

MICROSHADE® IN BREEAM-CERTIFIED CONSTRUCTION



 Micro
Shade®

Introduction to BREEAM

BREEAM, (Building Research Establishment Environmental Assessment Method), is an internationally recognized certification scheme that evaluates and promotes sustainability in construction and urban areas. The BREEAM Certification Scheme is designed to ensure that buildings and urban areas meet high standards of environmental, economic, and social sustainability.

The BREEAM Certification considers various aspects of a building or an urban area, including energy efficiency, materials and resources, waste management, transportation, the well-being of occupants as well as integration into the surrounding environment. The certification is based on a comprehensive assessment, where several criteria and parameters are assessed, and points are awarded in relation to how well the building or urban area meets these criteria.

The benefits of achieving a BREEAM certification include recognition of sustainable practices, enhanced marketability and viability of buildings, reduced energy consumption and environmental impact, and improved indoor environment for user comfort and well-being.

BREEAM Manuals

The BREEAM Certification system has been adapted to align with the specific requirements of each host country. As a result, awards and criteria may vary when different BREEAM manuals are utilized. In this brochure, we refer to the international BREEAM manual. The countries with and adaptation is:

- BREEAM 2023 UK, Languages: UK
- BREEAM 2023 SE, Languages: UK
- BREEAM 2022 NOR, Languages: UK
- BREEAM 2022 DE, Languages: UK
- BREEAM 2022 AT, Languages: UK
- BREEAM 2020 NL, Languages: UK

BREEAM CERTIFICATE

To obtain the BREEAM classification for its construction, points must be earned within the 10 main categories to meet the minimum requirement. Overall, one of the five certification levels can be obtained.

Outstanding:	85% Total Performance
Excellent:	70% Total Performance
Very good:	55% Total Performance
Good:	45% Total Performance
Pass:	30% Total Performance

BREEAM – MANUALS

The manuals cover new construction within the following building types:

- Residential Buildings
- Office Buildings
- Industrial Buildings
- Retail Buildings
- Education Buildings
- Residential Institutions
- Hotels & Residential Institutions
- Non-standard Building Types

BREEAM-criteria

The BREEAM certification follows a flexible framework consisting of categorized into ten environmental sections. Each section includes minimum performance standards that a project must meet in each assessment category to achieve a specific certification level. In addition, BREEAM uses a points-based system to award credits based on how well a project performs in each section.

The obtained points are presented as a percentage of the maximum achievable points. The total score of a project is determined by the points earned in each section multiplied by their respective weightings. The resulting scores are then summed across all categories to determine the total score. Based on the percentage achieved, a building is awarded either Pass, Good, Very Good, Excellent, or Outstanding indicating its level of sustainability and performance.

It's important to acknowledge that the specific criteria and evaluation points may vary depending on the version of the BREEAM certification being used. Therefore, it is essential to refer to the relevant BREEAM documentation packages and guidelines provided by MicroShade A/S or the BREEAM itself for accurate and up-to-date information.

INNOVATION CREDITS

BREEAM has introduced innovation credits to encourage the implementation of innovative practices within the building industry. These credits can be obtained through exemplary performance in the criteria or the recognition by BRE Global of an innovative technology, design or construction method.

BREEAM – SCORE

BREEAM rating system consists of the following categories with their respective minimum score:

- Outstanding $\geq 85\%$
- Excellent $\geq 70\%$
- Very good $\geq 55\%$
- Good $\geq 45\%$
- Pass $\geq 30\%$
- Unclassified $<30\%$

BREEAM ENVIRONMENTAL SECTION WEIGHTINGS

In BREEAM the environmental section weightings are adapted to the local conditions of the project. This adaptability suggests that BREEAM may be efficiently implemented across different regions while addressing local environmental priorities.

BREEAM INNOVATION CREDITS

BREEAM encourages innovation in sustainable design and construction by offering innovation credits. These credits are awarded for implementing pioneering technologies, strategies, or practices that significantly advance sustainability goals and exceed standard BREEAM requirements.

The innovation credit can add up to 10% to the total score.

Overview of criteria*

BREEAM v6.0 (2021) International

This brochure provides an overview of the criteria highlighted for the BREEAM v6.0 (2021) International version. For a detailed and specific list, please refer to the Documentation packages corresponding to your chosen version and country.

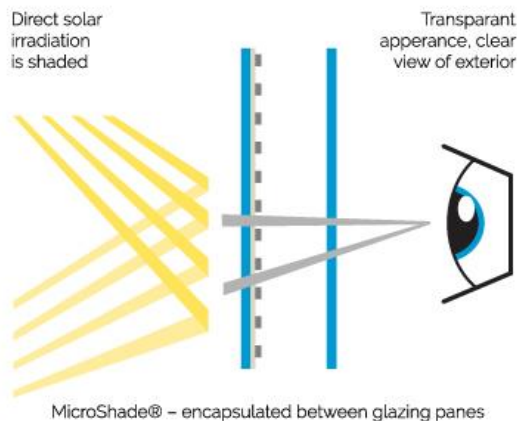
SECTION	CRITERIA NAME	CREDITS
MANAGEMENT (MAN)	MAN 01 Project brief and design	4
	MAN 02 Life cycle cost and service life planning	4
	MAN 03 Responsible construction practices	6
	MAN 04 Commissioning and handover	4
	MAN 05 Aftercare	3
HEALTH AND WELLBEING (HEA)	HEA 01 Visual comfort	Up to 6
	HEA 02 Indoor air quality	5
	HEA 03 Safe containment in laboratories	2
	HEA 04 Thermal comfort	3
	HEA 05 Acoustic performance	Up to 4
	HEA 06 Accessibility	2
	HEA 07 Hazards	1
	HEA 08 Private space	1
	HEA 09 Water quality	1
ENERGY (ENE)	ENE 01 Reduction of energy use and carbon emissions	13
	ENE 02 Energy monitoring	2
	ENE 03 External lighting	1
	ENE 04 Low carbon design	3
	ENE 05 Energy efficient cold storage	3
	ENE 06 Energy efficient transportation systems	3
	ENE 07 Energy efficient laboratory systems	5

	ENE 08 Energy efficient equipment	2
	ENE 09 Drying space	N/A
	ENE 10 Flexible demand side response	1 (exemplary)
TRANSPORT (TRA)	TRA 01 Public transport accessibility	Up to 5
	TRA 02 Proximity to amenities	Up to 2
	TRA 03 Alternative modes of transport	Up to 2
	TRA 04 Maximum car parking capacity	Up to 2
	TRA 05 Travel plan	1
	TRA 06 Home office	1
WATER (WAT)	WAT 01 Water consumption	5
	WAT 02 Water monitoring	1
	WAT 03 Water leak detection and prevention	3
	WAT 04 Water efficient equipment	1
MATERIALS (MAT)	MAT 01 Life cycle impacts	Up to 6
	MAT 02 Hard landscaping and boundary protection	N/A
	MAT 03 Responsible sourcing of construction products	4
	MAT 04 Insulation	N/A
	MAT 05 Designing for durability and resilience	1
	MAT 06 Material efficiency	1
WASTE (WST)	WST 01 Construction waste management	3
	WST 02 Recycled aggregates	1
	WST 03 Operational waste	1-2
	WST 04 Speculative finishes	1
	WST 05 Adaption to climate change	1
	WST 06 Functional adaptability	1
LAND USE AND ECOLOGY (LE)	LE 01 Site selection	3
	LE 02 Ecological value of site and protection of ecological features	2
	LE 03 Minimizing impact on existing site ecology	N/A
	LE 04 Enhancing site ecology	3
	LE 05 Long term impact on biodiversity	2
POLLUTION (POL)	POL 01 Impact of refrigerants	4
	POL 02 NOx emissions	2
	POL 03 Surface water run-off	5
	POL 04 Reduction of nighttime light pollution	1
	POL 05 Reduction of noise pollution	1
INNOVATION (INN)	INN 01 Innovation	10

What is **MicroShade**?

MicroShade A/S is a Danish cleantech company founded in 2003 as a spin-off from the Danish Technological Institute. At MicroShade we first developed a solar shading solution where a passive steel membrane was used. The new MicroShade®, however, consists of a microstructure film which, when placed in between a 2- or 3-layer glazing unit, provides optimal solar shading while maintaining the view to the outside and ensuring pleasant daylight conditions. In combination, these parameters raise the quality of the indoor climate significantly compared to any other solar shading solution.

At MicroShade we strive to ensure better work environments, and at the same time reduce operating costs for building owners and their tenants.



MicroShade® Technical Details

MicroShade® is a passive and highly effective shading solution fully integrated into either a double or triple pane insulating glazing unit. MicroShade® comprises an almost invisible film that combines UV and IR coatings with a structured micro-lamella. The shading effect of can be compared to that of exterior blinds - except the film is almost invisible to the human eye - so the view is maintained.

MicroShade® allows a high level of natural daylight to enter the building and is available in various configurations suitable for both facade and roof applications.

MicroShade contribution to **BREEAM-certification**

MicroShade® has the potential to contribute to several criteria in BREEAM certification and can positively influence the innovation category in the certification process.

Calculation guidelines and transparent file sharing makes it easy to compare MicroShade® in your project.

We have developed a comprehensive library of guidelines and files to ensure the correct and effective use of our products throughout all phases of construction. This extensive resource is freely available for download and utilization in your project. By providing these guidelines and files, MicroShade aims to promote good design practices and facilitate well-balanced decision-making from the beginning to

MicroShade® - Product Environment Declaration

MicroShade provides an Environmental Product Declaration (EPD) that allows for a comparative analysis of MicroShade's product in relation to other similar products, specifically assessing their environmental performance. The EPD serves as a transparent and trustworthy source of information, as it undergoes independent third-party verification, ensuring its reliability.

BREEAM – Documentation

At www.microshade.com, you will find our BREEAM documentation, which contains relevant information for your BREEAM project.

The documentation files to download is:

- BREEAM-brochure
- EPD
- Technical User Manual
- Declaration of contents

Some documentation may be provided in the form of calculation guidelines to support calculating thermal comfort and daylighting. The guidelines can be found on our website www.microshade.com under the tab "FOR PROFESSIONALS".

MicroShade also provides the simulation tool, SimShade, which can advise industry professionals in glazing system compositions and shading solutions, ensuring informed decisions in the early design phase.

MicroShade's contribution to BREEAM 2021 International - certification of buildings

This list provides an overview of the criteria and the associated knowledge and product details offered by MicroShade in BREEAM 2021 International. The following criteria can provide up to 43.70% when MicroShade is used along with other building components which means that "Pass" BREEAM rating can be obtained. It is important to note that the specific criteria in the BREEAM may vary between countries and versions. Specific criteria that are influenced by MicroShade in your BREEAM certification can be found in the BREEAM documentation packages found on our website.

Criterion	What can MicroShade® do, and what do we provide?	Max credits	Section score
MAN 02 Life cycle cost and service life planning	MicroShade® offers a life span equal to a window system, eliminating the need to replace the shading device. Furthermore, can an early price estimate to an LCC be taken directly from MicroShade online simulation tool (SimShade).	4	7.33%

MAN 03 Responsible construction practices	MicroShade® does not consider the CO2 emissions from the production facility to the project site. However, the transport data are derived from the glass partner's factory/warehouse to the construction site.	6	
MAN 04 Commissioning and handover	MicroShade® provides a sustainability and technical user manual. More Information is in our technical user manual.	4	
HEA 01 Visual comfort	MicroShade® is optimized to provide optimal visual comfort due to the low g-value which gives the possibility of larger glass areas and, thus, good daylight and view-out conditions. MicroShade® provides daylight calculation guidelines for a large variety of building simulation tools, including BSDF files for a large variety of glazing and shading systems. The guidelines provide instructions to calculate a building's daylight, promoting health and well-being at work and home. The guidelines are on our website MicroShade .	6	6.84%
HEA 04 Thermal comfort	MicroShade® is optimized to provide appropriate thermal comfort due to the low g-value. MicroShade® provides thermal comfort guidelines for a large variety of building simulation tools. The guidelines provide instructions to calculate a building's thermal comfort, promoting health and well-being at work and home. The guidelines are on our website MicroShade .	3	
ENE 01 Reduction of energy use and carbon emissions	MicroShade® is designed to reduce up to 26% the energy demand for cooling and heating. ¹	13	9.70%
ENE 04 Low carbon design	MicroShade® is an element of a passive design concept designed to reduce the primary energy demand with no operational costs.	3	
MAT 01 Life cycle impacts	An EPD on MicroShade® is available which offers an analysis of the environmental performance of our product.	5	7.58%
MAT 06 Material efficiency	An EPD on MicroShade® is available which offers an analysis of the environmental performance of our product.	1	
WST 01 Construction waste management	MicroShade® can contribute to diverting glass from landfill and recycling as the product does not complicate the process.	3	2.25%



¹ Compared to an external screen with 5% transmittance activated at 150 W/m² on a south façade in Stuttgart with 40% window-to-floor ratio.

Contact information

If you want to know more about MicroShade:

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