes	72	15	15	53	15	0.76	0.66	1.95	1.88
CareShield® Neutral													
CS24NCP	Low-E DGU	24.5mm (15/16")	27kg	5 minutes	52	10	14	35	9	0.52	0.45	1.96	1.89
CS25NCP	Low-E DGU	25.5mm (1")	29kg	5 minutes	51	10	14	34	9	0.52	0.45	1.96	1.89
CS26NCP	Low-E DGU	26.5mm (1 1/16")	32kg	10 minutes	51	10	14	33	9	0.52	0.45	1.95	1.88
CareShield® Grey													
CS10GR	Standard	10.5mm (7/16")	17kg	5 minutes	53	6	5	48	5	0.74	0.64	4.61	5.04
CS12GR	Standard	11.5mm (7/16")	22kg	5 minutes	43	5	4	39	5	0.67	0.58	4.57	4.99
CS14GR	Standard	14.5mm (9/16")	27kg	10 minutes	34	5	4	30	5	0.61	0.53	4.52	4.95
CS24GRCP	Low-E DGU	24.5mm (15/16")	27kg	5 minutes	45	14	9	38	14	0.72	0.63	1.96	1.89
CS25GRCP	Low-E DGU	25.5mm (1")	29kg	5 minutes	41	14	8	34	14	0.71	0.62	1.96	1.89
CS26GRCP	Low-E DGU	26.5mm (1 1/16")	32kg	10 minutes	37	14	8	30	14	0.7	0.61	1.95	1.88
CareShield® Acid Etch Obscure													
CS24OB	DGU	24.5mm (15/16")	27kg	5 minutes	76	14	13	59	12	0.84	0.73	2.73	2.6
CS25OB	DGU	25.5mm (1")	29kg	5 minutes	75	14	13	57	12	0.83	0.72	2.72	2.59
CS26OB	DGU	26.5mm (1 1/16")	32kg	10 minutes	75	14	13	57	12	0.83	0.72	2.72	2.58

NB: Conditions and calculation of the above optical and solar performance data are based on ASHRAE Standard. Performance data is based on representative value from software tabulation and information available at the time of preparation of this document which is subject to changes without notice. Actual value may vary slightly due to variations in the production process. Other glass manufacturers and coaters may use different instruments and measurement techniques. Therefore, reported performance values may vary on identical products by others.



VISIONINK® GLASS PRINT TECHNOLOGY

Custom Solutions - Designed specifically for your project

When considering security for a project there can be many influences that will need to be considered before an appropriate solution can be found. While Glasshape's range of security glass products has been designed to provide a solution for most security glass requirements we realise that your requirements may require a unique solution.

The specialist team at Glasshape® have designed custom solutions to meet specific requirements including intruder, bullet and blast protection as well as a solution for use in mental health facilities where self-harm is a concern.

If you have a project with unique requirements whether it is the threat level, thermal performance, privacy or other specific demands, talk to Glasshape® and we will design and test a glass solution to meet your needs.



Gulf Harbour - Security Pier Gates
Auckland, New Zealand
Glasshape®



VisionInk Printed, Bent & Toughened Promotional Panel
Glasshape®



Decorative Requirements

Enhance your design by adding digital ceramic printing to your security glass. Colours, gradients, patterns and even full colour pictures are all possible with the latest digital ceramic printing technology. Now your glass can add to your design aesthetics while providing the security and protection your project requires.

VisionInk® removes all the limitations of screen printing:

- Print any design, from simple lines to detailed imagery
- Six spot colours combine to create an unrivalled colour palette; bespoke premixed colours can be created too
- Complete predictability, repeatability & durability
- Extend black-out borders to include your brand/insignia (in colour if you wish)

VisionInk® combines the durability of ceramic ink with the versatility of digital printing:

- Precision control of ink thickness for prediction & manipulation of Visible Light Transfer and Solar Heat Gain variables
- Surface can be cleaned as per normal glass with no impact on the graphic
- Perfectly suited to both interior and exterior applications, with 10 year warranty against fading

Graphic Limitations (almost none!)

VisionInk® can replicate any image, design or pattern with brilliant accuracy, vibrant colours and sharp resolution. From simple lines to full colour photos, VisionInk® allows architects, engineers and designers to explore new possibilities in modern and sustainable design in interior and exterior applications.

Digital Process of Printed Glass

SW Adventist University
Glasshape®

Digital Processing



1. Initial Graphics Preparation

Acceptable File Formats:
jpg, png, dxf, dwg, pdf & tiff



PixelBlaster

2. RIP - Raster Image Process

Convert Design to BGWORK



3. Send .tiff files to Print

Colour Separation



4. Printing Process



Albert Park - Fiji
Glasshape®



Photos courtesy of VIVA Railings



Gulf Harbour - Security Pier Gates
Auckland, New Zealand
Glasshape®

Onsite Digital Measure & 3D CAD Services

Digital Site Measure Services

Our digital site measure service utilises the latest scanning hardware to produce electronic templates with unmatched accuracy, doing away with the need for cumbersome and time-consuming physical template measure and production. These templates convert into 3D renders that can be approved by the client ahead of production. This added layer of checks and balances means inaccurate measurements and human error are practically eliminated from the process.

In the event that at a later stage, a replacement piece of glass is required, we have the exact record of what was produced and can reproduce it precisely.

With Glasshapes on site digital measure service, our specialist technicians visit your site, with state-of-the-art scanning hardware to produce electronic templates with unparalleled accuracy. This is then turned into a 3D model for review and approval saving significant time and expense.

3D Laser Scanning & Digitising:

We can use your measurements, or come to the site and generate them from existing structures, whether architectural or marine, glass balustrades, windows, doors or even components unrelated to glass.

Mesh Creation:

Specialised CAD software translates the data into a 'mesh', providing an accurate representation of the project.

3D Computer Modelling:

3D CAD models are generated from the mesh geometry to ensure a perfect fit to framework. We are happy to take your existing 2D CAD files to turn into 3D models, should you require them.

Engineering Drawing:

Engineering drawings for production and quality control are subsequently generated and approved by the client.

Computer Rendering:

Should you require, we are able to produce photorealistic 'renders' of a finished project in situ to help visualise the end result for you or your clients.



3D Computer Modelling, Rendering
& Laser Scanning

About Us

Complete Security Glass Solutions

When it comes to security glass, Glasshape® understand that quality, performance, durability, safety standards and security ratings are paramount to achieving the best solution for Architects, Designers and Specifiers when creating safe and secure environments.

Combining over 30 years of industry knowledge and technical capability, Glasshape® have developed unique proprietary manufacturing processes in order to provide premium security glass solutions that address the specific needs of the security sector.

Glasshape® provide glass solutions that are specifically designed to protect embassies, residential properties, commercial buildings and retail outlets in the event of an attack from intruders; and provide a safe environment for staff and detainees in prisons, remand centres, police stations and courtrooms.

At Glasshape®, we take a customised approach. We work with clients to confirm their needs and establish the appropriate glass solutions. Our complete service includes consultation, digital site measurement, CAD design, certification, manufacturing, and review audit. With Glasshape® tailored approach; clients are assured their glass solutions are fulfilled.

About Us

Established in 1986, we are a leading innovator, designer and manufacturer of bent, toughened, laminated and digital ceramic print specialty glass. Family owned, based in Auckland, New Zealand, with offices in Australia and the US, Glasshapes philosophy of growth through innovation, ingenuity and customer service sees it deliver best-in-class glazing solutions in a variety of categories, with notable success in marine, architectural (residential and commercial), high security and heavy machinery projects.

We're driven to exceed our client's design and performance requirements using our extensive industry knowledge and technical expertise to provide the perfect solution. Glasshape® provides customised turnkey solutions from initial consult through to installation, with proven global success backed by comprehensive warranties and validated by international accreditation.

The family spirit underpins the delivery of excellence at Glasshape®. Mark Forrest and his four sons combine more than 100 years of combined experience in bent and specialist glass technology. It's always the people behind the message who deliver on the promises.



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