

weber.therm circle

Premium WDVS.
Zero Waste.



weber.therm circle

Opposite to throw-away mentality



In Spandau, the green west part of Berlin, the sustainable and energy-efficient **BUWOG SPEICHERBALLETT** quarter was recently built. The developer BUWOG implemented a variety of sustainability aspects in the construction of the housing estate along the Havel river and opted for the environmentally friendly external thermal insulation composite system **weber.therm circle**.

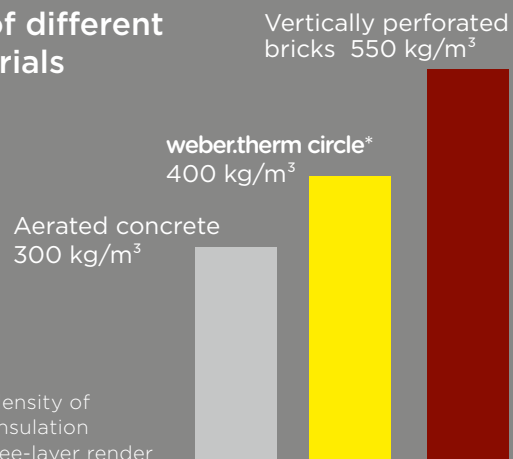
weber.therm circle is the logical development of the ETICS construction method. The innovative system combines the convenience of a thick-layer, fully mineral system with a sustainable, resource-saving approach: **weber.therm circle** is the first external thermal insulation composite system that can be separated by type of component and recycled.

Robust, heavy, long-lasting

No scenery architecture

Styrofoam and hollow spots have nothing to do with **weber.therm circle**. Its raw density is also quite impressive in comparison with monolithic building materials (refer to the diagram). Due to its solid structure the thick-layer premium ETICS adds further mass to light constructions. This improves the heat storage capacity and buffers temperature fluctuations. In this way, the system longer keeps the heat in the house in winter and the heat out in summer. Moreover, the high heat storage capacity of the wall facilitates the rapid drying out of the facade surface and thus prevents the formation of algae. Due to the heavy mineral wool quality and the solid build-up, the system also improves the acoustic insulation.

Raw density of different building materials

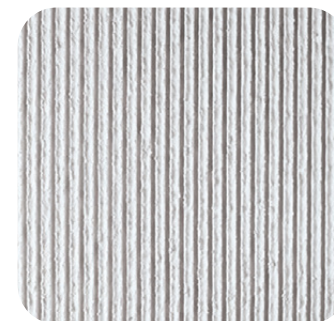


* Average raw density of mineral wool insulation boards and three-layer render



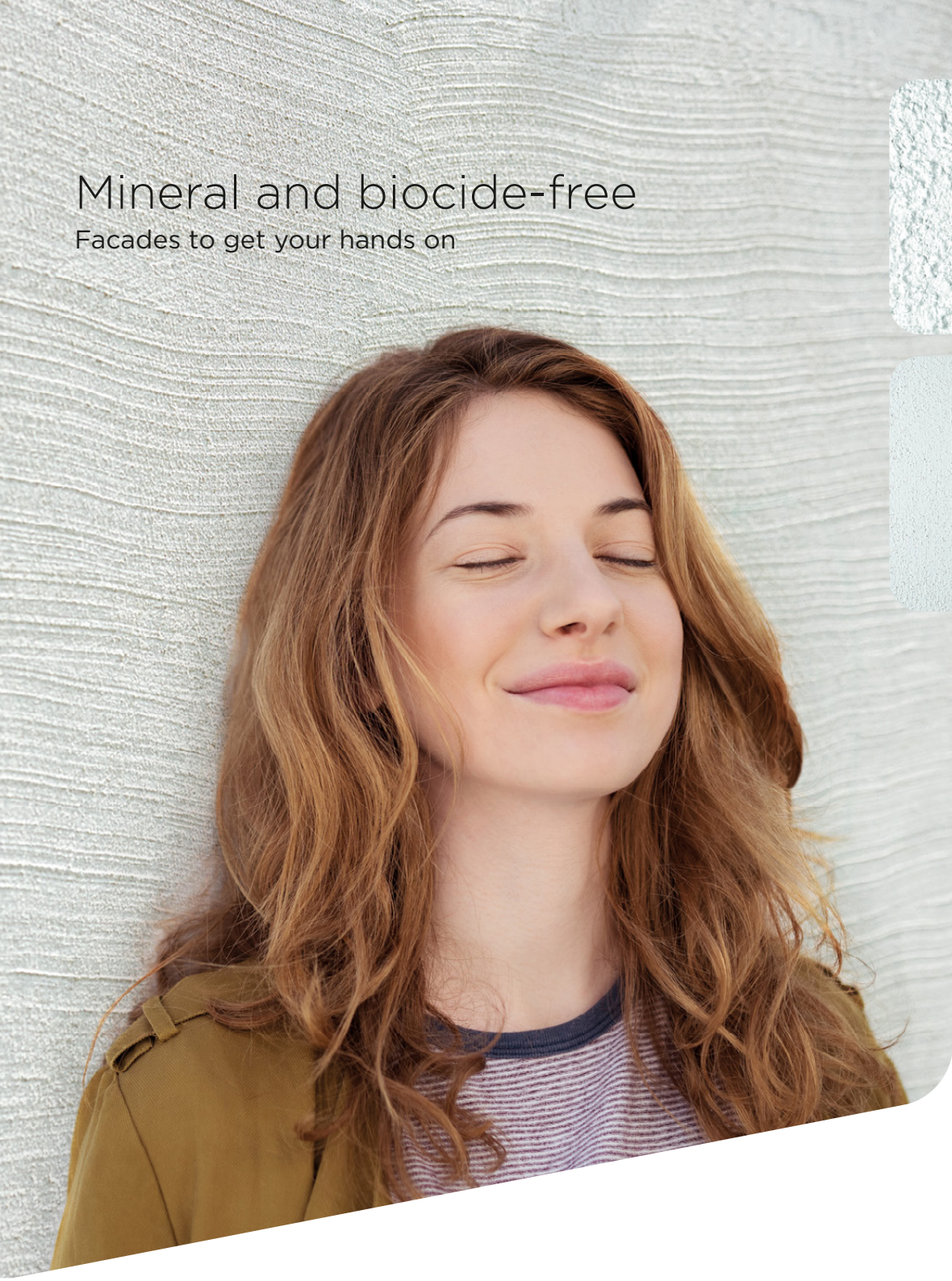
Mineral and biocide-free

Facades to get your hands on



weber.therm circle is a fully mineral system. As such, it is non-combustible, eliminating the need for elaborate fire protection measures such as fire bars. The high vapour permeability of mineral systems results in a balanced moisture management within the wall construction and contributes to a healthy living climate. With its solid, up to 25 mm thick render layer **weber.therm circle** is also suitable for highly stressed facades. The robust render system is low-maintenance and its service life is significantly longer than that of a thin-layer system.

With mineral overlay renders (top coats) and paints, the facade is also protected in the long term against algae and fungal growth. Within **weber.therm circle** facade overlay renders based on the eco-friendly AquaBalance technology are used. This technology picks up the physical (hydrophilic) principle of mineral renders, reinforces it and thus achieves algae protection without biocidal additives.



Free design for top coat render

Diversity instead of uniformity



Broom render



Comb render



Scratch render



Scratch render



Smoothed render



Floated render

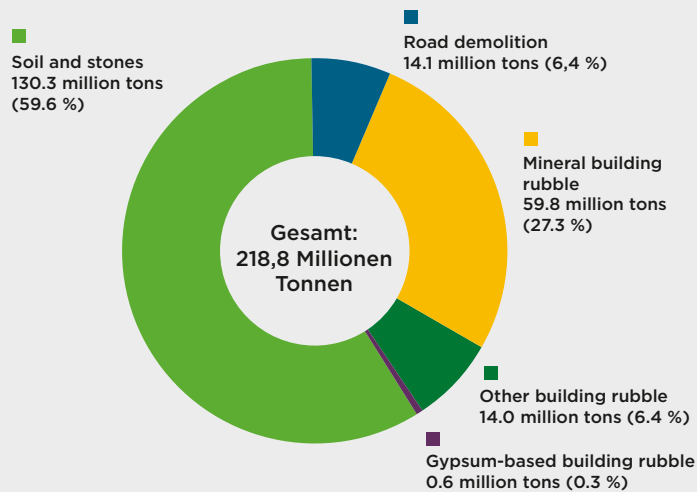


Rilled render



Throw-on render

Statistics on collected quantities of mineral construction waste 2018



Source: 10th Monitoring Report of Building Circular Economy, 2021



Urban Mining

Raw materials for future

For construction activities in Germany, among others around 37 million cubic meters of insulating materials and 100 million tons of sand are used. These are often disposed of in mixed form during extensions or conversions, demolition or dismantling and are thus lost for further recycling.

From the beginning the lack of recyclability of external thermal insulation composite systems has been a major point of criticism. For as the word „composite“ already expresses, all components adhere inseparably one to another, so that they only can be disposed of mixed together, and not sorted type by type.

Saint-Gobain Weber has now developed a solution: With the new Zero Waste external thermal insulation composite system **weber.therm circle** all components can be separated according to each type and recycled after dismantling



Building better

Zero Waste.

In view of the increasing shortage of raw materials, the construction industry has a responsibility. And topics such as circular economy and recycling are not the sole responsibility of planners and architects. The industry, for its part, is obliged to develop appropriate systems. One example is provided by Saint-Gobain Weber with its innovative external thermal insulation composite system **weber.therm circle**.

This is the first recyclable ETICS. All components (insulation material, dowels, fabric and mineral render mortar) can be separated by type and either re-used or returned to the raw material cycle.

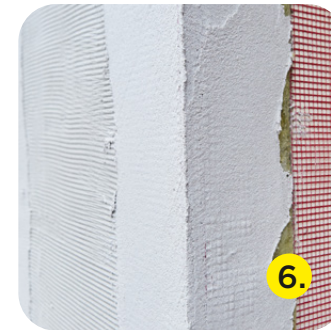


Layer by layer

Innovative system, proven workmanship

The main installation steps correspond to the familiar building practice, so that specialized handicraft companies do not have to make any major changes to their working methods.

The external thermal insulation composite system **weber.therm circle** is applied by certified contractors who have been trained and instructed in advance by the manufacturer in order to give builders and planners the utmost confidence.



1. The insulation boards are fixed to the wall without bonding mortar, but with screw dowels.

2. By inserting caps of mineral wool over the dowel heads heat loss is prevented and the subsequent dismantling made possible.

3. A solid base coat render of 8 - 12 mm thickness is applied directly onto the insulation board.

4. The separation fabric (woven mesh) is installed close to the insulating material. During dismantling, it stabilizes the render shell and ensures a clean separation of the render layers from the insulating material.

5. The separation layer (base coat render + woven mesh) is followed by a reinforcement layer. For this purpose, a lightweight reinforcing mortar is applied in a thickness of 5 - 8 mm and the same woven mesh is embedded.

6. The formation of corners and connections is similar to conventional ETICS.

7. As third layer of render an overlay render (top coat) is applied. The whole solid render shell can thus achieve a layer thickness of over 25 mm

8. The use of mineral overlay renders makes it easy to recycle the whole render shell as single-variety.

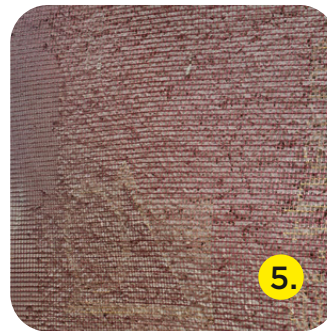
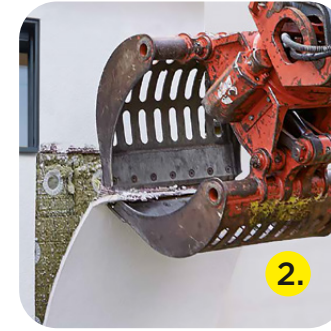
Dismantling

Clean separation and re-use after recycling

During demolition, the render layer stiffened by the separation fabric can be cleanly removed from the mineral wool with an excavator shovel. Steel screws are screwed out of the wall and the dowel shafts are cut with a milling cutter. Afterwards the mineral wool can be completely removed from the wall.

The main components can be easily separated from each other. The mineral wool insulation can be directly recycled for use in subordinated application fields on job sites. The mineral render is crushed and can be re-used as aggregate for new mineral building materials (concrete, mortar).

The steel screws are melted down and re-used for new steel products. Plastics and fiberglass can be collected separately and brought back into the material cycle.



1. At the beginning of dismantling the render layers and the separation fabric (woven mesh) are divided in segments with a cutting disc.

2. The hydraulic excavator shovel tears off the segments of the render shell from the insulation board.

3. The separation fabric stabilizes the segments, so that it can be separated as a whole from the insulation board.

4. The render is crushed after its removal from the separation fabric and used as additive in subordinated mineral building materials.

5. The fiberglass fabric is shredded and returns to the material cycle. It is re-used for ex. for the reinforcement of plastic building components

6. The steel screw dowels are melted down after the separation of the polyamide sheating and re-used for new steel products.

7. The plastic dowels are given a new lease of life on the building site. They are recycled as printed material for third-party assembly on ETICS.

8. The mineral wool insulation boards can be directly recycled. They find a new usage in building separation joints or flocked as blow-in insulation.



Info about
weber.therm
circle



Technical background

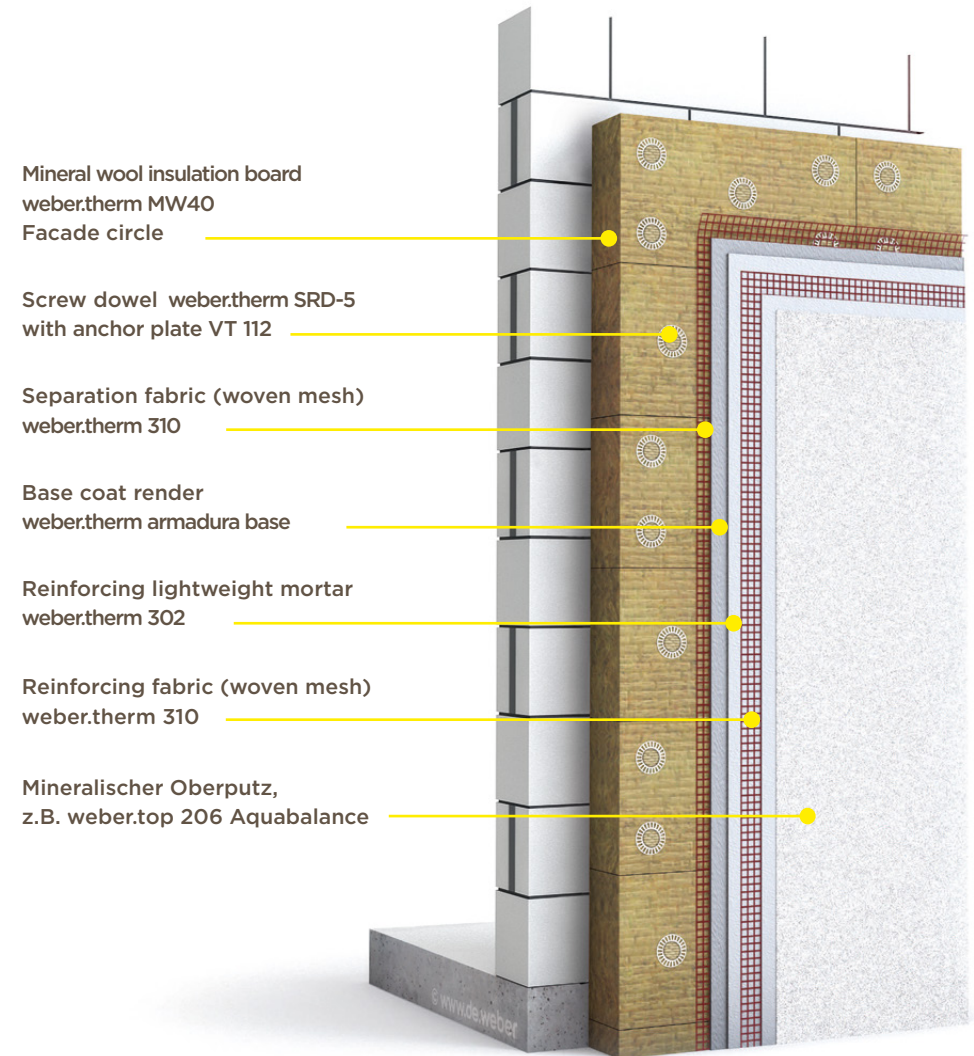
Mode of operation

Functionality is ensured by a coordinated interplay of shear stiff mineral wool insulation material, high-performance fasteners, multifunctional countersunk plates and a specially developed, solid reinforcing base coat render.

The insulation boards are fastened to the masonry only mechanically with screw dowels, i.e. the system does not require any bonding mortar. The dowels are installed countersunk and the dowel heads are then covered with a cap of mineral wool. Afterwards a reinforcing base coat render is applied in a layer thickness of 10 to 15 mm. This render has a levelling and stiffening function. A separation fabric is inserted into the render layer.

In contrast to the woven mesh within the reinforcement layer, the separation fabric is not placed in the upper third, but in the lower third of the mortar layer, and thus close to the insulation board. It is necessary for the subsequent residue-free dismantling, during which the separation fabric is removed strip by strip together with the render layer.

The separation layer is followed by a reinforcement layer (lightweight mortar + mesh). The top coat render is the third render layer. The solid three-layer render system can thus achieve a layer thickness of over 25 mm.



Bundespreis
ecodesign
Produkt 2019



Official approval of **weber.therm circle** : Z-33.9-167

Time to act

Building as a cycle

Technical values/ Fields of application weber.therm circle		
Insulation board	Reaction to fire (Euroclass)	A1 non-combustible (nach EN 13 501)
	Rated value of thermal conductivity	0.04 W/(mK), (Norm 4108-4)
	Class of thermal conductivity	WLG 040
	Specific heat capacity	1.03 kJ/ (kgK)
	Water vapour diffusion resistance value	1 (EN 13 162)
	Shear strength	≥ 15 (EN 13 162)
Fields of application	Substrate	massive substrates/ masonry, concrete
	Insulation thickness	100 – 200 mm
	Render thickness	up to 30 mm
	Building height	18 m
	Wind load zone	1 (max. 22.5 m/s) and 2 (max. 25.0 m/s)
	Weight of system	up to 75 kg/m ²
	Number of dowels	5 per board



**weber.therm circle –
today building material
tomorrow raw material**

- massive, fully mineral system
good protection against heat,
cold and sound
- non-combustible, permeable to
water vapour, long-lasting solid
and thick-layer system build-up
- durable protection against
algae without biocides
- completely recyclable



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