

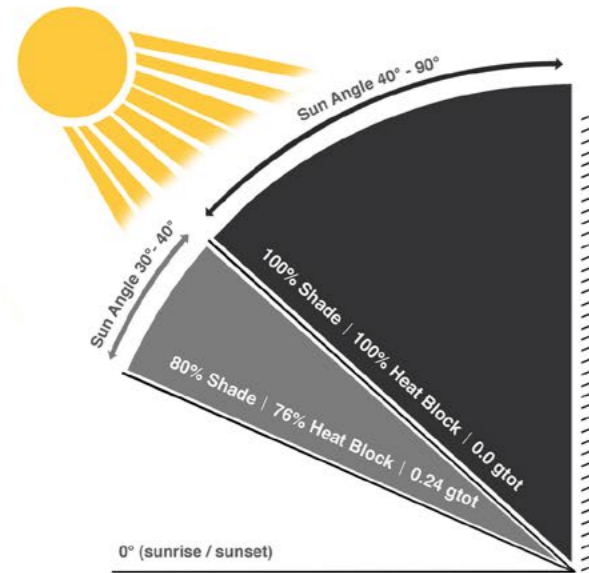
# MicroLouvre™ Solar Shading Systems

Fire-Safe External Shading



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 refit buildings.

**MicroLouvre™ Solar Shading is compliant to EuroClass A1/A2-s1,d0 : BSEN 13501 Reaction to Fire.**



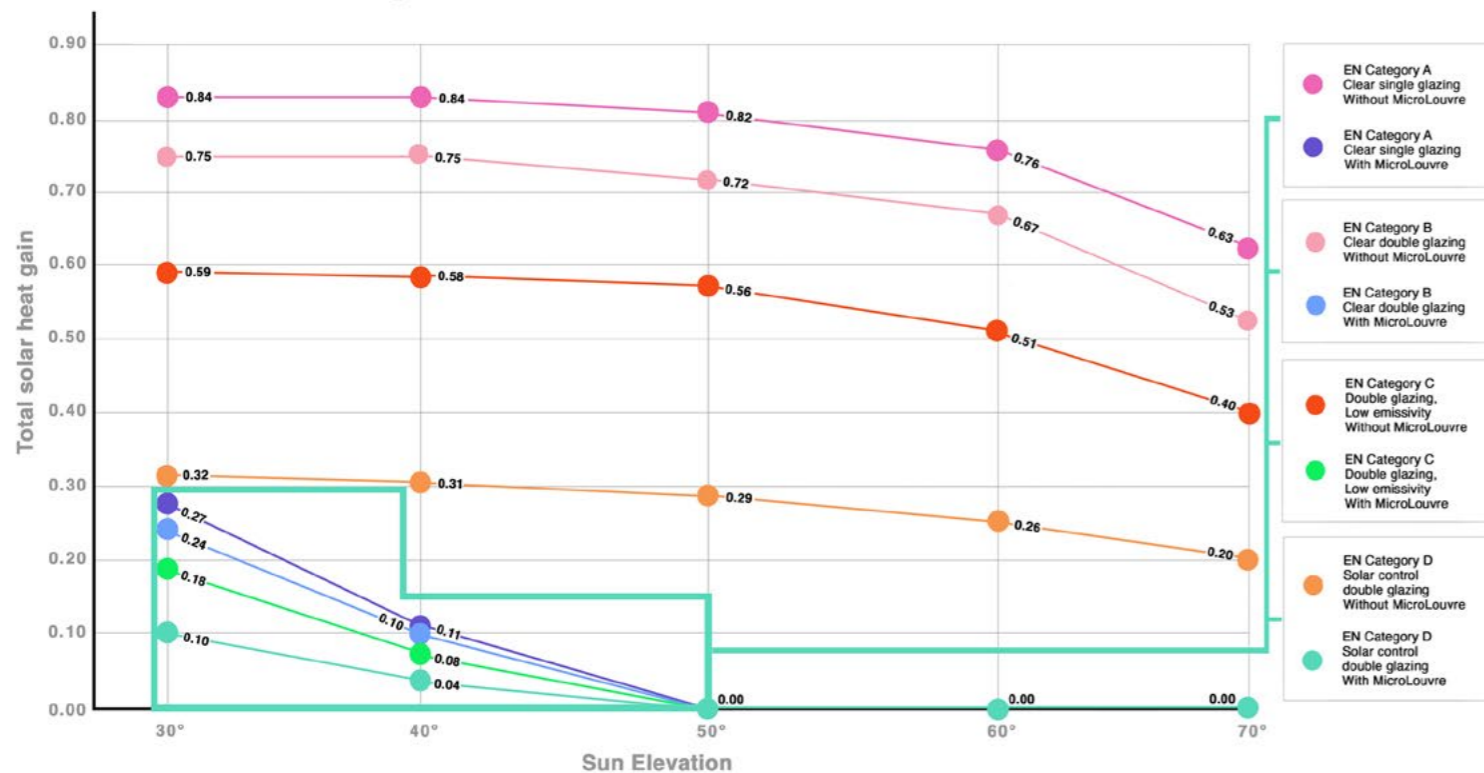
Arguably the most comprehensive external solar shading system on the market today, the all-metal MicroLouvre™ solar shading system has up to 700 paper thin brass louvres in every square metre, each only 1.2 mm apart and angled at 17°. This unique and innovative design:

- blocks 100% and absorbs 97% 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 0.00gtot.

gtot of EN reference glazing with MicroLouvre\*



Results based on Fraunhofer ISE EEB3-HRW-1812-E18

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 are a real and present danger.

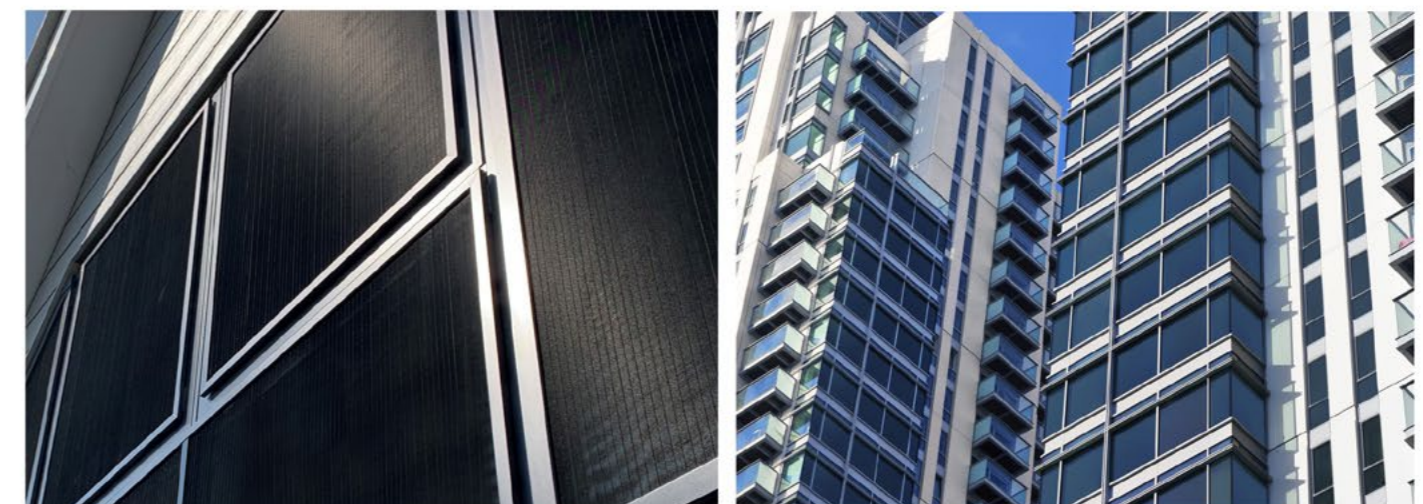
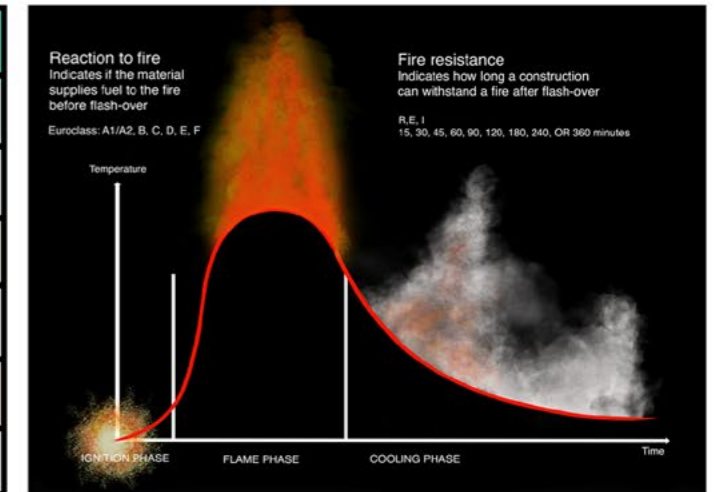
Regulations demanding fit for purpose construction materials used for both new build and upgrades, quite rightly, have been tightened.

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.

STATUTORY INSTRUMENTS	
<b>2018 No. 1230</b>	
<b>BUILDING AND BUILDINGS, ENGLAND</b>	
<b>The Building (Amendment) Regulations 2018</b>	
Made - - - -	28th November 2018
Laid before Parliament	29th November 2018
Coming into force - -	21st December 2018

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

Performance	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.

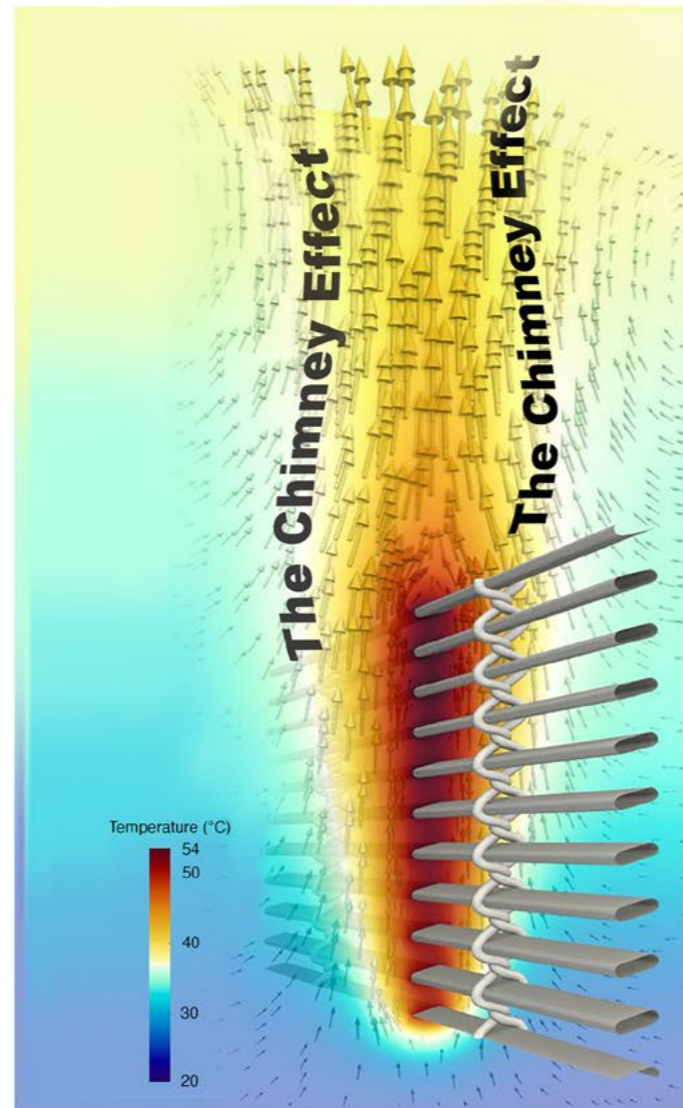
The bronze louvres in MicroLouvre's angle selective technology, are specifically designed to absorb nearly 100% of radiated heat from the sun like a sponge, venting it away before it reaches the glazing.

## 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™: Protection from Burning Ember Attack



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.

## MICROLOUVRE™: AT A GLANCE KEY PERFORMANCE INDICATORS

Thermal Comfort *		Fire Performance	
Solar Shading (Ss)	100%	Reaction to Fire	A1/A2-s1,d0:BSEN 13501-2007+A1:2009
Solar Heat Block (Shb)	100%	Burning Ember Exclusion	BAL-FZ AS3959-2009 100% (>1.2mm)
Solar Heat Gain gtot)	0.00 (Fraunhofer ISE)	Fire / Heat Attenuation	49.4% CSIRO
Solar Transmittance (Ts)	0.00 (Fraunhofer ISE)	Building Attack Level Protection	BAL-FZ/BAL-40 AS3959
Solar Absorptance (As)	0.97 (Fraunhofer ISE)	Wind Performance	
Solar Reflectance (Rs)	0.03 (Fraunhofer ISE)	(BRE)	
Visual Comfort		Wind Resistance	Hurricane: > Force 12 Hurricane: Cat 2
Light Transmittance (Tv)	51%	Wind Loading	14.65kg/m2 @ 60mph
Colour Rendering Index (CRI)	100%	Energy Saving Performance	
Visual Contact with the Outside	Class 4 (EN14501)	LBNL California	
Daylight Utilisation	Class 4 (EN14501)	Air Conditioning reduction	68%
Environment Comfort		Energy Consumption	Nil
Natural Ventilation	80% open area	Durability Performance	
Privacy & Visual Security*	100%	Oldest operational installation	60 years
Insect & Pest Protection	100% (>1.2mm)	Maintenance	Nil

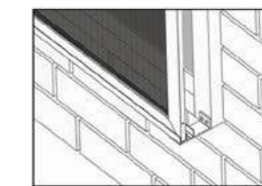
\*angular selective >40° \*\*angular selective 0° @ normal incidence or 90° to the planar surface

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

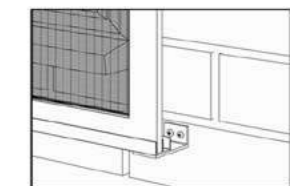
Method of fixings depend on the façade or window frame materials. The recommendation is that suitable, fit for purpose mechanical fixings are always used.



Frame Fix



Mullion Fix

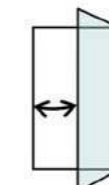


Masonry Fix

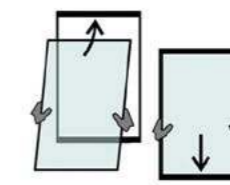
## MicroLouvre™ screens are simple, quick and easy to remove for access to windows



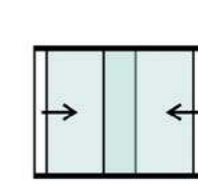
Snap on / off



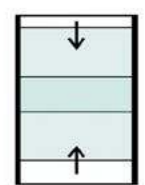
Hinged



Lift in / Lift out (in channels)



Horizontal sliding (in channels)



Vertical sliding (in channels)



### Fully non-combustible

Our screens conform to A1/A2 Fire Performance rating



### Ember Protection

Providing protection from burning embers coming into the building



### Hurricane proof

BRE tested, proven to withstand 100+mph/160+kph winds from multiple angles



### Uninterrupted views out

The micro fine louvres disappear from the occupant's eye, providing unrivalled visual comfort



### Lightweight & easy to fit

Simple to install or retrofit with arrangements to suit any window type



### Blocks solar heat gain

Miniature bronze louvres stop the sun's heat from ever reaching the window.



### 90% Copper Scrap

MicroLouvre metal fabric is made from wire manufactured in Britain from over 90% recycled copper scrap



### 100% Recycleable

MicroLouvre™ has a proven 60+ year life cycle and is 100% recyclable



### Insect & pest protection

The miniature louvres provide greater protection than insect mesh



### Save Energy

Proven to save up to 68% air conditioning energy costs and over 50% on air conditioning equipment



### Low / easy maintenance

A simple pressure wash is recommended once a year



### Natural daylighting

The angle of the louvres (17°) allows the optimum unfiltered daylight in, with full CRI



### Longevity

A proven lifetime of installed screens exceeding 60 years



### Allows fresh air flow

The 80% open area between the louvres provides an air flow with a distinct upwards trend

