DEUTSCHE STEINZEUG AGROB BUCHTAL

Building certifications and environmental guidelines

DEUTSCHE STEINZEUG AGROB BUCHTAL

Useful information on environmental certificates for ...

1) Buildings

- **LEED** **(USA)**
- **DGNB** **(Germany)**
- **BREEAM** **(Great Britain)**
- **HQE** **(France)**
- **SBTool** **(Canada)**

2) Products

- **Type I (DIN EN ISO 14024): Blue Angel / Ecolabel**
- **Type III (DIN EN ISO 14025): Environmental Product Declaration (EPD)**

3) Companies

- **EMAS**
- **DIN EN ISO 14001 (Environment Management System)**
- **DIN EN ISO 50001 (Energy Management System)**

Supplementary information

a) CE marking
b) Ceramic tiles: service life / underfloor heating
c) Brief environmental profile
d) Other environmental protection aspects

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1) Buildings

These certificates are issued by auditors.
Already during the bidding phase of a project, the manufacturers are asked which contribution their building products can make to a possible certification. In this connection, ecological, economical and social aspects are relevant.

Essential (inter)national building certifications:

BREEAM	DGNB	HQE	LEED	SBTool
Building **R**esearch **E**stablishment **E**nvironmental **A**ssessment	**D**eutsche **G**esellschaft für **N**achhaltiges **B**auen	**H**aute **Q**ualité **E**nvironnementale	**L**eadership in **E**nergy and **E**nvironmental **D**esign	**S**ustainable **B**uilding **T**ool
Great Britain	Germany	France	USA	Canada

As these certificates are issued for buildings, they cannot be obtained by products and manufacturers*. The assessment criteria of the diverse building certifications differ from each other in details. DSCB has drawn up fact sheets for the systems LEED, BREEAM and DGNB, which are made available on request.

In case of such a request, please contact
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*Independent of this, we are a member of the following certification organisations in order to visibly express the environmental protection concept to which we have been committed for many decades and to actively promote the goals of the respective organisations:

- since Nov. 2008: DGNB Deutsche Gesellschaft für Nachhaltiges Bauen (AGROB BUCHTAL GmbH)

- since Jan. 2009: Green Building Council of South Africa (AGROB BUCHTAL GmbH)

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2) Products

Type I and Type II: n o t relevant for us, just an example

Blue Angel	Not available for ceramic tiles
Ecolabel	The Ecolabel represents a disproportionately high financial outlay as the label is awarded for each individual product. It has not asserted itself in the ceramic tile sector with its extremely extensive variety of products. - Distinction for special environmental performances - Verified (type I according to ISO 14024) - self-declared (type II according to ISO 14021)

Type III (DIN EN ISO 14025): relevant for us:

EPD Ceramic Tiles and Panels	Available in German and English: - Co-ordinated by the Industrieverband keram. Fliesen und Platten for its members (and therefore also for AGROB BUCHTAL) - Created by the Institut für Bauen und Umwelt e.V. (IBU) in Königswinter, Germany; thus verified by third parties - life cycle-based (life cycle assessment according to ISO 14040) - without assessment

EPD (Environmental Product Declaration)

EPDs provide information on the use of energy and resources and the extent to which a product contributes to the greenhouse effect, acidification, over-fertilisation, destruction of the ozone layer and formation of smog. Furthermore, information is provided on the technical features required for estimating the performance of the construction product in the building, e.g. service life, thermal and sound insulation or the influence on indoor air quality. Institut Bauen und Umwelt e.V. (IBU) draws up Environmental Product Declarations in accordance with Type III (DIN EN ISO 14025). These Declarations are based on independent analyses and indicate the quality of a product as well as the company's sense of responsibility with regard to sustainable building.

IBU EPDs are based on the international ISO 14025 standard which applies across individual sectors and products. IBU is currently the only organisation in Germany which consistently issues declarations in accordance with this internationally valid standard.

An EPD therefore helps to evaluate the building as a whole. Consumption of resources and emissions across the entire manufacturing process are recorded and documented. The corresponding contribution to the greenhouse effect, over-fertilisation or acidification of water bodies can be quantified and evaluated using the Life Cycle Assessment method. Such Life Cycle Assessments therefore deliver a systematic and standardised data base for deriving an overall ecological analysis of individual construction products via the EPD "modular system".

Institut Bauen und Umwelt e.V.

THIRD-PARTY VERIFIED EPD ISO 14025 and EN 15804 Institut Bauen und Umwelt e.V.

In collaboration with the Industrieverband Keramische Fliesen + Platten e.V., we support the EPD range of Institut Bauen und Umwelt e.V. for the purpose of sustainable building.

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3) Companies

EMAS (**E**co-**M**anagement and **A**udit **S**cheme)	This system for voluntary Environment Management and the environmental audit represents an **instrument developed as early as 1993 by the European Community (now known as the European Union) for companies aiming to improve their environmental performance**. Current legal situation: Directive (EC) No. 1221/2009. This amendment came into force on 11 January 2010. The structure of an EMAS environment management system and associated processes have also complied with the DIN EN ISO 14001 since 2001.
DIN EN ISO 14001 (Environment Management System)	This standard outlines the development and optimisation of an environment management system which may also only be defined for parts of an organisation. Relevant aspects include: • Emissions into the air • Discharge into water bodies • Contamination of soil • Consumption of raw materials • Use of energy • Release of energy • Waste and by-products Also to be taken into consideration: • Design and development • Manufacturing process • Transport • Waste Management • Disposal Some components of the DIN EN ISO 14001 are also included in the DIN EN ISO 50001 (Energy Management System). See next page for details.

Deutsche Steinzeug Cremer & Breuer AG with its sales company for the AGROB BUCHTAL brand has been committed to environmental protection for several decades and avails of an accordingly heightened self-image. In other words, we do not need any legislation or directives as we implement the corresponding guidelines on the basis of our own inner conviction.

The criteria outlined in the DIN EN ISO 14001 standard are practically complied with inherently (therefore and also for cost reasons, formal certification is consciously dispensed with), e.g.

- Combining economic and ecological requirements with high demands on design
- Environmental protection, occupational safety and health as integral components of the corporate strategy which is aligned towards sustainability
- Continuous improvement/optimisation of products and processes
- Regular training as regards environmental protection, occupational safety and health
- Appointment of an Energy and Environment Protection Officer for each individual location

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Sub-topic DIN EN ISO 50001 (Environment Management)

One area of the DIN EN ISO 14001 outlined above and an additional module in the environmental protection philosophy prevailing in our company is represented by the DIN EN ISO 50001 Energy Management System (**see next page for corresponding certificate**).

Combined with the DIN EN ISO 50001, the following premises are of relevance, for example:

- Energy savings and continuous improvement of energy efficiency are key corporate goals.
- An awareness as regards saving energy and the corresponding knowledge should be promoted.
- The Management Board agrees on energy targets and programmes specifically listing the results, measures, deadlines and responsibilities to be pursued.
- The Management Board safeguards the requisite financial and structural prerequisites.

The specific goals of the DIN EN ISO 50001:

- Recording/Evaluating the use of energy and determining factors
- Effective deployment of the requisite energy by permitting processes to reduce consumption and emissions where possible (including on launching/modifying products and methods)
- Introduction of suitable processes facilitating analysis of compliance by the energy policy and the energy programme, and correction of the course as required in the form of alternative measures
- Regular inspection of compliance with statutory guidelines and requirements as a given prerequisite when specifying difficult goals and controlling the success thereof
- More consideration should be given to energy efficiency in training measures on offer. Work groups, projects, seminars etc. should be offered to encourage employees to actively get involved in the theme of energy management.
- All employees are regularly informed and included in the energy management process in such a way that they can make a contribution.
- Specific energy consumption and the specific energy costs per product unit should be reduced continuously. This is a goal worth pursuing for both economical reasons as well as in terms of environmental protection and conservation of resources.
- At the same time, reducing emissions of greenhouse gases also contributes towards climate protection.
- Priority should always be given to cases where it makes sense to use regenerative energy.

The following s t r a t e g i c goals are pursued on the basis of the energy policy:

- Reduction in the specific consumption of electricity / natural gas and energy-related emissions
- Energy-efficient design of the production processes
- Communication of the energy goals and energy programmes
- Integration of energy management in internal company training
- Improvement of participation by employees
- Avoiding energy wastage

Furthermore, **o p e r a t i v e goals** for reducing specific energy consumption are specified annually which are to be achieved by means of a suitable range of measures.

DEUTSCHE STEINZEUG AGROB BUCHTAL

Certificate

The
Environmental Verifiers
Henning von Knobelsdorff & Dr. Wolfgang Ulrici hereby certify that

Deutsche Steinzeug Cremer & Breuer AG
at the locations:
Servaisstraße, D-53347 Alfter-Witterschlick
Rheinallee 19, D-53489 Sinzig
Jasba Mosaik GmbH, Im Petersborn 2, D-56244 Ötzingen
Buchtal , D-92521 Schwarzenfeld

for the scope
manufacture of ceramic surface materials
has implemented and is applying an

Energy Management System

complying with the standard

DIN EN ISO 50001:2011.

The certificate is valid until March 15th, 2018.
The Management System will be reviewed on annual basis until that date.
Certificate No. 16122011DSCBeeg00engl

Bonn, March 19th, 2015

Henning von Knobelsdorff — Environmental Verifier — DE-V-0090

Dr. Wolfgang Ulrici — DE-V-0120

Environmental Verifier Henning von Knobelsdorff, Mozartstraße 44, DE-53115 Bonn
Certification of management systems

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Supplementary information

a) CE marking

This issue is regularly combined with environment protection certificates although there is no direct connection. In simplified terms, the CE marking indicates that the respective product complies with minimum requirements in terms of **safety of use** enabling it to be distributed within the EU.

b) Ceramic tiles: service life / underfloor heating

The service life offered by tiles is unusually lengthy. Unlike other types of coverings, there are not only clear economic (procurement and maintenance costs) reasons in favour of ceramic tiles but also ecological ones (Life Cycle Assessment):

Average service life of tiles	40 years
Average service life of textile floor coverings (e.g. carpet)	10 years

Source: Study on environmental impact by residential buildings, Ökoinstitut e.V., Freiburg

This study was based on a service life of 80 years for a residential building in Germany. During this period, the textile floor covering would require replacement, disposal, new production and installation seven times as opposed to only once in the case of tiles. When combined with the numerous other advantages, this therefore results in a clear advantage for ceramic tiles when compared to carpet, wallpaper, plaster, laminate etc.

What's more, ceramic is the ideal covering for underfloor heating thanks to its extremely high thermal storage and conductive properties (acting like a large tiled stove unfolded across the floor): giving rise to pleasant radiant heat instead of convection heat via air circulation. This is not only subjectively perceived to be more pleasant by the human body - it actually objectively reduces heating costs as this heat sensation is achieved at a lower temperature. Consistent heat distribution across the entire floor surface avoids air "turbulence" with the result that less dust is whirled up and the air is subjected to less pollution.

c) "Brief environmental profile" **(see next page)**

This concerns average values from our plants in which products representing the AGROB BUCHTAL brand are manufactured. This brief "fact sheet" aims to facilitate swift responses to your queries as well as serving as an active sales pitch tool.

d) Other environmental protection aspects

Please refer to page 11 - 2.8.

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Environmental protection is one of the most urgent tasks of our days to which we feel obliged to a great extent: not only since this subject has been in the public eye and not forced by laws and decrees, but voluntarily and based on inner conviction. Here are some typical examples for this:

- Our ceramic tiles are manufactured from natural raw materials, e.g. clay, kaolin, feldspar and quartz.
- They are recommended with respect to construction biology and even excellently suitable for persons suffering from an allergy. As regards the material characteristics, our products are closely related to the dishes from which we eat our daily meals and to those ceramic materials which are even used for medical purposes such as artificial hip joints or false teeth – these examples impressively demonstrate that ceramics is perfectly compatible with the human organism and nature and has proved as harmless material for thousands of years.
- The natural raw materials mentioned above are available in Germany in excellent quality and sufficient quantity. Our production plants are all situated near the deposits. This means short transport distances, i.e. environmental protection already starts at the raw material extraction.
- After the exploitation of a clay pit, the landscape is recultivated. In this way, recreational areas, bathing lakes or nature zones are created which already during the utilization as clay pit and afterwards in recultivated state are ecologically more valuable than e.g. former arable or fallow land: a new flora and fauna with a large number of species are developing.
- Our products are no throw-away products, but durable and therefore eco-friendly. Also at the end of the long product life cycle, they are easy to handle: our ceramic tiles are no hazardous waste requiring costly disposal, but uncomplicated building rubble which is in great demand e.g. as back-fill material in road construction.
- Our ceramic tiles emit no dusts, gases or other substances during their long life. They constitute no danger to the environment, persons, animals or plants. In contrast to many other materials, no harmful or toxic gases are released even in case of fire.
- The German laws and conditions concerning environmental protection rank among the strictest in the world. They do not only exist on the paper, but are also strictly supervised.
- For firing, natural gas, one of the cleanest energy sources at all, is used. The few remaining exhaust gases are carefully filtered, e.g. by means of absorption systems. The top-modern firing kilns are exactly controllable. In this way, energy can be saved or efficiently utilized.
- Recycling and closed cycles play an important part for us:
  - solid media: clay and other raw materials accumulating during the manufacturing process are systematically collected and reused in the production cycle.
  - liquid media, in particular the water for industrial use, are recycled to a high degree: approx. 90 % of the total production quantity of our Group are manufactured completely without sewage, i.e. the industrial water is recycled at a rate of 100 %. The remaining 10% of the total production quantity are produced in a factory which has its own sewage treatment plant already built more than 50 years (!) ago. Thanks to regular modernization and maintenance, it has been operated since then without interruption, trouble-free and efficiently.
  - gaseous media: the waste heat of the firing kilns is used for the pre-drying of unfired raw products to save firing energy in this way.
- We pack our products in boxes made of recycling material which can be reasonably reused afterwards. Besides, we have been permanently reducing the volume of packagings, because material that is not circulated at all is the best contribution to environmental protection.
- As far as logistically possible, we are using returnable pallets. The number of countries participating in this exchange pool is constantly growing, so that the effect of this measure is increasing more and more.
- Another important contribution to environmental protection is our innovative HT surface coating. Thanks to the extremely easy cleaning and the antibacterial effect (without using any chemical products), the consumption of cleaning agents and disinfectants can be considerably reduced. This not only saves time and money, but helps to protect the environment. In addition, HT decomposes the exhaust fumes produced by Industry and cars: a facade surface of 1000 m^2 with HT tiles cleans the air as effectively as 70 medium-sized deciduous trees.