Microlouvre Fabric®

Bushfire & Wildfire Screens

Smartlouvre Technology

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MicroLouvre®

FIRE PERFORMANCE

Building Attack Level Protection:

- **BAL/FZ/BAL-40 AS3959**

Fire/Heat Attenuation:

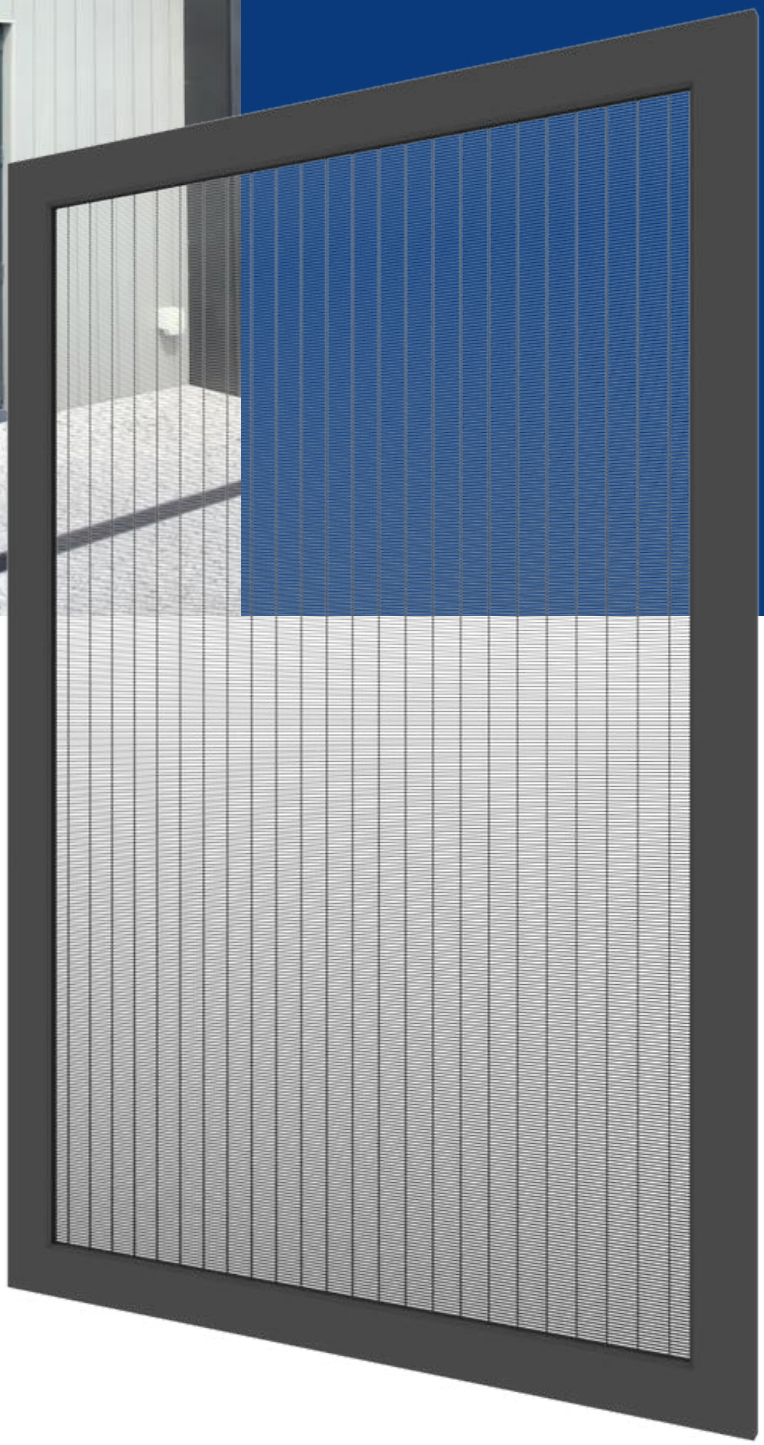
- **49.4% CSIRO**

Burning Ember Exclusion:

- **BAL-FZ AS3959-2009 100% (>1.2mm)**

Reaction to fire:

- **A1/A2-s1,d0:BSEN 13501 - 2007+A1:2009**



HEIGHTS UP TO 3 metres

WIDTHS UP TO 1.8 metres

ANY SHAPE OR COLOUR

Bushfire Protection

The MicroLouvre® bushfire screen incorporates specially angled louvres that are only 1.2mm thick. The innovative louvre design prevents flame penetration from ember attacks and burning debris. Testing was performed with industry leading results at the CSIRO.

As the louvres are spaced 2mm apart, the MicroLouvre® bushfire screen provides protection to AS3959 up to BAL-FZ. A MicroLouvre® bushfire screen can provide complete solar shading and fire protection of a whole window up to BAL-19.

Bushfire & Wildfire Heat Attenuation	1 MicroLouvre®	2 Leading Competitor Screens	3 Leading Competitor Screens	4 Leading Competitor Screens	5 Leading Competitor Screens
	49.4%	37%	19%	31%	25%
Irradiance at 365*	10.9kW/m2	13.8	17.7	15	16.3
Solar heat gain (gtot)	8%**	39%	37%	36%	39%
Natural Ventilation open area	80%	44%	41%	44%	44%
High visibility through	✓	✗	✗	✗	✗

- Results based on 40kW/m2 incident irradiance
- ** Low E Double Glazing, seun and 40°

MicroLouvre has been tried and tested in countries where wildfires and bushfires are rife. When tested by CSIRO, Australia's National Science Agency, it achieved the best rating of 49.4% heat attenuation, providing protection to AS3959 Burning Ember Exclusion, as well as up to BAL-FZ and complete protection of a whole window up to BAL-40.

As our metal louvres are so close together, any flying embers of debris from fire hits the MicroLouvre® and stops the fire particles reaching the window and spreading through the building. Our non-combustible copper also means that this won't damage your MicroLouvre® screens.

Australia has one of the worst bushfire situations in the world. Every year, the bushfires last longer, spread further, and become harder to put out. One of the main issues is getting the fire under control as it will keep catching to combustible objects and therefore continue to spread.

MicroLouvre is made of non-combustible metal fabrics that are proven to the highest world standards to block fire from reaching the windows and attenuate the heat.

Wildfire Protection

The destruction of buildings in America due to wildfire outbreaks costs tens of billions of pounds in losses every year.

High rise buildings have been created to curb the problem of overcrowding, but with fires in these buildings more like to occur, spread faster, and harder to control, combined with global warming, this figure is going to continue to rise.

MicroLouvre is proven to reduce the chances of a building catching fire from overheating, as well as blocking fire attacks before they reach your windows and enter the building.

Not only does MicroLouvre have amazing fire safety properties, but the screens also allow perfect vision out. MicroLouvre screens have 68% openness factor, 0.00 gtot, and 43% light transmittance, meaning you don't have to worry about moving the screens like regular interior and exterior blinds.

The screens are easily passively installed to the building. They fix to the facade or existing windows or mullions to complement the original building design.

We have several standard fix options that suit most buildings, but we can also accommodate bespoke requirements.

BAL (Bushfire Attack Level Assessment):

BAL stands for Bushfire Attack Level Assessment. It is a measure used to assess the potential risk and severity of a building's exposure to bushfire attack.

Purpose of BAL

Informing Bushfire Planning and Building Design

- The purpose of BAL (Bushfire Attack Level) is to inform and guide bushfire planning and building design in areas prone to bushfires.
- It helps determine the appropriate level of construction and building materials to minimize the risk of damage or destruction.

Factors Considered in BAL Assessment

Informing Bushfire Planning and Building Design

- The purpose of BAL (Bushfire Attack Level) is to inform and guide bushfire planning and building design in areas prone to bushfires.
- It helps determine the appropriate level of construction and building materials to minimize the risk of damage or destruction.

BAL Rating	Meaning	Construction Requirements
BAL-Low	Low risk of ember attack and radiant heat exposure.	No specific construction requirements, but general maintenance and clearing of vegetation is recommended.
BAL-12.5	Moderate risk of ember attack and some exposure to radiant heat.	Sealing gaps and openings, ember-resistant vents, and non-combustible materials for external walls and roofs.
BAL-19	Increased risk of ember attack and increased exposure to radiant heat.	Sealing gaps and openings, ember-resistant vents, non-combustible materials for external walls and roofs, and protection for windows and doors.
BAL-29	High risk of ember attack and increased exposure to radiant heat.	Sealing gaps and openings, ember-resistant vents, non-combustible materials for external walls and roofs, protection for windows and doors, and additional measures for eaves and subfloor areas.
BAL-40	Very high risk of ember attack and intense exposure to radiant heat.	Sealing gaps and openings, ember-resistant vents, non-combustible materials for external walls and roofs, protection for windows and doors, additional measures for eaves and subfloor areas, and increased requirements for decking and other vulnerable elements.
BAL-FZ	Extreme risk of ember attack and direct exposure to flames.	Sealing gaps and openings, ember-resistant vents, non-combustible materials for external walls and roofs, protection for windows and doors, additional measures for eaves and subfloor areas, increased requirements for decking and other vulnerable elements, and specific requirements for glazing and screens.

BAL Ratings and Their Meanings

BAL ratings are used to assess the risk and potential impact of a bushfire attack on a building. These ratings range from low to extreme and help determine the construction requirements and building materials needed to ensure the building's resilience to bushfires.

Understanding Wildfires and Bushfires

Wildfires and bushfires are natural disasters that can cause significant damage to the environment and pose risks to human lives and property. It is important to understand the causes and characteristics of these fires in order to effectively protect against them.

Causes
Wildfires and bushfires can be caused by a variety of factors, including:

- Natural causes such as lightning strikes.
- Human activities such as campfires, discarded cigarettes, or arson.
- Environmental conditions such as high temperatures, low humidity, and strong winds.

Characteristics
Wildfires and bushfires can exhibit the following characteristics:

- Rapid spread: These fires can spread quickly, fueled by dry vegetation and strong winds.
- Intense heat: The heat generated by these fires can be extremely high, causing damage to structures and vegetation.
- Smoke and ash: Wildfires and bushfires produce large amounts of smoke and ash, which can reduce visibility and impact air quality.
- Ember attacks: Burning embers can be carried by the wind and start new fires, making it difficult to control the spread of the fire.

The Dangers of Wildfires and Bushfires

Property Destruction
Wildfires and bushfires can cause extensive damage to homes, buildings, and infrastructure. The intense heat and flames can quickly engulf and destroy everything in their path.

Threat to Human Life
These natural disasters pose a significant threat to human life. The fast-spreading fires can trap people, making it difficult to escape to safety. The inhalation of smoke and toxic gases can also lead to severe health issues and even death.

How MicroLouvre™ Combines Solar Shading + Fire Safety

Comfortable temperatures, natural ventilation and contact with the outside are vital for our well-being. Typical, traditional external shading fabrics just block and distort natural light, vision out and natural ventilation.

In contrast, with MicroLlouve™ solar shading there is no trade-off. With an 80% open area, you get full shading and heat block plus:

- complete vision out
- natural ventilation
- 100% CRI perfect light quality.

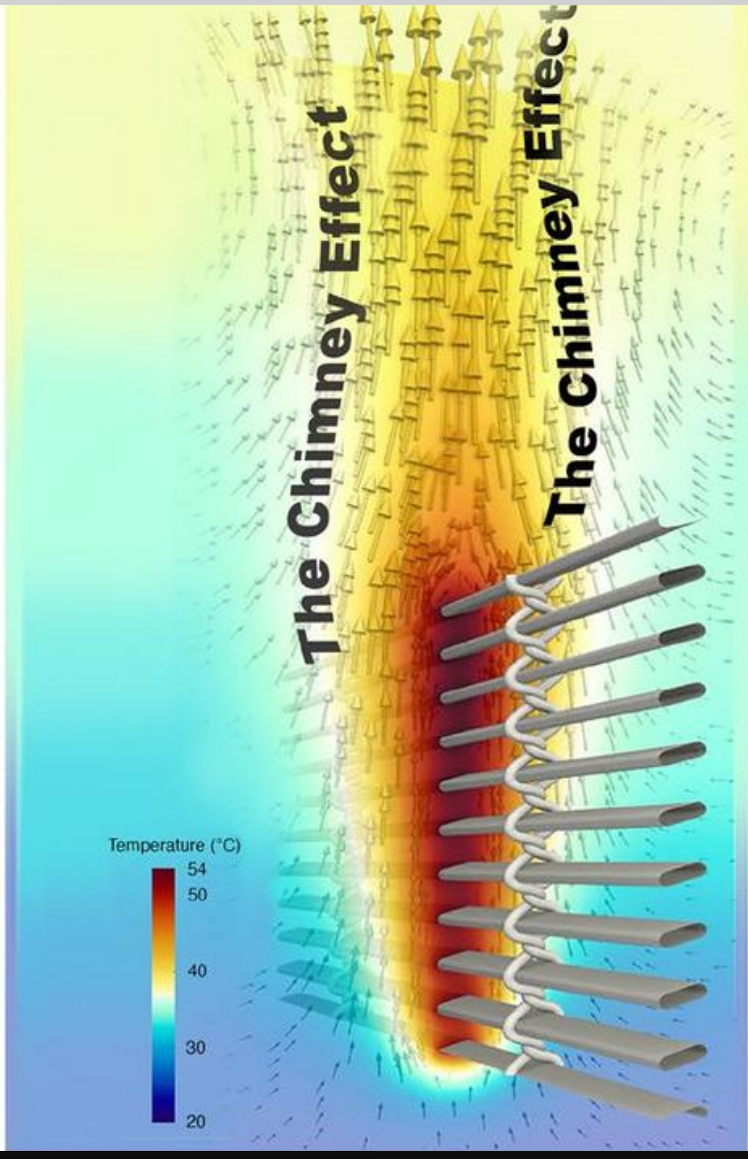
The bronze louvres in MicroLouvre's angle-selective technology, are specifically designed to absorb nearly 100% of radiated heat from the sun like a sponge, venting it away before it reaches the glazing.

The Chimney Effect

The impact of the heat from the paper-thin bronze louvres on the circulating air is negligible and the air is driven upwards in a laminar flow so the louvres cannot transfer heat to the incoming air.

This is the **'Chimney Effect'**, a thermal column of heated air driven upwards to be naturally ventilated away from the glazing to the outside. The Chimney Effect has been successfully modelled and proven by SimScale.

(Modelling computational fluid dynamics and thermal performance of MicroLouvre™ - SimScale 2020)



MicroLouvre® KEY PERFORMANCE INDICATORS

Thermal Comfort*

Solar Shading (Ss)	100%
Solar Heat Block (Shb)	100%
Solar Heat Gain (gtot)	0.00 (glazing A-E)
Solar Transmittance (Ts)	0.00 (Fraunhofer ISE)
Solar Absorbtance (As)	0.97 (Fraunhofer ISE)
Solar Reflectance (Rs)	0.03 (Fraunhofer ISE)

Visual Comfort

Light Transmittance (Tv)	51%
Colour Rendering Index	100%
Visual Contact with the Outsi	Class 4 (EN14501)
Daylight Utilisation	Class 4 (EN14501)

Environmental Comfort

Natural ventilation	80% Open Area
Privacy & Visual Security*	100%
Insect & Pest Protection	100% (>1.2mm)

Fire Performance

Reaction to Fire	A1/A2-s1,d0:BSEN 13501 - 2007+A1:2009
Burning Ember Exclusion	BAL-FZ AS3959-2009 100% (>1.2mm)
Fire/Heat Attenuation	49.4% CSIRO
Building Attack Level Protection	BAL-FZ/BAL-40 AS3959

Wind Performance (BRE)

Wind Resistance	Hurricane: > Force 12 Hurricane: Cat 2
Wind Loading	14.65kg/m2 @ 60mph

Energy Saving Performance LBNL California

Air Conditioning Reduction	68%+
Energy Consumption	Nil

Durability Performance

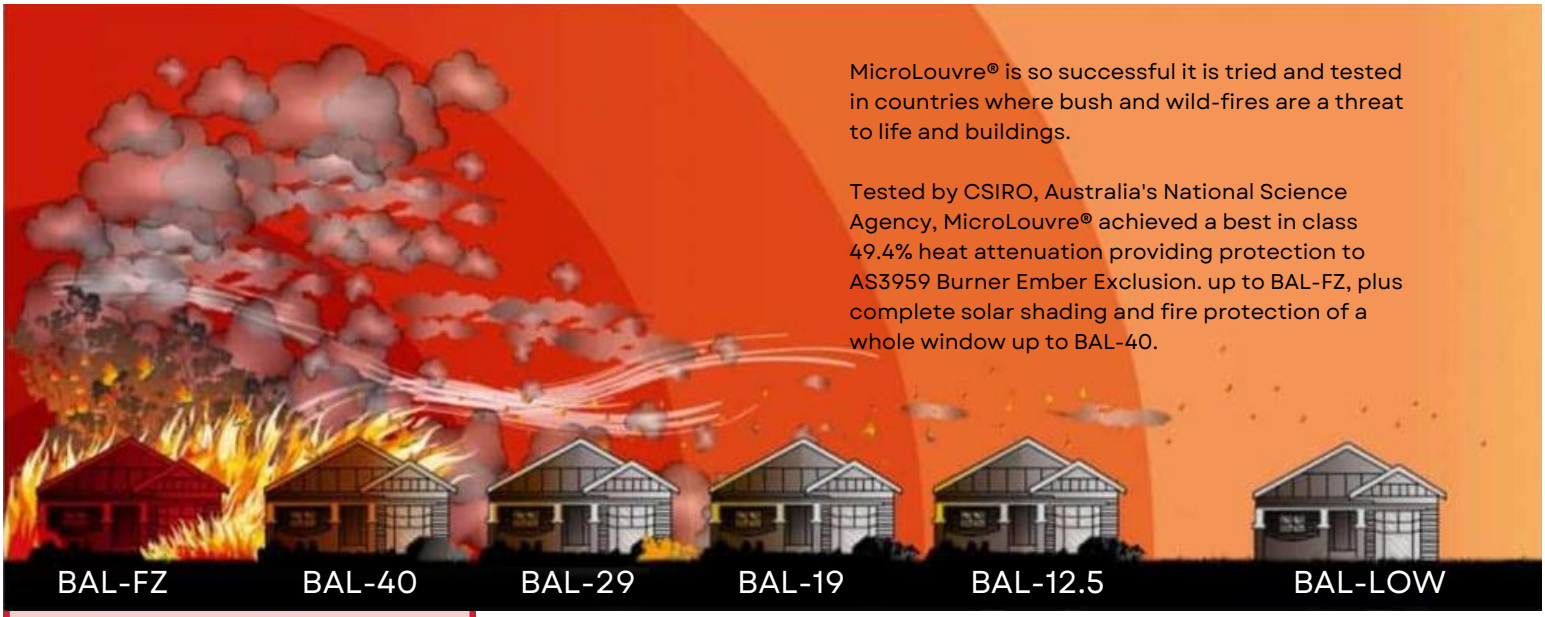
Oldest Operational Installation	60+ Years
Maintenance	Nil

*angular selective >40° **angular selective 0° @ normal incidence or 90° to the planar surface

MicroLouvre®: Wildfire + Flying Burning Ember Protection

MicroLouvre® flying burning ember protection for close proximity building fires, bush fires and wildfires

MicroLouvre® metal fabric has paper-thin bronze louvres, angled at 17°, each only 1.2mm apart with over 17 miniature louvres in every 25mm/1”of the metal fabric, thereby effectively stopping dangerous flying embers from lodging on, or entering into a building and spreading the fire.



MicroLouvre® is so successful it is tried and tested in countries where bush and wild-fires are a threat to life and buildings.

Tested by CSIRO, Australia's National Science Agency, MicroLouvre® achieved a best in class 49.4% heat attenuation providing protection to AS3959 Burner Ember Exclusion. up to BAL-FZ, plus complete solar shading and fire protection of a whole window up to BAL-40.

BAL-FZ	BAL-40	BAL-29	BAL-19	BAL-12.5	BAL-LOW
Direct exposure to flames, radiant heat & embers from the fire front.	Increasing ember attack & windborne debris, radiant heat between 29kW/m2 & 40kW/m2	Increasing ember attack & windborne debris, radiant heat between 19kW/m2 & 29kW/m2	Increasing ember attack & windborne debris, radiant heat between 12.5kW/m2 & 19kW/m2	Ember attack radiant heat below 12.5kW/m2	Insufficient risk to warrant specific construction requirements. Some risk remains.

How MicroLouvre™ Combines Solar Shading + Fire Safety

Fire Safe: For People & Building Protection

Fires in medium and high rise buildings are becoming increasingly commonplace and more and more regulations are demanding A1/A2 etc Reaction to Fire / Fire Resistance for external attachments like sun shading devices: MicroLouvre® is Part B Compliant.

MicroLouvre® is a multi-function, all-in-one shading, natural ventilation & daylight maximising system and is fully A1/A2 -s1,d0 to EN 13501

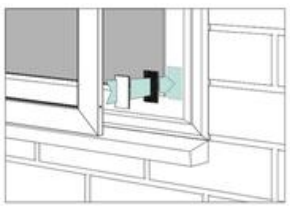
Burning Ember & Ash Protection

MicroLouvre® also achieves the top Classification for Wildfire and Bush Fire protection to:

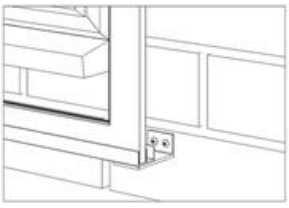
- AS 3959
- BAL- FZ Top Classification: Direct exposure to flames, radiant heat and burning embers
- BAL -40 Top Classification: Ember attack and burning debris. Radiant Heat 29 KW/m² and 40KW/m²

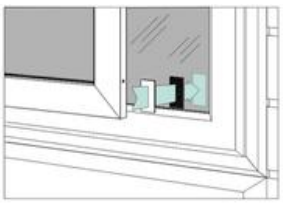
MicroLouvre® screens are simple, quick and easy to install or retrofit

Method of fixings depend on the facade or window frame materials.
The recommendation is that suitable, fit for purpose mechanical fixings are always used.

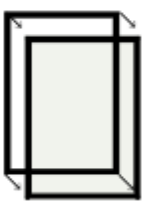

Frame Fix

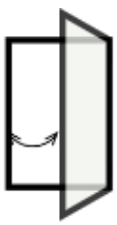

MullionFix

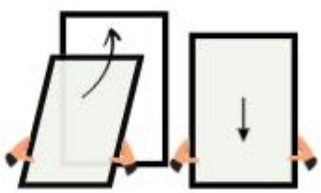

Masonry Fix

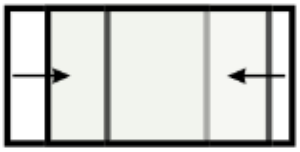

Glass Fix

MicroLouvre® screens are simple, quick and easy to remove for access to windows


Snap on/off


Hinged


Lift-in/Lift-out
(in channels)


Horizontal Sliding
(in channels)


Vertical Sliding
(in channels)

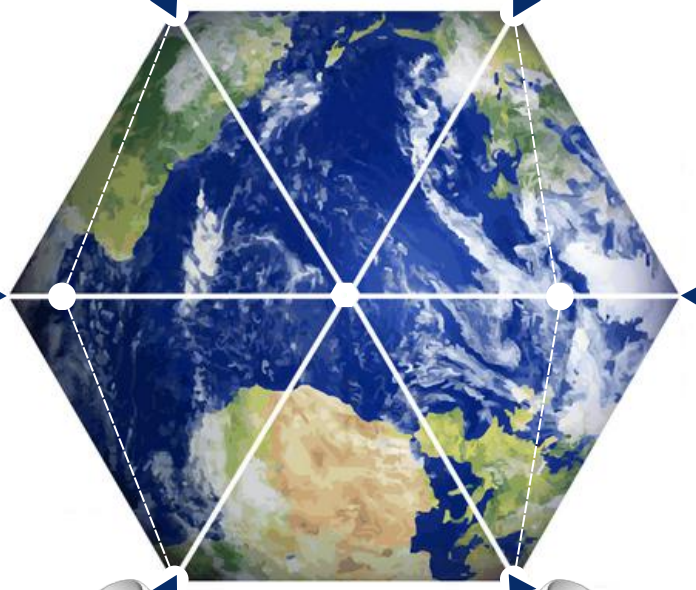
We meet the needs of the present without compromising the ability of future generations to meet their own needs

MicroLouvre® is also a passive system that requires zero energy to maintain peak performance

0%

MicroLouvre® metal fabrics & frames are fully recyclable

100%



The metal fabrics are made from over 90% recycled scrap copper

90%

Air conditioning usage can be reduced by over when used as Solar Shading

68%

MicroLouvre® has proven longevity with over 60 maintenance free years

60+

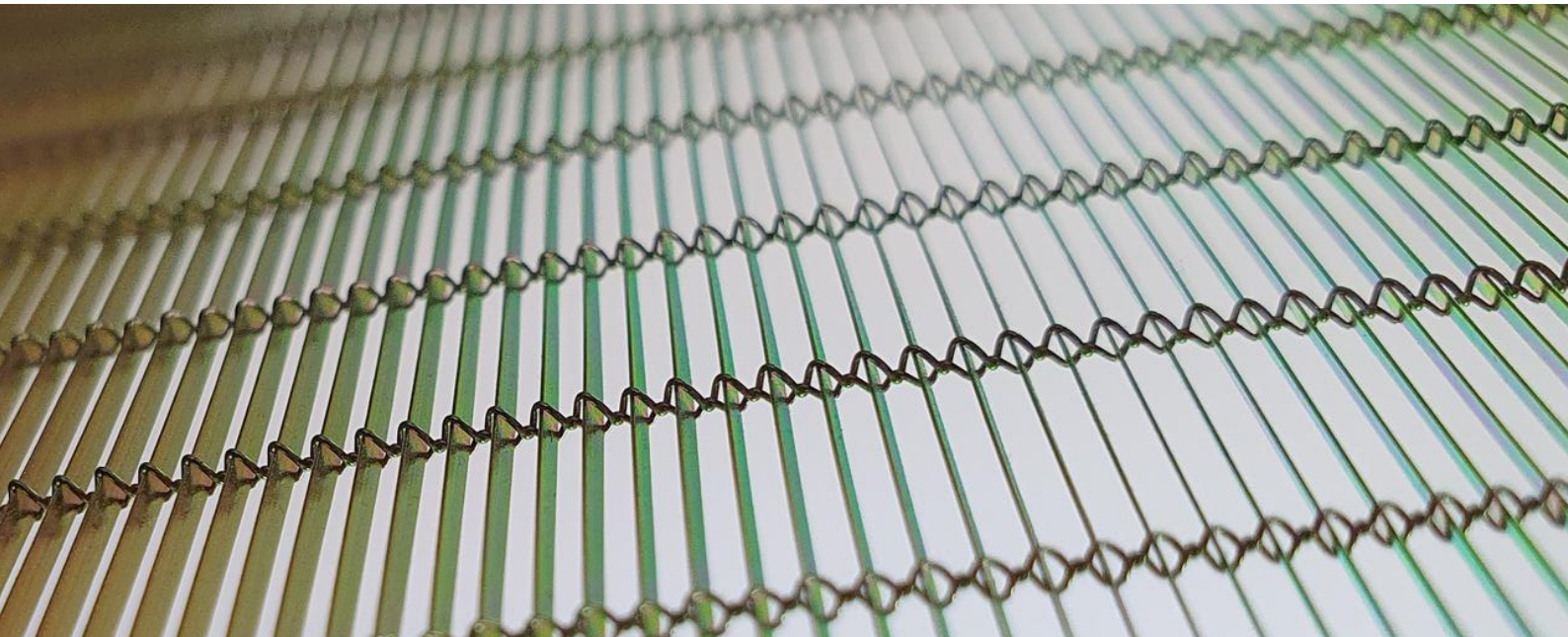
100%

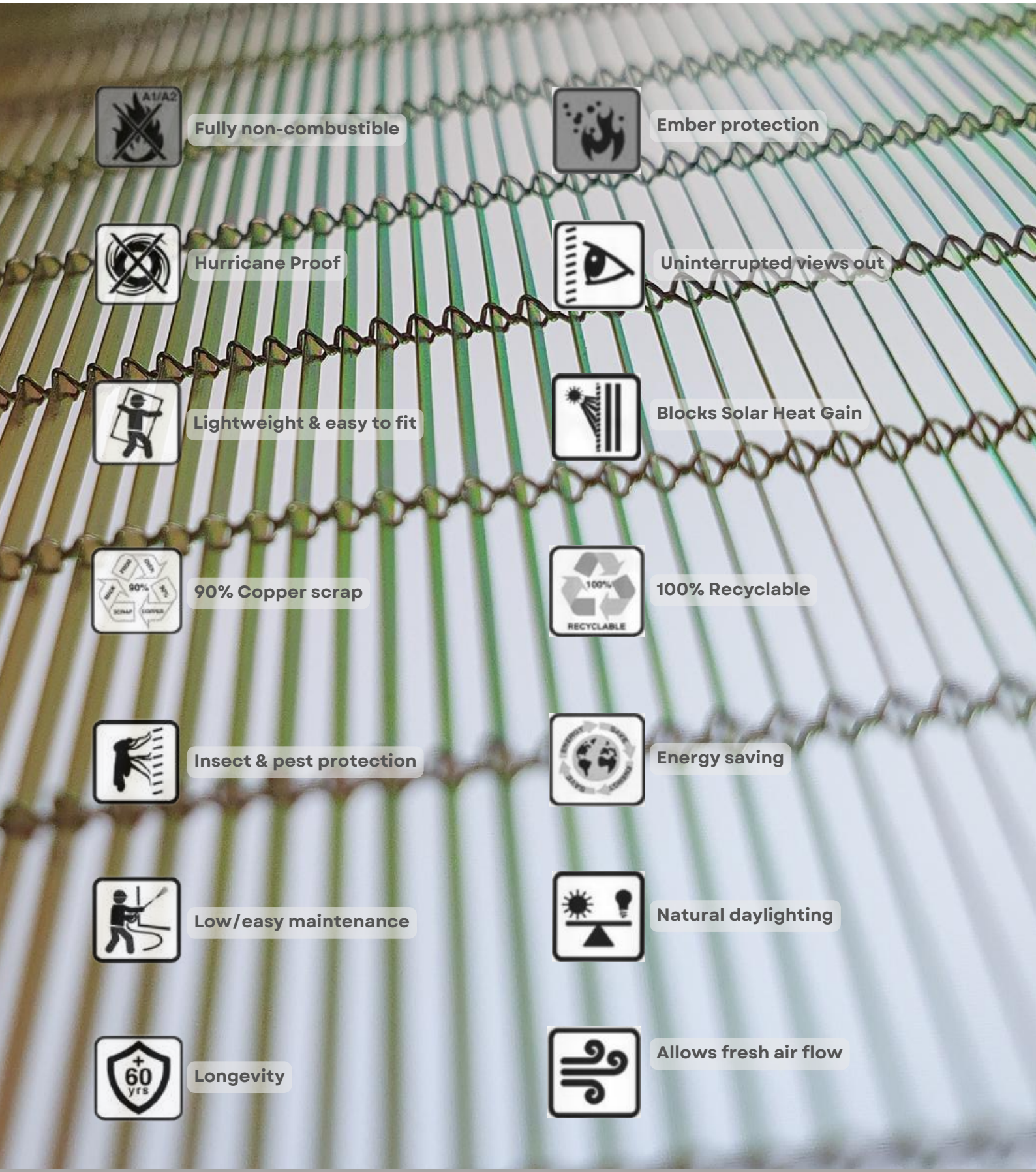
100% Sustainable

SUSTAINABILITY

It's at the core of what we do.

- ☑ Reducing the need and cost of air-con by **68%+**
- ☑ Recycled, recyclable, no plastics, net zero
- ☑ Durable & Long Lasting
- ☑ Environmentally Conscious
- ☑ Non-mechanical Cooling





TESTED, ACCREDITED & CERTIFIED.

IFC GROUP · CSIRO · SIMSCALE · AkzoNobel · CSTB le futur en construction

Smartlouvre Technology

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