



## BREEAM 2016 INC - GB/T 50378-2019 Comparison

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➤ **General Introduction**

 **Scope**

Building Types	BREEAM INC 2016	GB/T 50378-2019	Notes
<b>Commercial</b>	Office Retail Industrial	Office Retail	The building evaluation type of GB/T 50378-2019 does not include industrial buildings, which shall use GB/T 50878-2013 "Evaluation standard for green industrial building".
<b>Residential</b>	Single dwellings Multiple dwellings	Multiple dwellings	Single dwellings do not comply with the Chinese national land standards, not allowed to participate in the evaluation.
<b>Education</b>	Preschool School and colleges University Higher education institutions	All	
<b>Residential institutions (long-term stay)</b>	Residential care home Sheltered accommodation	All	
<b>Hotels and Residential institutions (Short term stay)</b>	Hotel, hostel, boarding and guest house Secure training centre Residential training centre	All	
<b>Non-standard building types</b>	Community or visitor centre Town hall or civic	All	GB/T50378-2019 has no "bespoke" option, and all

	centre Conference facilities Theatre or concert hall Sports or leisure facility (with or without a pool) Library Cinema Hospitals and other healthcare facility Prison Law court Police station Fire station Transport hub (coach, bus or rail station) Gallery or museum Place of worship Research and development (category 2 or 3 laboratories – non-higher education)		clauses must be evaluated.
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### Mixed-use developments and building types

BREEAM INC 2019	GB/T 50378-2019
For mixed-use development and buildings, BREEAM rating and certificate for each individual building or functional use within a single building.	For mixed-use buildings, the applicable areas shall be evaluated according to all evaluation provisions of this standard, and the score of each evaluation provision shall be determined.

**Please note: GB/T 50378-2019 must be evaluated for the entire building. Evaluation of one part of a building, one floor, is not allowed. The evaluation object is a single building or group of buildings. The evaluation objects should implement and deepen the green development requirements proposed by the legal planning and related special planning; Systematic and holistic indicators shall be evaluated on the basis of the overall nature of the project to which the building belongs.**

## ➤ Scoring and rating

BREEAM INC 2019		GB/T 50378-2019	
Pass	≥ 30	Basic level- Mandatory criteria compliance	
Good	≥ 45	One star	≥ 60
Very good	≥ 55	Two stars	≥ 70
Excellent	≥ 70	Three stars	≥ 85
Outstanding	≥ 85		

Please note: The rating and scores of each section in GB/T 50378-2019 are significantly different from BREEAM INC 2016. Therefore, the two standard ratings cannot be exactly equivalent.

## ➤ Minimum standards

The minimum requirements for BREEAM INC 2016 and GB/T 50378 require the total score to reach the corresponding grade respectively, if the minimum requirement for the rating is reached. But the two standards are different, so the minimum level is different. The details are as follows:

### BREEAM INC 2016

BREEAM issue	Minimum standards by BREEAM rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Man 03 Responsible construction practices on page 47	Criterion 2 only (Health and Safety)	Criterion 2 only (Health and Safety)	Criterion 2 only (Health and Safety)	One credit (Considerate construction)	Two credits (Considerate construction)
Man 04 Commissioning and handover on page 57	None	None	None	Criterion 10 (Building or home user guide)	Criterion 10 (Building or home user guide)
Man 05 Aftercare on page 65	None	None	None	One credit (Seasonal commissioning)	One credit (Seasonal commissioning)
Hea 01 Visual comfort on page 73	Criterion 1 only (High frequency ballast)	Criterion 1 only (High frequency ballast)	Criterion 1 only (High frequency ballast)	Criterion 1 only (High frequency ballast)	Criterion 1 only (High frequency ballast)
Hea 02 Indoor air quality on page 87	Criterion 1 only (No asbestos)	Criterion 1 only (No asbestos)	Criterion 1 only (No asbestos)	Criterion 1 only (No asbestos)	Criterion 1 only (No asbestos)
Hea 06 Accessibility on page 122	None	None	None	None	Two credits (Inclusive and accessible design - residential buildings and residential institutions only)

BREEAM issue	Minimum standards by BREEAM rating level				
	Pass	Good	Very Good	Excellent	Outstanding
Hea 08 Private space on page 130	None	None	None	None	One credit
Hea 09 Water quality on page 133	Criterion 1 only (minimise legionellosis risk)	Criterion 1 only (minimise legionellosis risk)	Criterion 1 only (minimise legionellosis risk)	Criterion 1 only (minimise legionellosis risk)	Criterion 1 only (minimise legionellosis risk)
Ene 01 Reduction of energy use and carbon emissions on page 139	None	None	None	Six credits	Ten credits
Ene 02a Energy monitoring on page 150	None	None	One credit (First sub-metering credit)	One credit (First sub-metering credit)	One credit (First sub-metering credit)
Wat 01 Water consumption on page 237	None	One credit	One credit	One credit	Two credits
Wat 02 Water monitoring on page 248	None	Criterion 1 only (mains water meter)	Criterion 1 only (mains water meter)	Criterion 1 only (mains water meter)	Criterion 1 only (mains water meter)
Mat 03 Responsible sourcing of construction products on page 266	Criterion 1 only (Legal timber)	Criterion 1 only (Legal timber)	Criterion 1 only (Legal timber)	Criterion 1 only (Legal timber)	Criterion 1 only (Legal timber)
Wst 01 Construction waste management on page 291	None	None	None	None	One credit
Wst 03a Operational waste on page 302 Wst 03b Operational waste on page 307	None	None	None	One credit	One credit

Table 3.2.8 GB/T 50378-2019 minimum requirements for different grades			
Issues	One star	Two stars	Three stars
The ratio of improvement of thermal performance of envelope or reduction of load of building heating and air conditioning	Envelope performance increased by 5%, or load decreased by 5%	Envelope performance increased by 10%, or load decreased by 10%	Envelope performance increased by 20%, or load decreased by 15%
The heat transfer coefficient of exterior windows of residential buildings decreases proportionally in extremely cold and cold regions	5%	10%	20%
Water efficiency level of water-saving appliances	Level 3	Level 2	
Sound insulation of residential buildings	--	The air sound insulation performance between the outdoor and the bedroom on both sides of the partition wall (floor slab) as well as the impact sound insulation of the bedroom floor reach the mean value of the low limit standard limit and the high requirement standard limit.	The performance of air sound insulation between outdoor and bedroom, between bedroom on both sides of partition wall (floor slab) and the performance of bedroom floor crash sound insulation have reached the high standard limit value.
The concentration of major indoor air pollutants was reduced in proportion	10%	20%	
Outside window airtight performance	In accordance with the provisions of the current national standards for energy-saving design, and the combination of external window opening and external window frame should be tight.		

➤ **Environmental section**

BREEAM INC 2016	GB/T 50378-2019
Management	Safe and durability
Health and wellbeing	Healthy and comfort
Energy	Occupant convenience
Transport	Resource saving
Water	Environment livability
Materials	Promotion and innovation
Waste	
Land use and ecology	
Pollution	
Innovation	

➤ **Assessment criteria**

**Key:** √= full overlap ◎= partial overlap × = no overlap or not addressed by GB/T 50378-2019

BREEAM INC 2016		GB/T 50378-2019	Notes
<b>Management</b>			
Man01 Project brief and design	×	Not addressed in GB/T 50378-2019	
Man02 Life cycle cost and service life planning	×	Not addressed in GB/T 50378-2019	
Man03 Responsible construction practices	◎	9.2.8 Carry out construction and management according to the requirements of green construction;	Please refer to “ Evaluation standard for green construction of building ” GB/T 50640-2010 for details of China's national code for green construction

Man04 Commissioning and handover	◎	6.2.13 Develop green facility manual	
Man05 After care	◎	6.2.12 Evaluate the operation effect of the building regularly and optimize the operation according to the result; 6.2.13 Establish a green education promotion and practice mechanism, and regularly carry out user satisfaction surveys;	
<b>Health and wellbeing</b>			
Hea01 Visual comfort	◎	5.1.5 building lighting and related requirements; 5.2.8 Using natural daylight, lighting requirements and glare control in residential and non-residential buildings; 7.1.4 the lighting power density value of the main functional rooms shall not be higher than the current value specified in GB 50034 “ Standard for lighting design of buildings”; The lighting system of the common area should adopt partition, timing, induction, etc. Energy saving control; Lighting control should be independent of lighting control in other areas.	Hea01 daylighting requirements for different types of buildings are slightly different from those in GB/ T 50378-2019 5.2.8.



Hea02 Indoor air quality	©	<p>5.1.1&amp;5.2.1 The concentration of ammonia, formaldehyde, benzene, total volatile organic compounds, radon and other pollutants in the indoor air shall comply with/be lower than the current national standard "indoor air quality standard" GB/T 18883. Smoking should be prohibited in buildings and at the main entrance and exit of buildings;</p> <p>5.1.2 Measures shall be taken to prevent the air and pollutants in the kitchen, dining room, printing room, bathroom, underground area and other areas from spilling into other spaces; Should prevent kitchen, toilet exhaust inversion;</p> <p>5.2.2 The selected decoration and decoration materials shall meet the requirements on the limit of harmful substances in the current national green product evaluation standards;</p> <p>5.2.10 Optimize the spatial and plane layout of the building to improve the natural ventilation effect;</p> <p>8.2.4 Reasonable location of</p>	<p>BREEAM Hea02 adopts ISO standards and approved standard. GB/ T 50378-2019 adopts the national codes and standards.</p>
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		outdoor smoking area;	
Hea03 Safe containment in Laboratories	×	Not addressed in GB/T 50378-2019	
Hea04 Thermal comfort	◎	<p>5.1.6 Measures should be taken to ensure the indoor thermal environment. For buildings with central heating and air-conditioning systems, the design parameters such as temperature, humidity and fresh air volume in the rooms shall comply with the relevant provisions of GB/T 50736 of the current national standard "design code for heating, ventilation and air conditioning in civil buildings"; Buildings with non-central heating and air-conditioning systems shall have measures or reserve conditions to ensure the indoor thermal environment;</p> <p>5.1.8 Main function rooms shall have independently controlled thermal environment adjustment devices on site;</p> <p>5.2.9 Good indoor thermal and humidity environment;</p>	BREEAM Hea04's evaluation is mainly based on thermal model analysis. Climate change scenarios need to be adopted.
Hea05 Acoustic performance	◎	5.1.4 The indoor noise level and sound insulation performance of	The prerequisite of Hea05 is that a

		<p>the main functional rooms shall meet the national standards;</p> <p>5.2.6 Measures shall be taken to optimize the indoor acoustic environment of the main functional rooms;</p> <p>5.2.7 Sound insulation performance of main function rooms is good;</p>	<p>suitably qualified acoustician (SQA) is appointed by the client.</p>
Hea06 Accessibility	©	<p>4.1.8 There shall be a warning and guide marking for safety protection;</p> <p>4.2.4 Install anti-skid measures on indoor and outdoor ground or road surface;</p> <p>4.2.5 pedestrian and vehicle diversion measures shall be adopted, and sufficient lighting shall be provided for pedestrian and cycle lane;</p> <p>6.1.1 A continuous barrier-free walking lanes shall be established among buildings, outdoor space, public green spaces and urban roads;</p> <p>6.2.2 The indoor and outdoor common areas of the building shall meet the requirements of full-aging design;</p>	<p>Hea06 has different scoring requirements for inclusion and accessible design in residential and non-residential buildings.</p>

Hea07 Hazards	◎	<p>4.1.1 The site shall avoid landslide, debris flow and other geological dangerous areas, and the flood-prone areas shall have reliable flood-prevention infrastructure;</p> <p>The site shall be free from the threat of hazardous chemicals, inflammable and explosive hazard sources, electromagnetic radiation and radon containing soil;</p> <p>4.2.1 Adopt performance-based seismic design and reasonably improve the seismic performance of the building;</p>	
Hea08 Private space	◎	Not addressed in GB/T 50378-2019	
Hea09 Water quality	◎	<p>5.1.3 Setting of water supply and drainage system;</p> <p>5.2.3 The water quality of direct drinking water, concentrated domestic hot water, swimming pool water, water for heating and air conditioning system, and landscape water shall meet the requirements of the current national standards;</p> <p>5.2.4 water storage facilities such</p>	

		<p>as drinking water pools and water tanks shall take measures to meet hygiene requirements;</p> <p>5.2.5 All water supply and drainage pipes, equipment and facilities shall have clear and clear permanent marks;</p>	
<b>Energy</b>			
Ene01 Reduction of energy use and carbon emissions	◎	<p>7.2.8 Take measures to reduce building energy consumption;</p> <p>9.2.1 Measures shall be taken to further reduce energy consumption of building heating and air conditioning systems;</p> <p>9.2.7 Calculate and analyze the carbon emission of buildings and take measures to reduce the carbon emission intensity per unit building area;</p>	<p>BREEAM energy credits (option 1) based on the building's energy demand, primary energy consumption and carbon dioxide emissions.</p> <p>It also provides alternative ways to rate projects without NCM.</p>
Ene02 Energy monitoring	◎	<p>7.1.5 energy consumption of cold and heat sources, transmission and distribution system and lighting shall be measured separately;</p> <p>6.2.6 An automatic remote metering system for classification and classification of energy use is set up, and an energy</p>	<p>Ene02a non-residential and residential institutions only</p> <p>Ene02b residential only</p>

		management system is set up to monitor, analyze and manage building energy consumption;	
Ene03 External lighting	×	Not addressed in GB/T 50378-2019	
Ene04 Low carbon design	◎	7.2.9 Rational utilization of renewable energy based on local climate and natural resources;	For Ene04, if the feasibility study was commissioned at the concept design stage or earlier and in the unlikely event the study conclude that the specification of any local LZC technology was unfeasible ,the LZC credit still be award.
Ene05 Energy efficient cold storage	×	Not addressed in GB/T 50378-2019	
Ene06 Energy efficient transport system	◎	7.1.6 The vertical elevator shall adopt group control, frequency conversion speed regulation or energy feedback and other energy-saving measures; Escalators shall adopt frequency conversion induction starting and other energy-saving control measures;	
Ene07 Energy efficient	×	Not addressed in GB/T 50378-	

laboratory systems		2019	
Ene08 Energy efficient equipment	×	Not addressed in GB/T 50378-2019	
Ene09 Drying space	×	Not addressed in GB/T 50378-2019	
<b>Transport</b>			
Tra01 Public transport accessibility	◎	6.1.1 There shall be a public transportation station or dedicated bus service connecting with the public transportation station within 500m at the pedestrian entrance of the site; 6.2.1 Convenient connection between the site and public transportation stations;	The public transport Accessibility Index (AI) for the assessed building is determined by entering the detail information into the BREEAM Tra 01 calculator.
Tra02 Proximity to amenities	◎	6.2.3 Provision of convenient public services; 6.2.4 Open spaces such as urban green spaces, squares and public sports venues, accessible by foot; 6.2.5 Reasonable setting of fitness and spaces;	Tra02 is awarded credits based on the type of building, the type of local services and facilities and the walking distance.
Tra03a&b Alternative modes of transport	◎	6.1.3 The parking area shall have charging facilities for electric vehicles or installation conditions for charging facilities, and shall reasonably set up parking spaces for electric vehicles and barrier-free vehicles;	Tra03's rating of modes of transport is based on a variety of options. This score can be obtained through different facilities

			6.1.4 Bicycle parking places shall be located reasonably and convenient for access;	and methods.
Tra04	Maximum car parking capacity	×	Not addressed in GB/T 50378-2019	
Tra05	Travel plan	×	Not addressed in GB/T 50378-2019	
Tra06	Home office	×	Not addressed in GB/T 50378-2019	
<b>Water</b>				
Wat01	Water consumption	◎	7.1.7 Water appliances and equipment shall meet the requirements of water-saving products; 7.2.10 Use sanitary appliances with higher water efficiency;	Wat01's score of water consumption needs to be calculated by the BREEAM Wat01 calculator, and the score is based on the result of the calculator.
Wat02	Water monitoring	√	7.1.7 Water metering devices shall be set up according to usage purpose, payment or management unit; 6.2.8 Set up remote water metering system and online water quality monitoring system;	
Wat03	Water leak detection and prevention	◎	6.2.8 Use measurement data for automatic detection, analysis and rectification of pipeline leakage,	Wat03 has different requirements for residential and non-



		and the pipeline leakage rate is less than 5%;	residential buildings.
Wat04 Water efficient equipment	◎	7.2.11 Water-saving equipment or technology shall be adopted in the greening irrigation and air-conditioning cooling water system; 7.2.13 Use of non-traditional water sources;	
<b>Material</b>			
Mat01 Life cycle impact	×	Not addressed in GB/T 50378-2019	
Mat03 Responsible sourcing of construction products	×	Not addressed in GB/T 50378-2019	
Mat05 Designing for durability and resilience	◎	4.1.2 The building structure shall meet the requirements of carrying capacity and building use function. The external walls, roofs, doors and windows, curtain walls and external insulation shall meet the requirements of safety, durability and protection; 4.1.4 Non-structural components, equipment and ancillary facilities inside the building shall be firmly connected and able to adapt to the deformation of the main structure;	

			<p>4.1.5 The exterior doors and windows of the building must be firmly installed, and their wind-pressure resistance and water-tightness performance shall comply with the relevant national standards;</p> <p>4.1.6 Waterproof layer shall be set on the floor of the toilet and bathroom, and moisture-proof layer shall be set on the wall and ceiling;</p> <p>4.2.6 Take measures to improve the adaptability of buildings;</p> <p>4.2.7 Take measures to improve the durability of building parts;</p> <p>4.2.8 Improve the durability of building structural materials;</p> <p>4.2.9 Reasonable use of decoration and construction materials with good durability and easy maintenance;</p>	
Mat06	Material	×	Not addressed in GB/T 50378-2019	
<b>Waste</b>				
Wst01	Construction	×	Not addressed in GB/T 50378-2019	
Wst02	Recycled aggregates	×	Not addressed in GB/T 50378-2019	

Wst03a&b Operational waste	◎	8.1.7 Domestic waste shall be collected by classification, garbage containers and collection points shall be set reasonably and coordinated with the surrounding landscape;	Wst03a non-residential and residential institutions only Wst03b residential only
Wst04 Speculative finishes	◎	GB/T 50378-2019 mandatory provisions: All evaluation projects must be Partial/fully fitted.	
Wst05 Adaptation to climate change	×	Not addressed in GB/T 50378-2019	
Wst06 Functional adaptability	×	Not addressed in GB/T 50378-2019	
<b>Land use and ecology</b>			
Le01 Site selection	×	Not addressed in GB/T 50378-2019	
Le02 Ecological value of site and protection of ecological features	◎	8.2.1 Fully protect or restore the ecological environment of the site, and rationally arrange the buildings and landscape;	The prerequisite for some credits is that a suitably qualified ecologist meeting BREEAM requirements should participate in the assessment reports.
Le04 Enhancing site ecology	×	Not addressed in GB/T 50378-2019	
Le05 long term impact on biodiversity	×	Not addressed in GB/T 50378-2019	

Pollution				
Pol01	Impact of refrigerants	×	Not addressed in GB/T 50378-2019	
Pol02	NOx emissions	×	Not addressed in GB/T 50378-2019	
Pol03	Surface water run-off	◎	8.2.2 Plan stormwater runoff on the surface and roof of the site, and control the total amount of runoff on the site; 8.2.5 Use site space to set up green rainwater infrastructure;	Pol03 also needs to do a flood risk assessment. Attention also needs to be paid to pollution control of surface water runoff.
Pol04	Reduction of night time light pollution	◎	8.2.7 Design of buildings and lighting to avoid light pollution;	Pol04 focuses on light pollution during night time periods.
Pol05	Reduction of noise pollution	×	Not addressed in GB/T 50378-2019	