

# Microlouvre Fabric®

Fire-safe External Shading & Fire Protection Screens



# Contents

- | **03** | Overview
- | **04** | EuroClass A1/A2-s1,d0 : BSEN 13501 Reaction to Fire.
- | **05** | Why & When you need A1/A2 Reaction to Fire
- | **06** | Chimney Effect & MicroLouvre KPIs
- | **07** | Wildfire + Flying Burning Ember Protection
- | **08** | Full Fire KPIs
- | **09** | Sustainable Protection
- | **10** | Contact



## FIRE PERFORMANCE

Building Attack Level Protection:

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

Fire/Heat Attenuation:

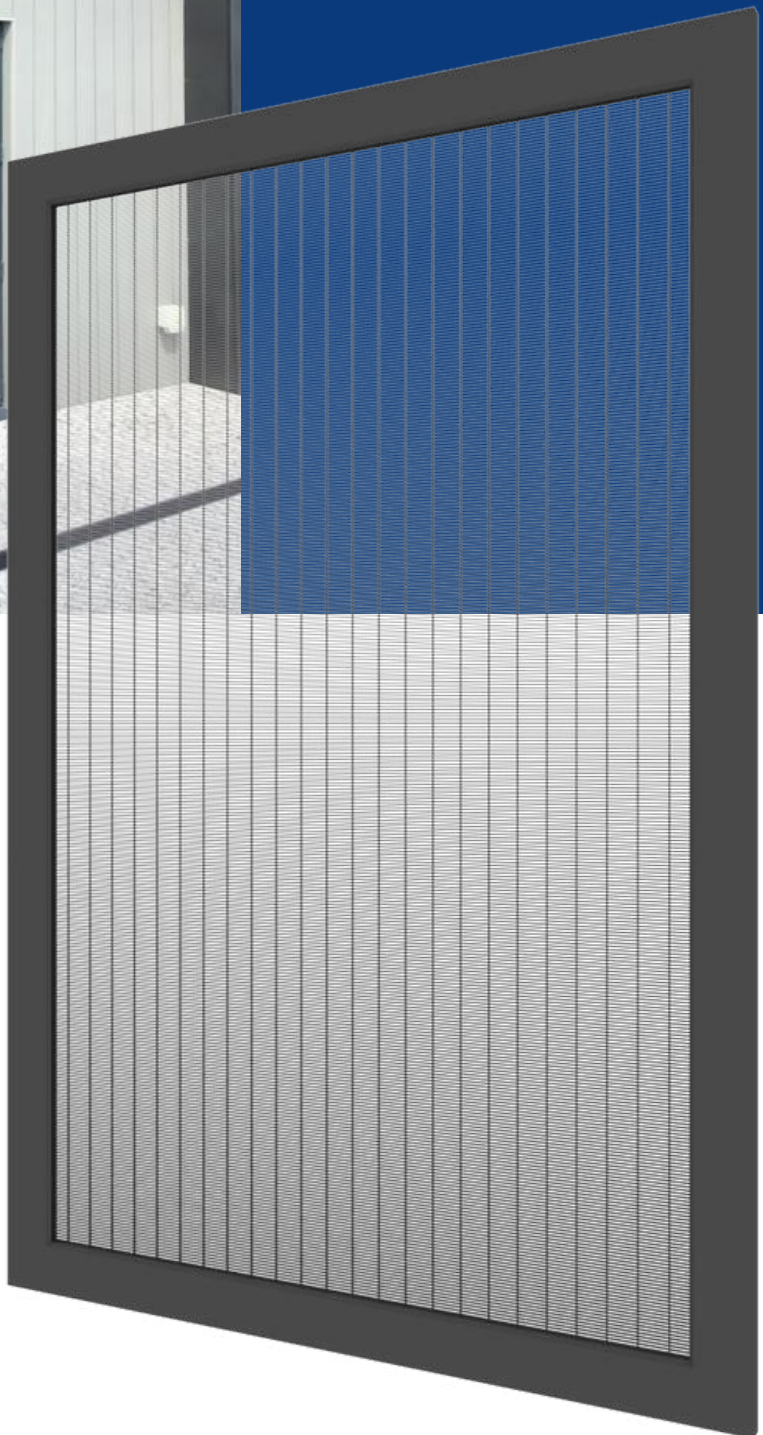
- **49.4% CSIRO**

Burning Ember Exclusion:

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

Reaction to fire:

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



**HEIGHTS UP TO 3 metres**

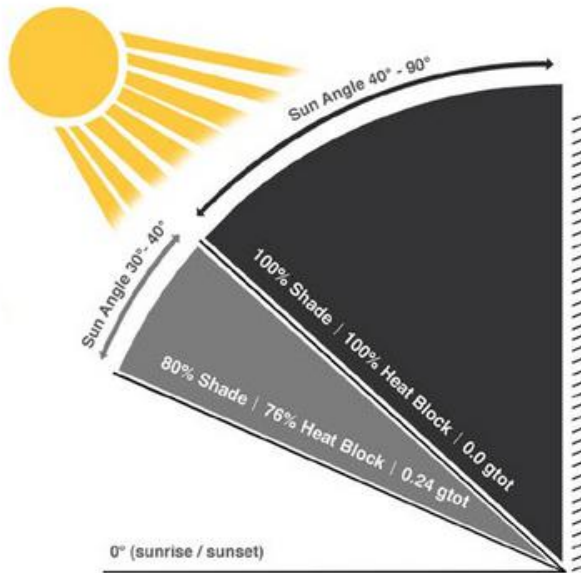
**WIDTHS UP TO 1.8 metres**

**ANY SHAPE OR COLOUR**

# Microlouvre® Fire-safe External Shading & Fire Protection Screens

Following tragic high-rise building fires in recent years, certain building envelopes must now be of A1/A2 non-combustible material compliant with UK Building Regulations. This applies to both new or retrofit buildings.

Microlouvre® Solar Shading is compliant to EuroClass A1/A2-s1,d0 : BSEN 13501 Reaction to Fire.



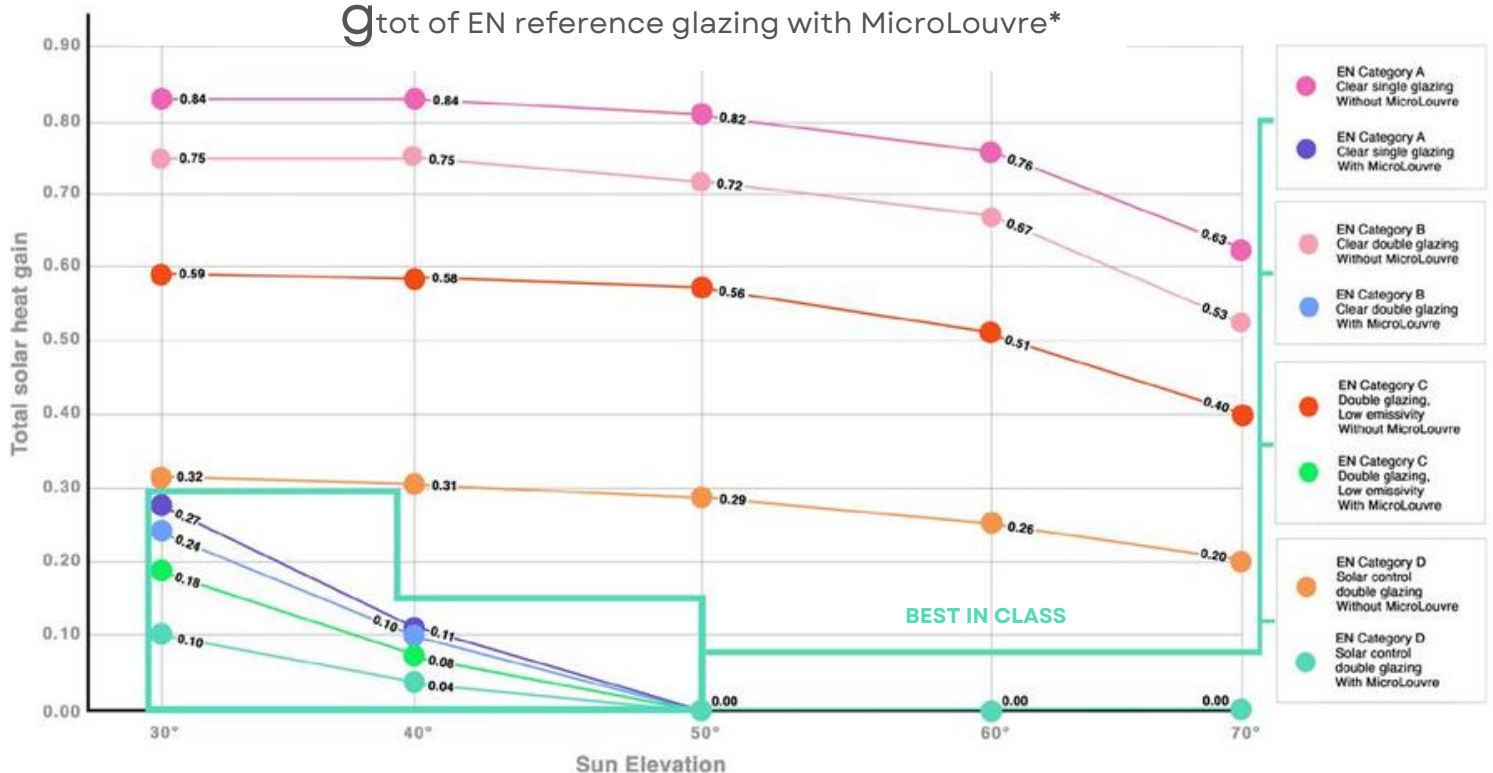
Arguably the most comprehensive external solar shading system on the market today, the all-metal MicroLouvre™ solar shading system has up to 700 paper thin brass louvres in every square metre, each only 1.2 mm apart and angled at 17°. This unique and innovative design:

- blocks 100% & absorbs almost 100% of all radiated heat gain from sun or fire
- reduces air conditioning energy and equipment costs by up to 68%
- enables complete outward vision
- permits high levels of unfiltered natural daylight, up to 70%.
- allows high levels of natural ventilation with 80% open area, essential for mitigating airborne viruses
- is maintenance free with a proven durability and lifespan 60+ years
- MicroLouvre™ louvres are made from 90% recycled copper scrap and are 100% recyclable

Microlouvre® Shading outperforms solar glass and is A1/A2 Fire-Safe.

Single glazing with MicroLouvre® outperforms even top solar control glazing. Typical Low E glass, designed to retain heat in winter, is counterproductive in summer. MicroLouvre® reduces heat gain from a massive 0.59 gtot to 0.00 gtot.

g<sub>tot</sub> of EN reference glazing with MicroLouvre\*



# Why & When you need A1/A2 Reaction to Fire

High-rise and multi-level designs solve the problem of overcrowding but fires in such buildings are harder to control and make evacuation of occupants more difficult and hazardous. This rapid spread of fire, combined with burning droplets and toxic smoke is a real and present danger.

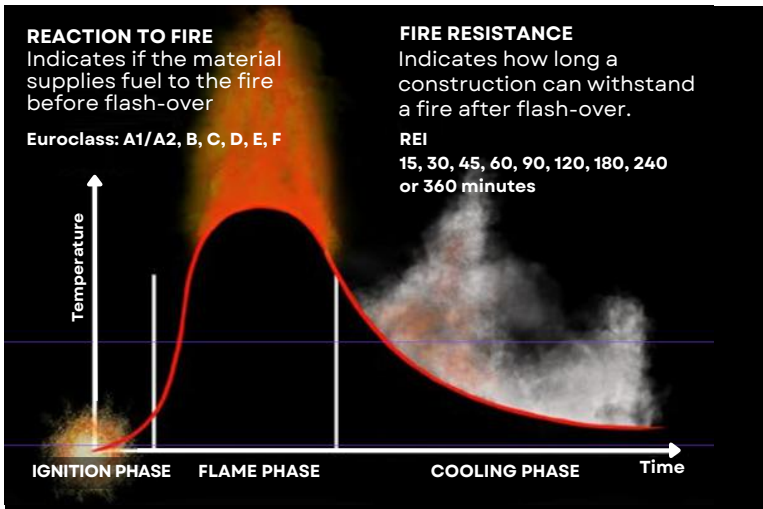
Regulations demanding fit-for-purpose construction materials used for both new build and upgrades, quite rightly, have been tightened.

England Building (Amendment) Regulation 2018 regarding materials used on building exteriors now demands materials to be proven non-combustible to EuroClass A1/A2-s1,d0 : BS EN 13501.

This applies to residential buildings over 18 metres eg. apartments, hospitals, schools or indeed any building of this size with any residential element.



A1/A2 external shading is a legal requirement on buildings over 18m with a residential element.



PERFORMANCE CRITERIA	MicroLouvre®
A = Combustibility	✓
A1/A2': Top Classifications	✓
s' = Smoke & Toxic Gases	✓
s1' : Top Classification	✓
d' = Burning Droplets	✓
d0' = Top Classification	✓



## How does MicroLouvre® unconditionally achieve A1/A2-s1,d0 : BSEN 13501?

The answer is simple, the unique MicroLouvre™ system is made entirely of metal and is non-combustible. The fabric is a copper / bronze alloy (melting point of nearly 1000°C (1800°F).

Frames are from aircraft grade aluminium and fittings are either stainless steel or aluminium.

# 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 MicroLouvre™ 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.

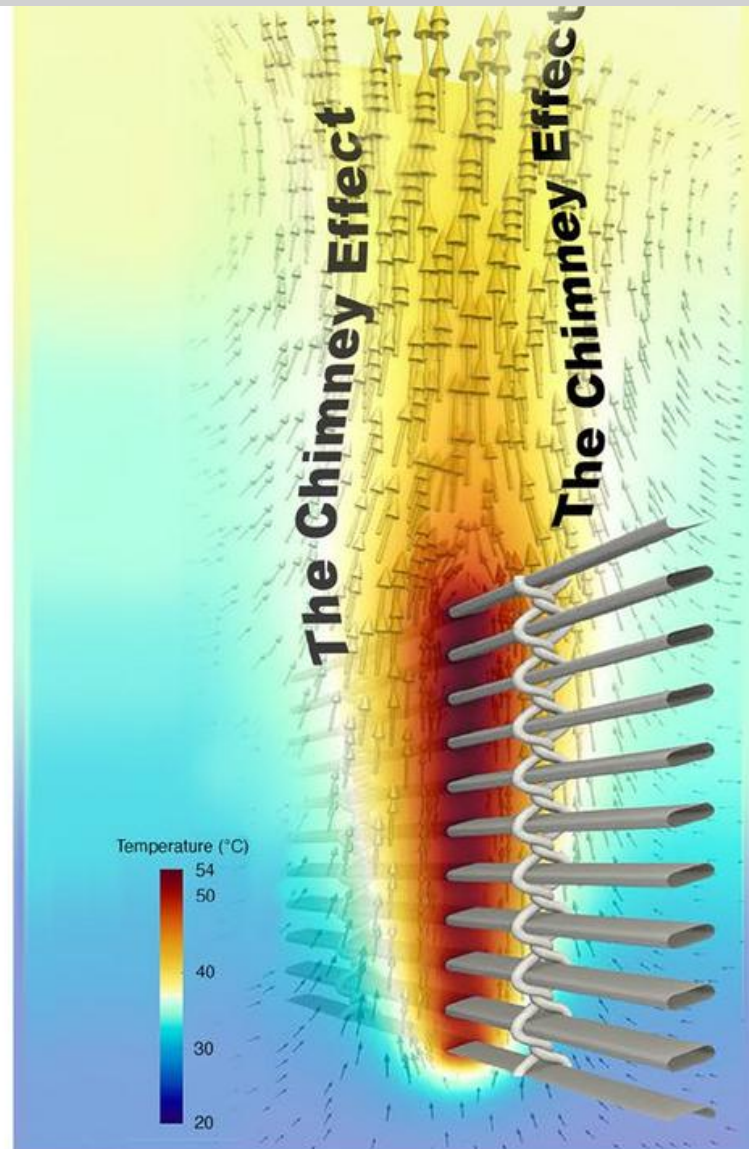
The bronze louvres in MicroLouvre's angle-selective technology, are specifically designed to absorb nearly 100% of radiated heat from the sun like a sponge, venting it away before it reaches the glazing.

## 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

<p><b>Thermal Comfort*</b></p> <p>Solar Shading (Ss) 100%</p> <p>Solar Heat Block (Shb) 100%</p> <p>Solar Heat Gain (gtot) 0.00 (glazing A-E)</p> <p>Solar Transmittance (Ts) 0.00 (Fraunhofer ISE)</p> <p>Solar Absorbance (As) 0.97 (Fraunhofer ISE)</p> <p>Solar Reflectance (Rs) 0.03 (Fraunhofer ISE)</p>	<p><b>Fire Performance</b></p> <p>Reaction to Fire A1/A2-s1,d0:BSEN 13501 - 2007+A1:2009</p> <p>Burning Ember Exclusion BAL-FZ AS3959-2009 100% (&gt;1.2mm)</p> <p>Fire/Heat Attenuation 49.4% CSIRO</p> <p>Building Attack Level Protection BAL-FZ/BAL-40 AS3959</p>
<p><b>Visual Comfort</b></p> <p>Light Transmittance (Tv) 51%</p> <p>Colour Rendering Index 100%</p> <p>Visual Contact with the Outside Class 4 (EN14501)</p> <p>Daylight Utilisation Class 4 (EN14501)</p>	<p><b>Wind Performance (BRE)</b></p> <p>Wind Resistance Hurricane: &gt; Force 12 Hurricane: Cat 2</p> <p>Wind Loading 14.65kg/m2 @ 60mph</p>
<p><b>Environmental Comfort</b></p> <p>Natural ventilation 80% Open Area</p> <p>Privacy &amp; Visual Security* 100%</p> <p>Insect &amp; Pest Protection 100% (&gt;1.2mm)</p>	<p><b>Energy Saving Performance LBNL California</b></p> <p>Air Conditioning Reduction 68%+</p> <p>Energy Consumption Nil</p> <p><b>Durability Performance</b></p> <p>Oldest Operational Installation 60+ Years</p> <p>Maintenance Nil</p>

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

# MicroLouvre®: Wildfire + Flying Burning Ember Protection



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



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**  
Direct exposure to flames, radiant heat & embers from the fire front.

**BAL-40**  
Increasing ember attack & windborne debris, radiant heat between 29kW/m2 & 40kW/m2

**BAL-29**  
Increasing ember attack & windborne debris, radiant heat between 19kW/m2 & 29kW/m2

**BAL-19**  
Increasing ember attack & windborne debris, radiant heat between 12.5kW/m2 & 19kW/m2

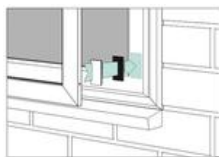
**BAL-12.5**  
Ember attack radiant heat below 12.5kW/m2

**BAL-LOW**  
Insufficient risk to warrant specific construction requirements. Some risk remains.

## 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.



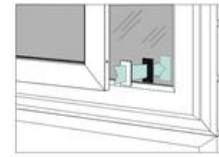
Frame Fix



Mullion Fix



Masonry Fix



Glass Fix

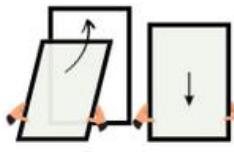
MicroLouvre® screens are simple, quick and easy to remove for access to windows



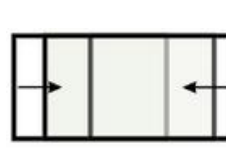
Snap on/off



Hinged



Lift-in/Lift-out (in channels)

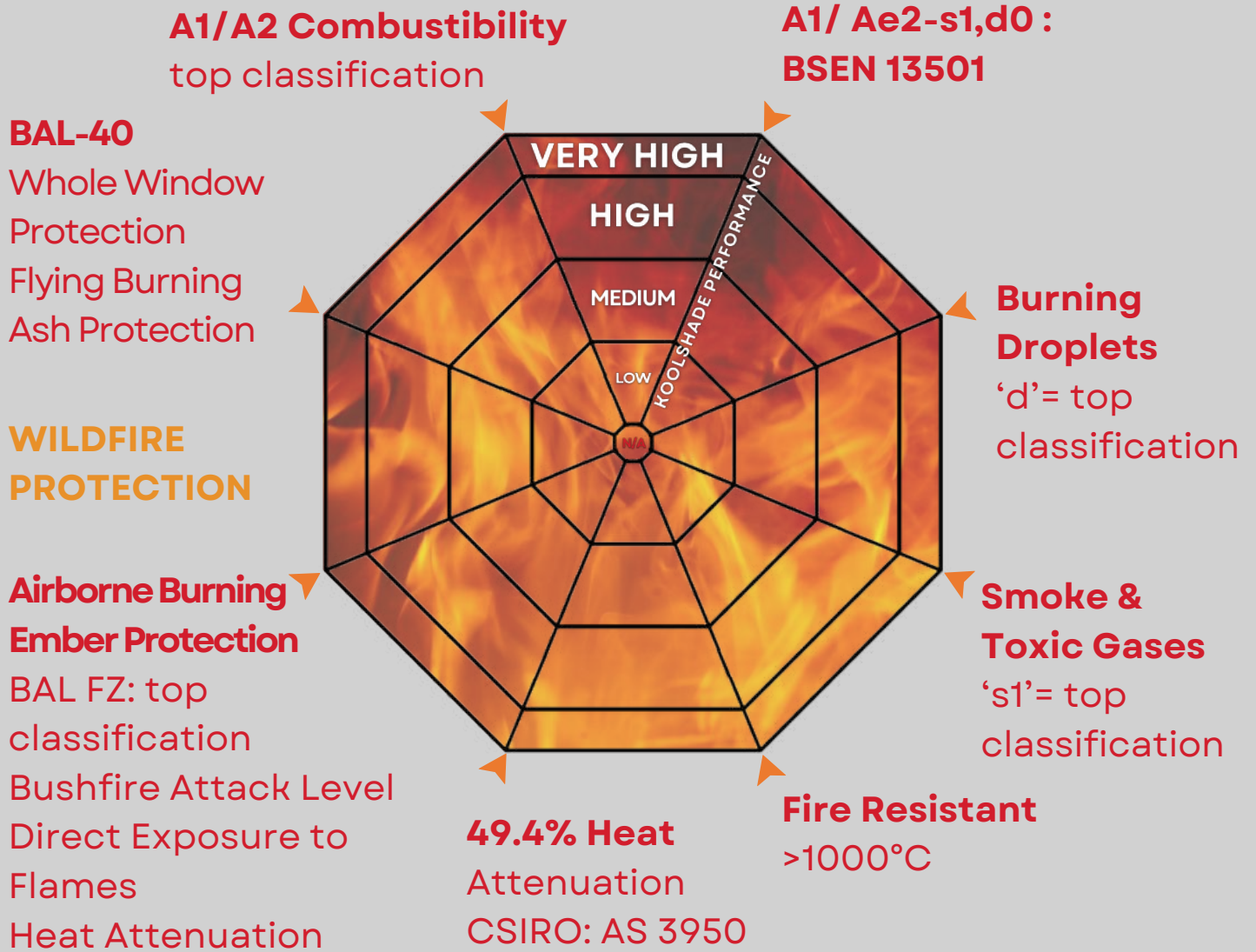


Horizontal Sliding (in channels)



Vertical Sliding (in channels)

# Arguably the ONLY shading product to satisfy Part B & Part O building regulations



**Koolshade compliance to part 'B'  
fire regulation for all products as  
required by part 'O'**





# 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: KoolShade® is Part B Compliant.

Koolshade 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



KoolShade® 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/m<sup>2</sup> and 40KW/m<sup>2</sup>

## 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

### SUSTAINABLE

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



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

**KoolShade® has proven longevity with 60+ maintenance free years**



KoolShade® metal fabrics & frames are fully recyclable

Air conditioning usage can be reduced by over **68%** when used as Solar Shading

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

**KOOLSHADE**  
The Ultimate In Passive Solar Shading



Fully non-combustible



Ember protection



Hurricane Proof



Uninterrupted views out



Lightweight & easy to fit



Blocks Solar Heat Gain



90% Copper scrap



100% Recyclable



Insect & pest protection



Energy saving



Low/easy maintenance



Natural daylighting



Longevity



Allows fresh air flow

TESTED, ACCREDITED & CERTIFIED.



**SIMSCALE**



**CSTB**

*le futur en construction*



info@smartlouvre.com



smartlouvre.com



+44 (0)2392 456 333