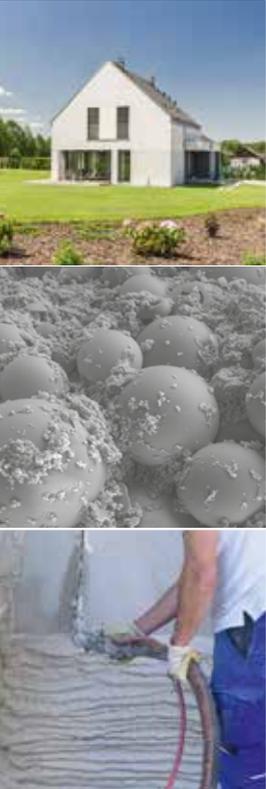




ecosphere

Mineral-based spray insulation



Glass meets mortar:

- ✓ ***new building material technology***
- ✓ ***based on hollow glass microspheres***
- ✓ ***revolution in the insulation market***



DEUTSCHER ZUKUNFTSPREIS
Preis des Bundespräsidenten
für Technik und Innovation

2020 nominiert

Birth of a new generation of building materials



maxit eco 70
Bonding layer | 30 kg

maxit eco 71
Sprayable interior insulation | 75 l

maxit eco 72
Sprayable exterior insulation | 75 l

maxit eco 73
Reinforcement mortar exterior | 20 kg

maxit eco 79
Reinforcement mortar interior | 20 kg

Marriage between glass and mortar

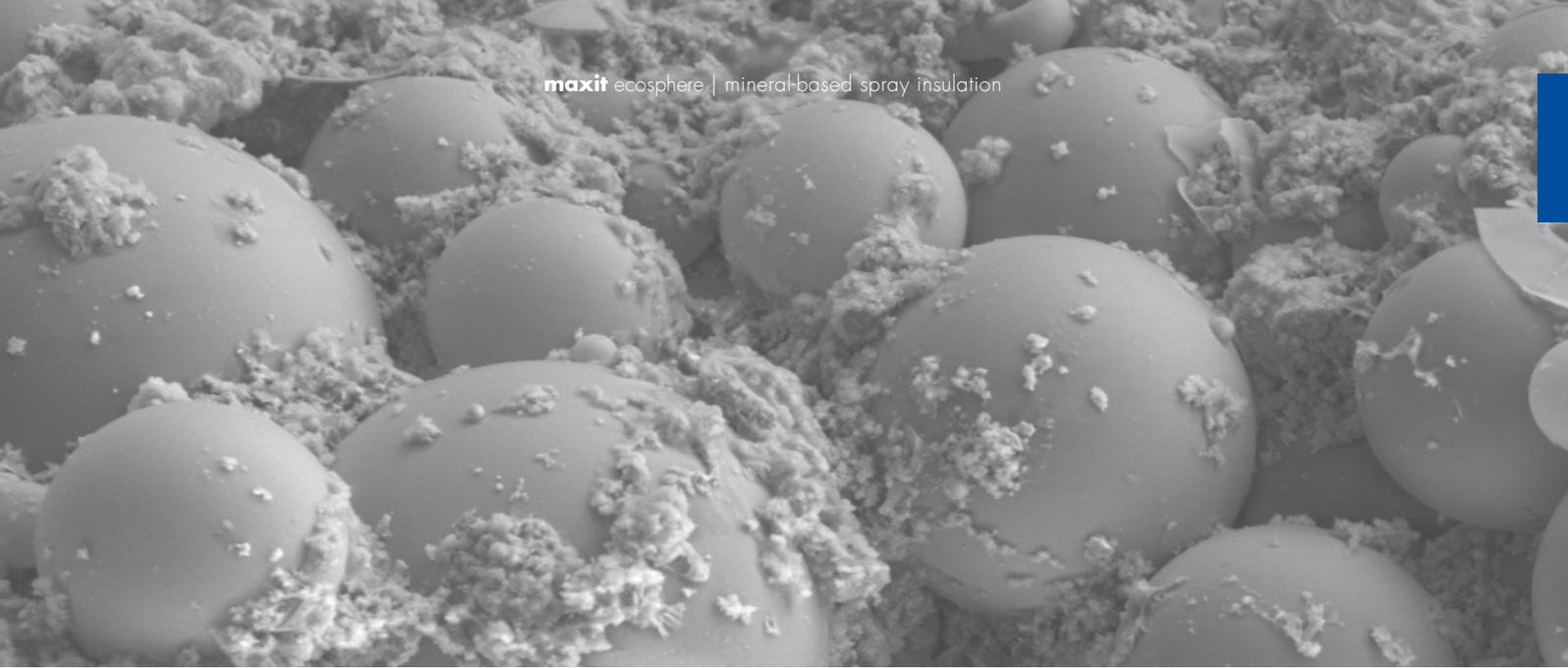
Supported by the Federal Ministry of Education and Research (BMBF, Berlin), **maxit** developed a completely new building material technology with the **ecosphere** insulation system. **maxit** initially applied this to an interior wall insulation, followed by a façade insulation based on mortar. Hollow glass microspheres function here as lightweight aggregates and provide the best values in terms of thermal insulation, weight reduction and long-term stability.

What makes it special is that the mineral material can be sprayed from a building material silo and is therefore not only completely joint free, but is also easy to apply.

Convincing strengths

- For interior and exterior use
- Long-term stability
- Purely mineral
- Recyclable
- High energy efficiency
- Low thermal conductivity
- High heat storage capacity
- Application from silo
- Sprayable
- Flexible usage
- High heat and frost resistance





ecosphere is revolutionising the insulation market

In Germany alone, the total area of surfaces requiring thermal refurbishment amounts to approximately 1.4 billion square metres. To date, panel solutions have been the most common method for interior and façade insulation. They are the subject of some controversy among experts, however. Not only is their installation often complex, but the basis of common thermal insulation systems – such as polystyrene and mineral wool in the outer area and mineral foam in the inner area – comes in for criticism. Long delivery periods, technical concerns or ecological demands are causing scepticism, which is why the search for alternatives is already in full swing.

ecosphere is not only a successful step toward an alternative solution, this innovative technology also marks the beginning of a completely new generation of building materials. Far removed from rigid panel solutions, **ecosphere** takes existing insulation technology to a new level and combines all the advantages in one.

- Thermal insulation & heat storage
- Weight reduction
- Conservation of resources
- Ecological aspects
- Yield

As of 2019, the first field of application for **maxit's** new **ecosphere** technology will be in a sprayable interior and exterior mortar-based insulation.



Lightweight, stable & ecological – taking nature as an example

In recent years, consumers have become increasingly aware of ecology as a social topic. Ever better insulated houses and the growing attention to products of natural origin are pointing the way. Mineral building materials are therefore also in particularly high demand for façade and interior insulation. With the **ecosphere** insulation system, we are introducing a completely new solution. It is the result of a long-term research project. With the support of federal funds and in close cooperation with the University of Bayreuth, the Finger Institute for Building Material Engineering at the University of

Weimar (FIB) and the company 3M (Minnesota), it has been possible to develop a building material technology that meets modern requirements. **maxit ecosphere** follows the example of nature, which avoids any form of overdimensioning. This is demonstrated, for example, in the formation of human bones, which consist of ideal, multicellular pore structures. Optimum technical parameters, coupled with the conservation of resources, was the guiding principle in the development of insulation materials. Tiny vacuum hollow glass spheres, so-called glass bubbles, which are used instead

of sand or other lightweight materials, are the secret behind **ecosphere**. As resources become increasingly scarce, this is an enormous advantage. As of 2019, the first field of application for the new building material technology will be in a spray-able interior and exterior mortar-based insulation. The new insulating material is therefore not only purely mineral and thus completely recyclable, but is also classified as „non-combustible“ (A1).

With funding from the Federal Ministry of Education and Research, **maxit** (Azen-dorf) has developed a completely new generation of building material with the **ecosphere** insulation system.

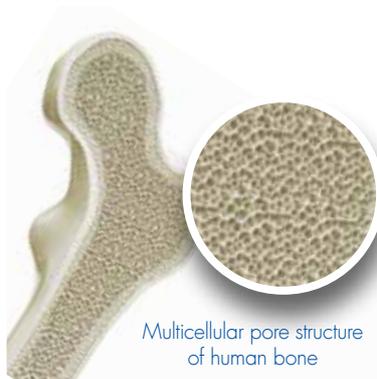
When developing **ecosphere**, **maxit** took nature as an example, which always avoids overdimensioning.

The formation of human bones, for instance, which consist of ideal, multicellular pore structures, served as a blueprint.

SPONSORED BY THE



Federal Ministry
of Education
and Research





Hollow glass microspheres as lightweight aggregates

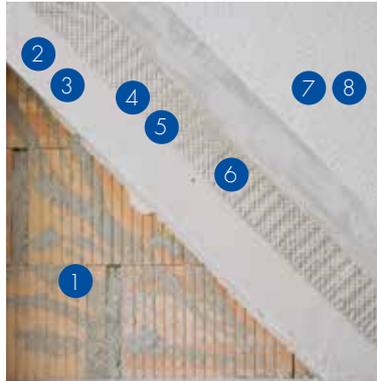
Hollow glass microspheres offer a number of advantages as lightweight aggregates: in addition to their high compressive strength and good rheological properties, the special thermal insulation properties of the microscopically small vacuum glass bubbles are also impressive. This makes them the ideal admixture for thermal insulating products. Hollow glass microspheres also score from an ecological point of view. They are extracted from various types of sand, thus ensuring the continuity of resources. The result is a low-alkali glass which is also non-combustible.

maxit ecosphere: thermal insulation plus heat storage

With an application thickness of only 20 to 100 millimetres, **ecosphere** spray insulation does not require any plaster lathing. When applied in thicknesses exceeding 100 millimetres, plaster lathing is used.

maxit ecosphere scores with excellent insulating properties and a thermal conductivity coefficient of $\lambda_{10, \text{dry, mat}} < 0.040 \text{ W/(m}\cdot\text{K)}$ in dry form. These are achieved by the microscopically small hollow glass spheres, which delay heat transfer thanks to vacuum containment. Moreover, they ensure in a purely physical way that algae and mould barely have a chance on the façade. This effect is due

in particular to the exceptional insulating and heat-storing properties of the insulating layer containing glass bubbles: the outer wall cools down at a significantly slower rate and dries out correspondingly faster.



- 1: **maxit** eco 70 Bonding layer
- 2: **maxit** eco 71 / 72 Sprayable insulation
- 3: **maxit** prim eco 1170 Primer
- 4: **maxit** eco 73 Reinforcement mortar exterior
- 5: **maxit** eco 79 Reinforcement mortar interior
- 6: Reinforcement mesh MW 8 x 8 mm
- 7: **maxit** mineral finish plaster
- 8: Paint coating if necessary

For interior and exterior use

ecosphere can also fully unleash its climate-regulating advantages in the interior insulation of façades: in contrast to panel solutions, its sprayability ensures seamless application and eliminates the risk of cavities. This prevents waterlogging and the formation of mildew, keeping the air in the interior healthy at all times.

The lightweight insulation that deserves its name.

Fresh mortar weight	250 kg/m ³
Dry bulk weight	125 kg/m ³
Water ratio	200 % to dry mass
Thermal conductivity coefficient (dry)	$\lambda_{10, \text{dry, mat}} < 0.040 \text{ W/(m}\cdot\text{K)}$
Compressive strength	0,8 N/mm ²
Flexural strength	0,2 N/mm ²
Yield	1 t = 7.200 l fresh mortar
Building material class	A1, non-combustible
Water vapour permeability coefficient μ	ca. 5
Water absorption	W _C 1 (eco 72), W _C 0 (eco 71)



Easy application from the silo

Especially in times of a shortage of skilled workers, the method of application is a decisive factor in the handling of building materials. Thanks to their excellent rheological properties, **ecosphere** insulations are well suited for both indoor and outdoor use: application is carried out classically by rendering machine from a bag or silo. Segregation is ruled out.

Refurbishment made easy

The new **ecosphere** spray insulation is applied – up to a thickness of 100 millimetres without plaster lathing – classically by rendering machine and from the silo. Installation errors, like those that can occur with panel systems, are virtually eliminated thanks to its sprayability.

Insulation in just one working day

The work is carried out in several layers „fresh in fresh“, i. e. in directly successive operations up to the desired layer thickness – and without any significant waiting times.

A reinforcement layer is applied on the same material basis. Commercially available insulating plaster equipment can be used without modification. With its extraordinary yield of 7,200 litres of sprayable **ecosphere** insulation with just one tonne of dry mortar, **maxit ecosphere** is impressive.

Technology owes this to the innovative combination of hollow glass microspheres with the latest mortar technology.



For more information, see
www.maxit-ecosphere.de

SPONSORED BY THE



Federal Ministry
of Education
and Research



maxit nord

maxit Baustoffwerke GmbH
Brandensteiner Weg 1
07387 Krölpa, GERMANY
Phone: +49 3647/433-0
Fax: +49 3647/433-380
E-Mail: info@maxit-kroelpa.de

maxit süd

Franken Maxit
Mauermörtel GmbH & Co.
Azendorf 63
95359 Kasendorf, GERMANY
Phone: +49 9220/18-0
E-Mail: info@maxit.de

BAYERN'S
BEST 50
PREISTRÄGER 2014

