

Amplimesh[®] Specification Guide



A SPECIFIER'S GUIDE
TO SCREENING PRODUCTS AND THE
RELEVANT AUSTRALIAN STANDARDS



Introduction

Screened windows and doors are a popular solution for modern, sustainable buildings yet the finer details of their design and specification can be underappreciated. Often an overlooked element in the early design phase, effective screening can contribute to improved building security, performance, ventilation, energy efficiency and comfort.

When installed, screens can increase ventilation in a building while blocking out direct sunlight. Natural airflow can cool a building in the summer months and reduce the dependency on mechanical air conditioning.

Screened windows and doors can also provide an environmentally friendly way to control pests from entering indoors.

Some systems prevent intruders from break and entry and provide a protective layer over popular glass doors or windows. An important security aspect is the ability to have conversations through a door while all locking points are engaged.

Advanced systems, such as exit screens, can provide security while also providing a quick escape when an

emergency occurs.

To specify the right screening product for any given application, a thorough understanding of the different screening systems is required. Choosing the wrong screen can result in non-compliance with Australian building regulations and, in the worst cases, pose a risk to the safety of owners and occupants.

In this whitepaper, we provide a useful guide to the different types of screening products available on the Australian market – from fly screens, barrier screens and security screens to fall prevention screens, debris screens, fire attenuation screens and screens used for construction in bushfire-prone areas.



WHO IS AMPLIMESH®

Amplimesh® is one of Australia's oldest security brands, supplying security screens through a national network of licensed Amplimesh dealers.

Amplimesh® is backed by Capral Aluminium who have an extensive range of advanced commercial and residential window systems developed by one of Australia's most experienced R&D teams. Capral is Australia's largest extruder and distributor of aluminium products with five manufacturing sites strategically placed across the nation.



Amplimesh® Screening Solutions

A screening product, whether it be an entry screen door, sliding patio door or window, can fulfil many different purposes – from keeping pests out and protecting against intruders to simply providing a barrier to the outside world.

The critical differences between each type of screening product are discussed below.

SECURITY SCREENS

A “true” security screen is a product that meets the requirements of the relevant Australian Standards for security:

- ▶ AS5039.1:2023 “Security door and window screens, Part 1: Classification and performance”,
- ▶ AS5039.2:2024 “Security door and window screens, Part 2: Installation”,
- ▶ AS5039.3:2023 “Security door and window screens, Part 3: Methods of test”.

These Standards outline the testing regime for assessing the strength and structural integrity of security screen products in terms of withstanding a break-in attempt. Security screens must incorporate three-point locking and, in most states, must be installed by a licensed installer.

BUSHFIRE SCREENS

A “bushfire screen” is a screening product that is appropriate for use in bushfire-prone areas. Screening requirements for such applications are specified in AS3959:2018 “Construction of buildings in bushfire-prone areas.”

FIRE ATTENUATION SCREENS

A “fire attenuation screen” is designed to protect window openings that are less than 3m from a property boundary or within 6m of another building in the same allotment. Fire attenuation screens are engineered to reduce the radiant heat transmitted from one area to another, reducing the risk of fire spreading between buildings. The fire attenuation rating given to a screen is determined based on testing conducted in accordance with AS1530.4:2014 “Methods for Fire Tests on Building Materials” and, represents the percentage of heat that is blocked by the screen.

CYCLONIC DEBRIS SCREENS

A “debris screen” is designed to protect against flying debris caused by strong wind gusts in cyclonic regions. Debris screening must pass wind-driven debris impact testing under AS1170.2:2021 “Structural design actions, Part 2: Wind actions”.

FALL PREVENTION SCREENS

A “fall prevention screen” is a screening product that is designed to prevent a person from falling through a window or opening. Fall prevention screens are tested as part of the window system under AS5203:2016 “Protection of openable windows/fall prevention - Test sequence and compliance method”.

PRIVACY SCREENS

A “privacy screen” is designed to provide visual privacy to occupants. Privacy screens typically incorporate DVA (Direct Visual Access) mesh also known as limited vision mesh. DVA mesh is light in weight and is widely used within window and barrier door screens.

BARRIER SCREENS

A “barrier screen” is sometimes described as a “standard” screen door. While a barrier screen may give the appearance of security, such screens have not been specifically engineered to keep intruders out nor tested to the relevant Australian Standards for security, AS5039 Security Door and Window Screens, Parts 1 to 3. Amplimesh® Diamond Grille products are classed as barrier screens.

FLYSCREEN

A flyscreen is a lightweight non-intrusive screen used to reduce insects entering.

There are a wide range of configurations for screening window and door systems including fixed window security screens, fire exit security screens, security french doors, security folding doors, sliding security doors, double and single hinged doors, and so on.

Screening materials include perforated aluminium, stainless steel mesh, aluminium diamond grille, DVA mesh, fiberglass, aluminium and bronze screening

Relevant Australian Standards

Different types of screening products can be defined with reference to the relevant Australian standards. These standards specify testing methods and requirements that ensure the screening product is suitable for the proposed application.

SECURITY

AS5039.1: 2023, PART 1 CLASSIFICATION AND PERFORMANCE

AS5039.2: 2024, PART 2 INSTALLATION

AS5039.3: 2023, PART 3 METHODS OF TEST

To define a product as security, it must meet the requirements of AS5039.1, and be installed to meet the requirements of AS5039.2. These Standards provide specifications covering design and performance for hinged and sliding security screen doors and hinged, sliding, removable and fixed security window grilles with an emphasis on resisting forced entry. AS5039.3 outlines the methods for testing security screens.

DYNAMIC IMPACT TEST

This test was created to simulate a physical attack to a security screen, whether by kicking, shouldering or using a heavy object to gain entry. In this test, a 40kg bag of lead is swung into the security screen to generate 100 or 200 joules of impact energy at a specified point. To pass this test, the screen must withstand a series of five impacts with no gap greater than 150mm around the frame or between the infill material/frame. For grille-type doors, a 65mm probe also must not pass.

JEMMY TEST

This test simulates an intruder attempting to lever the screen open with a screwdriver or jemmy bar. A mechanical winch is used in an attempt to pry the screen door open at all hinging and locking locations applying a standard force of a screwdriver. All hinging and locking locations need to resist this attack with no gap greater than 150mm being generated.

PULL TEST

This test simulates an intruder attempting to pull the screen out. To replicate an intruder's approximate pulling power, up to 2kN (200kg) of force is applied to the top, bottom and sides of the security screen for 20 seconds. To pass this test, the screen must resist all pulling attempts and not allow a gap for intrusion to be made. This test is relevant to grille products or where a gap has been generated in one of the previous two tests.

PROBE TEST

This test simulates an attempt by an intruder to create a gap in the screen that allows them to get their hand or body in to unlock the door or window. The test involves applying deflecting force of 1.5kN (150kg) to each side of the opening and attempting to increase the breach to allow entry.

KNIFE SHEAR TEST

The knife shear test subjects security screen infill material to a specified level of attack by a heavy duty knife. A heavy duty knife is drawn along a 250mm line with a force of up to 350 N (35kg) horizontally and 150 N (15kg) vertically against the screen. This procedure is carried out three times, each time with a new knife along the same cut line. To pass the test, the knife strokes must not cut through the screen in a continuous line for more than 150mm.

GRILLE SHEAR TEST

The shear test simulates an intruder attempting a bolt cutter attack on a security screen. In this test, the amount of force it takes to cut one strand is measured. To pass, the force required to break one strand must be at least 3kN (300kg).

Note: Not all tests need to be conducted for all door or window screens. Depending on their makeup and screen type, only certain tests are to be conducted. Under AS5039:2023, security screen doors and window grilles are classified into different types (Type I, II or III) depending on the infill aperture material size. Table 1 "Schedule for Assessment of Compliance" in Section 5.2 of AS5039.3:2023 sets out which tests are required for the door or window based on these classifications.



FALL PREVENTION AS5203:2016

The National Construction Code (NCC) imposes requirements for the prevention of falls from openable windows. The intent of these requirements is to limit the risk of a person (especially a young child) falling through an openable window.

The requirement is divided into two categories:

1. All windows where the potential fall is 4m or more,
2. Windows in bedrooms of Class 1, 2, 3 and 4 buildings, and any room in Class 9b Early Child Care Centres where the potential fall is 2m or more.

Additionally, the Strata Schemes Management Regulation 2010 (NSW) requires protection to windows in any room where the potential fall is over 2m.

AS5203:2016 sets out methods for determining the performance of a screen. Fall protection screens must be able to resist an outward force of 250N (25kg). A 125mm diameter sphere must not pass through any opening during or after the load is applied.



BUSHFIRE CONSTRUCTION AS3959:2018

Buildings in designated bushfire-prone areas must be specifically constructed to protect against attack from bushfire. AS3959:2018 provides the method for assessing and rating new homes and renovations to one of six Bushfire Attack Level (BAL) categories (ranging from Low to Flame Zone). Specific construction requirements apply to different BALs.

Various provisions in AS3959:2018 require screening for windows and doors for ember protection (to protect openings from burning embers and debris).

Screening for ember protection is used to protect buildings from burning embers that may travel ahead of a fire and attack a building before the occupants are prepared and while windows are still open. For this reason, all operable window openings must be screened (internally or externally), using materials appropriate for the relevant BAL regardless of whether a tested window or door system is used or not.





CYCLONIC DEBRIS AS1170.2:2021

Buildings must be constructed to the level appropriate to withstand the wind forces they will be subjected to. AS1170.2:2021 provides the criteria used when determining wind speed (m/s) for a given site.

Cyclonic debris screens are used to protect vulnerable opening such as glazed windows and doors from flying debris. A failure of one of these opening types can cause a catastrophic failure of the building.

Where a screen is to be used to protect an opening in the building, it is required to pass both small and large debris impact testing.

Large debris testing involves a 100x50mm piece of wood weighing 4kg being fired at the screen at a nominated speed, whereas small debris testing involves ball bearings being shot at the screen to represent gravel.

The impact speeds vary based on building type, location and use. Typical speeds for residential buildings are 35m/s (125km/hr) and the fastest speed reserved for post-disaster buildings is 44m/s (158km/hr).



FIRE ATTENUATION AS1530.4:2014 (APPENDIX B7)

Clause C3.4 of Volume 1 of the NCC requires openings in external walls be protected from fire when the walls are in close proximity to adjoining property boundaries. Any window openings or other openings in external fire-rated walls are required to be protected. One method of protection is the use of fire attenuation screens.

Fire engineers must demonstrate that fire attenuation screens meet the Performance Requirements of CV1 and CV2 in the NCC. These requirements outline the heat flux which will be acceptable at any distance from a building or boundary. Fire attenuation screens are tested to determine resistance to heat flux in accordance with Appendix B7 of AS1530.4:2014.

Amplimesh® Fire Attenuation screens have been subjected to two hours of rigorous testing by the CSIRO and in accordance with relevant Australian Standards.

A registered fire certifier or fire engineer should be consulted with regards to installation of the Amplimesh® security product as a fire attenuation screen. Installation must be in accordance with



details outlined in the Amplimesh® OneFrame and/or SupaScreen® technical manuals Section 6.

During testing, Amplimesh® OneFrame and SupaScreen® was subjected to an irradiance heat of 40kW/m² for a period of 2-hours and demonstrated a reduction to radiant heat by up to 59%, significantly lowering the threat of fire.

Locks, Fixings & Emergency Escape



THREE-POINT LOCKS

A three-point lock is standard with a compliant security door and should not be considered an “add on.”

A three-point lock is one that has locking points on the top and bottom of the door as well as at the centre, all driven by the action of the centre lock. They can help prevent the bottom or top of the door being wrenched back by an intruder.

If a single point lock is used, the solution is not compliant to AS5039. Key locks should be five-pin cylinder or equivalent. Electronic locks are available which can integrate with other home automation products.



FIXINGS

When window screens are fitted for security or fire attenuation, there are a number of methods for fixing. In architectural applications, concealed fixings may be desirable to maintain a sleek, tidy external appearance to a building.



ESCAPE SCREENS

Escape screens are commonly used on bedroom windows to ensure occupants have an escape route during an emergency. From the outside, they function as security products.

Escape screens often operate using a simple latch mechanism.

Secure buildings with Amplimesh®

Backed by Capral Aluminium, Amplimesh® is an icon in the Australian security market, with a full selection of entrance security doors, fire escapes, sliding doors, folding doors and security window screens for any application.

Amplimesh® Security Screens are a tough but attractive way of keeping both intruders and insects out.

All Amplimesh® products are manufactured and tested to meet and exceed relevant Australian standards for safety and security. This includes testing against cutting attacks, kicking, pushing, and pulling impact attacks.

The high tensile 316 marine-grade stainless-steel used in the mesh for SupaScreen® and OneFrame systems makes it more resilient to cyclonic impacts and has been performance tested against flying debris (single impacts).

SupaScreen® has also undergone recent independent impact testing to ensure it is the suitable product

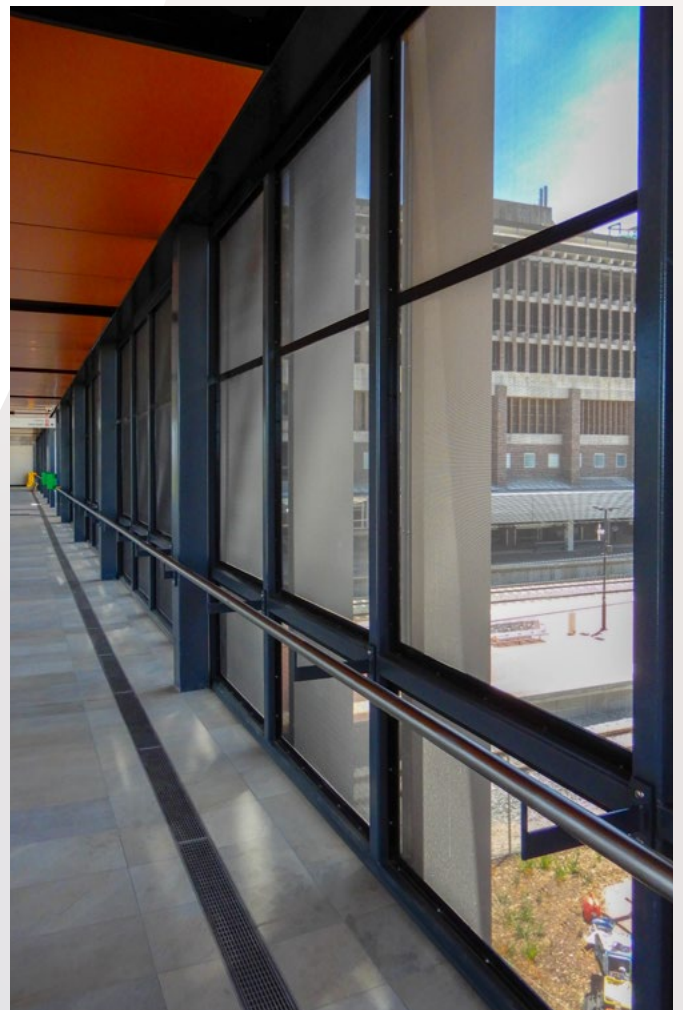
of choice for public commercial projects. Unlike competitor products, SupaScreen® has a unique assembly method that ensures no dissimilar metal surfaces come into contact, avoiding unsightly bimetallic corrosion.

Made from specially-tempered 5052 marine-grade aluminum with a distinguished perforated design, IntrudaGuard® security sliding doors and windows are assembled using a unique bonding process that eliminates the need for any unsightly fixings.





As a testament to the product's versatility, Amplimesh® Security Screens were fitted on the advanced pedestrian overpass in East Perth Train Station. The screens delivered on a range of design outcomes, allowing the project team to minimise the extent of glazing on the overpass, reducing damage and maintenance costs resulting from vandalism, while providing protection from the working rail corridor below. The screens are also “anti-throw”, ensuring that there is no damage to passing trains and commuters from flying objects.



OUR RANGE SUPASCREEN®

Strong and discreet, SupaScreen® is made out of genuine Meshtec high tensile 316 Marine Grade Stainless Steel that is woven into a fine mesh. With a wide 156° angle of view, SupaScreen® is a modern innovation in security technology under the guise of a flyscreen.

SupaScreen® security screen doors and window screens are assembled using a patented "pressure fit" mesh retaining system. This technology prevents the aluminium frame and 316 Marine Grade Stainless Steel mesh from coming into contact with each other, resisting galvanic corrosion and increasing the products lifespan.

This system also eliminates the need for screws, rivets, pins or snap-ins to retain the mesh panel.

Originating in Australia, Meshtec International is the global leader in supplying high tensile stainless steel security screens.

Each strand of wire used to manufacture SupaScreen® mesh is individually tested to stringent international standards.



AVAILABLE AS:

-  HINGED DOOR
-  SLIDING DOOR
-  FOLDING DOOR
-  FIXED WINDOW
-  SLIDING EXIT WINDOW
-  HINGED EXIT WINDOW

HOW TO SPECIFY

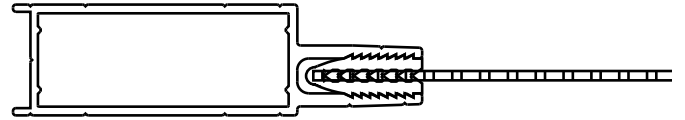
Security Window/Doors to be Amplimesh Supascreen with 316 Stainless Steel Mesh

NATSPEC WORK SECTION

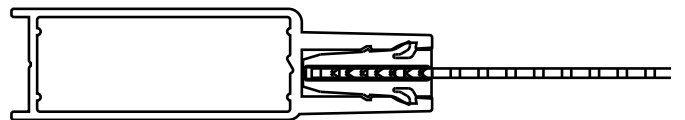
0451p Capral Aluminium windows and doors
















PROFILE & SCREEN CLAMPING

In SupaScreen® System



In OneFrame® System



 MATERIAL	316 Marine Grade Stainless Steel (0.8mm high tensile) 900±40MPa
 SCREEN APERTURE	1.5mm x 1.6mm
 FRAME	Aluminium
 WARRANTY	16 years
 VIEWING ANGLE	156°
 VENTILATION/AIR FLOW	41%
 BAL RATING	BAL40 / BALFZ ²
 FALL PREVENTION	✓
 CYCLONIC REGION	✓
 KNIFE SHEAR TEST	✓
 UV PROTECTION	✓
 TRIPLE-LOCK	✓
 IMPACT RESISTANT	✓
 INSECT PROTECTION	✓
 PRICE RANGE	\$\$\$

OUR RANGE STORMGUARD®

At the center of every StormGuard® screen, is an ultra high tensile Stainless steel mesh which offers exceptional strength and corrosion resistance, without compromising on natural light and ventilation.

StormGuard® cyclone screens have been rigorously tested to meet the requirements of cyclonic impact speeds up to 44m/s.

The StormGuard® patented* Isolated Screw Clamp (ISC) mesh retention system combines extreme wedge pressure, high friction materials, and custom engineered screw clamps to efficiently absorb and disperse impact energy equally along the frame ensuring every single mesh strand is secured.

* Innovation Patent No. 2021102984



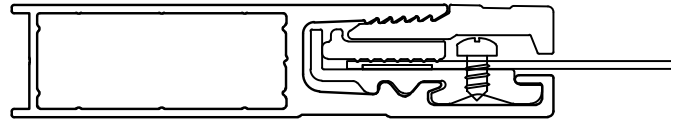
AVAILABLE AS:

- HINGED DOOR
- SLIDING DOOR
- FIXED WINDOW
- HINGED EXIT WINDOW

HOW TO SPECIFY

Security Window/Doors to be Amplimesh StormGuard with 304 Stainless Steel Mesh

PROFILE & SCREEN CLAMPING



MATERIAL	316 Marine Grade Stainless Steel (0.8mm high tensile) 900±40MPa	304 Stainless Steel (1.2mm high tensile) 900±40MPa
SCREEN APERTURE	1.5mm x 1.6mm	1.9mm x 2.1mm
FRAME	Aluminium	
WARRANTY	16 years	
VIEWING ANGLE	156°	
VENTILATION/ AIR FLOW	41%	
BAL RATING	BAL-40	
FALL PREVENTION	✓	
CYCLONIC REGION	✓	
KNIFE SHEAR TEST	✓	
UV PROTECTION	✓	
TRIPLE-LOCK	✓	
IMPACT RESISTANT	✓	
INSECT PROTECTION	✓	
PRICE RANGE	\$\$\$\$	

OUR RANGE INTRUDAGUARD®


Durable and corrosion-resistant, IntrudaGuard® is made from a single sheet of marine-grade aluminium with a distinguished design, making it not only corrosion resistant, but easy to maintain.

Offering a 119° angle of view, IntrudaGuard® screens reduce glare whilst allowing fresh air to flow through your home.

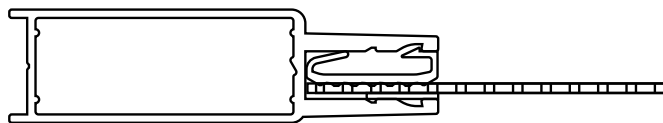
IntrudaGuard® security doors and patented bonding process with a bead that eliminates the need for any unsightly fixings.
















On top of this, as all materials are aluminium, there is no chance of galvanic corrosion.

AVAILABLE AS:

-  HINGED DOOR
-  SLIDING DOOR
-  FOLDING DOOR
-  FIXED WINDOW

PROFILE & SCREEN CLAMPING



 MATERIAL	5052 Marine Grade Aluminium Alloy (1.2mm)
 SCREEN APERTURE	2.0mm
 FRAME	Aluminium
 WARRANTY	10 years
 VIEWING ANGLE	119°
 VENTILATION/AIR FLOW	40%
 BAL RATING	BAL29
 FALL PREVENTION	✓
 CYCLONIC REGION	✗
 KNIFE SHEAR TEST	✓
 UV PROTECTION	✓
 TRIPLE-LOCK	✓
 IMPACT RESISTANT	✓
 INSECT PROTECTION	✓
 PRICE RANGE	\$\$

HOW TO SPECIFY

Security Window/Doors to be Amplimesh Intrudaguard with 5052 marine grade aluminium perforated sheet

NATSPEC WORK SECTION

0451p Capral Aluminium windows and doors
















SUPASCREEN®

STORMGUARD™

INTRUDAGUARD®

PRIVACYGUARD®

DIAMOND GRILLE

 MATERIAL	316 Marine Grade Stainless Steel Mesh (0.8mm high tensile) 900±40MPa	316 Marine Grade Stainless Steel Mesh (0.8mm high tensile) 900±40MPa	304 Stainless Steel Mesh (1.2mm high tensile) 900±40MPa	5052 Marine Grade Aluminium Alloy (1.2mm Perforated)	Aluminium (1.2mm Punched)	Aluminium (7mm)
 SCREEN APERTURE	1.5mm x 1.6mm	1.5mm x 1.6mm	1.9mm x 2.1mm	2.0mm	4mm x 1mm	N/A ³
 FRAME	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium	Aluminium
 WARRANTY	16 years	16 years	16 years	10 years	7 years	N/A
 VIEWING ANGLE	156°	156°	156°	119°	Restricted vision mesh	N/A
 VENTILATION/AIR FLOW	41%	41%	41%	40%	10.8%	N/A ³
 BAL RATING	BAL40 / BALFZ ²	BAL40	BAL-40	BAL29	BAL29	N/A
 FALL PREVENTION	✓	✓	✓	✓	✓	✓
 CYCLONIC REGION	✓	✓	✓	✗	✗	✗
 KNIFE SHEAR TEST	✓	✓	✓	✓	✓	✓ ⁴
 UV PROTECTION	✓	✓	✓	✓	✓	✗
 TRIPLE-LOCK	✓	✓	✓	✓	✓	✓
 IMPACT RESISTANT	✓	✓	✓	✓	✓	✗
 INSECT PROTECTION	✓	✓	✓	✓	✓	✓
 PRICE RANGE	\$\$\$	\$\$\$\$	\$\$\$\$	\$\$\$\$	\$\$	\$

¹ Insect or security mesh provides an effective barrier to insects larger than the stated aperture of the mesh. Insects smaller than the stated aperture may not be impeded.

² Bushfire Testing for SupaScreen® (Australian Standard AS3959-2018) SupaScreen® has been independently tested to meet the requirements for BAL-40 (Bushfire Attack Level). When used in bushfire prone areas rated BAL-FZ SupaScreen® must be used in conjunction with a window that has an FRL of at least -/30/- or in accordance with AS1530.8.2.

³ Dependant on mesh used with Diamond Grille

⁴ Grille shear test

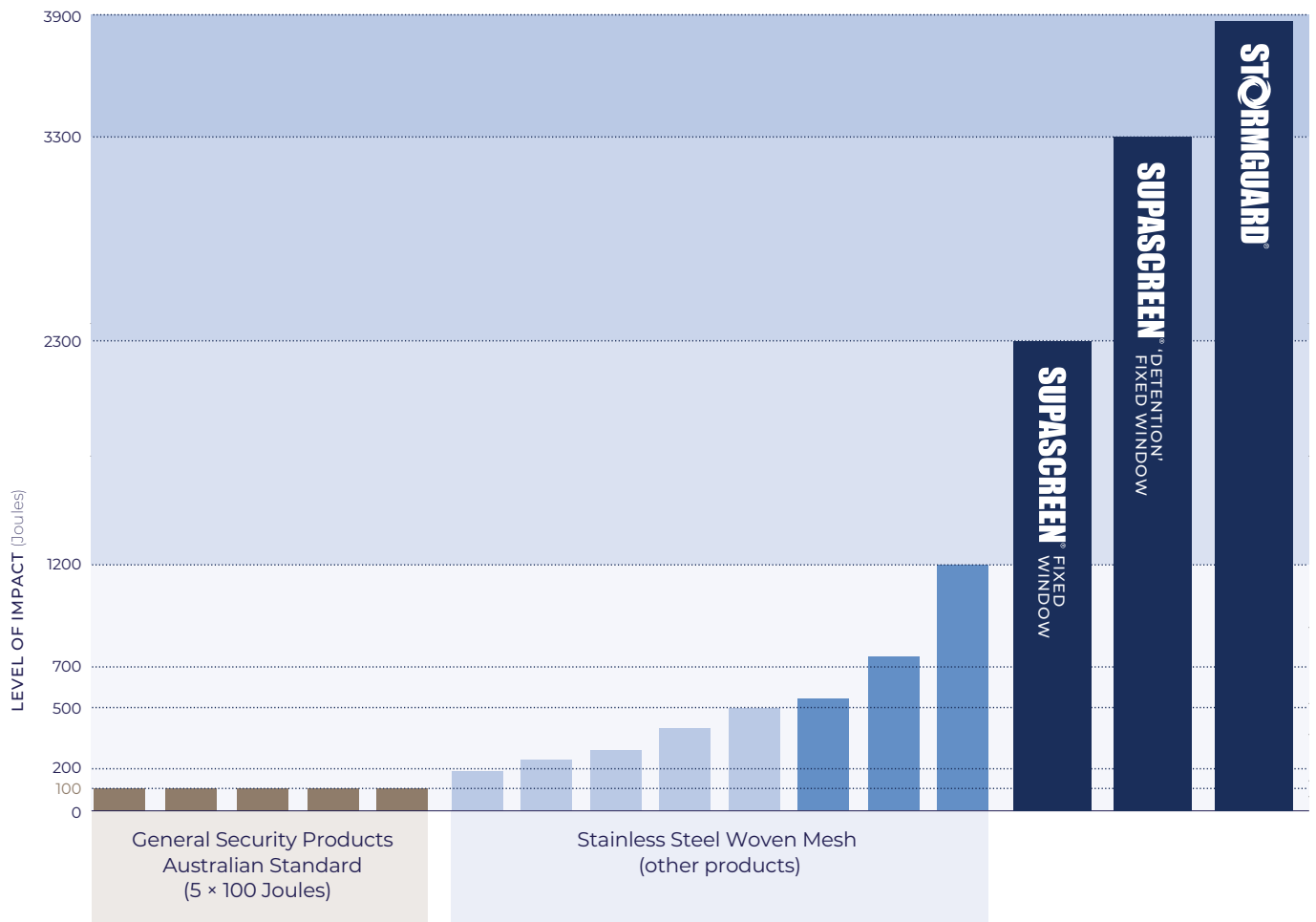
Specification Details

SPECIFICATIONS	316 STAINLESS STEEL MESH SUPASCREEN/CAPRAL SECURITY SYSTEM
MESH MATERIALS	316 Stainless Steel
TENSILE STRENGTH	900±40 Mpa
MESH THICKNESS (DIAMETER)	0.8mm
VENTILATION/OPEN AREA	43% *
ANGLE OF VIEW	156 Degrees
STRANDS PER INCH	11
MESH FIXING/ ASSEMBLY METHOD	Patented Pressure Fit Technology. No contact between the stainless mesh and aluminium frame. No screws, glues or clamps penetrating the mesh
APERTURE SIZE	1.55mm (1.5mm x 1.6mm) **
WARRANTY	16 years standard warranty
JEMMY TEST AS 5039 & AS 5041	✓
KNIFE SHEAR TEST AS 5039 & AS 5041	✓
DYNAMIC IMPACT TEST AS 5039 & AS 5041	<ul style="list-style-type: none">▶ 25 x 100 Joule Impacts on a single sample▶ 5 x 200 Joule Impacts on a single sample▶ 5 x 300 and 1 x 400 Joule Impacts on a single sample▶ 13 x 400 Joule Impacts on a single sample▶ 49 x 500 Joule Impacts on a single sample
SINGLE IMPACT TEST	<ul style="list-style-type: none">▶ Standard Series 2300 Joules▶ Detention Fixing 3300 Joules
CYCLONIC IMPACT TESTING AS 1170.2-2011	✓
FALL PREVENTION	✓
FIRE ATTENUATION TEST	✓ 59% attenuation level for 121 minutes
BUSHFIRE RATED	✓ BAL 40 and BAL-FZ when used in conjunction with a window that has an FRL of at least -/30/- or conforming with AS1530.8.2
SALT SPRAY TESTING	3,000hr under both acetic acid salt spray and neutral salt spray test regimes 10,000 hour neutral salt spray milestone on mesh, equivalent to over 25 years of usage.
ENERGY EFFICIENCY	Up to 56% improved

* Based on average open area from mesh supplier's report

** Based on average wind tunnel testing from mesh supplier

AMPLIMESH SUPASCREEN® & STORMGUARD® SINGULAR IMPACT PERFORMANCE TESTING



Lower-carbon Aluminium

Amplimesh Security Screens can be specified with lower-carbon aluminium frames using Capral's LocAl lower-carbon aluminium.

When specifying Amplimesh Security Products, consider choosing LocAl Green to substantially reduce the embodied carbon associated with the security screens in your project.

To find out more about LocAl, visit lowercarbonaluminium.com.au

Global Average



12.46kg CO₂e/1kg Al



8kg CO₂e/1kg Al



4kg CO₂e/1kg Al

Capral utilises a Mass Balance System in line with ISO 20095:2020 Chain of Custody to manage its LocAl Products. Kilograms emitted per kilogram of aluminium produced - Aluminium Smelting and Casting.

Authorised dealer:

ASI

ALUMINIUM SECURITY INDUSTRIES

SCREENS | SHUTTERS | BLINDS.

680 North East Road, Holden Hill

Ph: 8261 8377



FOR MORE INFORMATION, VISIT
amplimesh.com.au
or call 1800 267 546



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CAPRAL
ALUMINIUM

Need specification assistance?
Contact us at specify@capral.com.au

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