



Floors for Generations

Sustainable Flooring Solutions





Our reference in in Waldfischbach (Germany):
Medical center

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Master Builders Solutions

The Master Builders Solutions brand brings all of our expertise together to create chemical solutions for new construction, maintenance, repair and renovation of structures. Master Builders Solutions is built on the experience gained from more than a century in the construction industry. The know-how and experience of a global community of construction experts form the core of Master Builders Solutions.

We combine the right elements from our portfolio to solve your specific construction challenges. We collaborate across areas of expertise and regions and draw on the experience gained from countless construction projects worldwide. We leverage global technologies, as well as our in-depth knowledge of local building needs, to develop innovations that help make you more successful and drive sustainable construction.

The comprehensive portfolio under the Master Builders Solutions brand encompasses concrete admixtures, cement additives, solutions for underground construction, waterproofing solutions, sealants, concrete repair & protection solutions, performance grouts, performance flooring solutions and solutions for on- and offshore wind energy.

Our comprehensive portfolio

- Concrete admixtures
- Cement additives
- Chemical solutions for underground construction
- Waterproofing solutions
- Sealants
- Concrete repair and protection solutions
- Performance grouts
- Wind turbine grouts
- Performance flooring solutions



Sustainable Proof

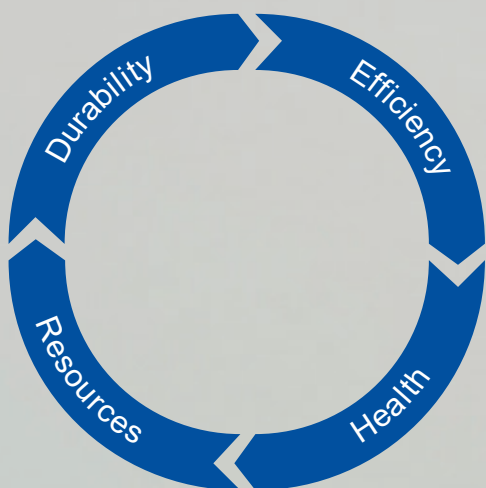
Thinking about tomorrow, today. Whatever project you have in mind: our Master Builders Solutions experts offer you a system with a very positive eco-balance over its entire life cycle.

For big plans, you need a strong partner. We at Master Builders Solutions can look back on more than one hundred years of experience in the construction chemicals field. Thanks to this experience and continuous investment in research and development, we are in a position to develop optimum product solutions.

As a specialist in seamless flooring systems, we offer tailor-made solutions for any application. Our flooring systems are not only perfectly suited to meet functional requirements, but also allow interior designers considerable leeway for creativity and have convincing installation properties.

Moreover, floors from Master Builders Solutions contribute to sustainable development: the extreme durability of our flooring solutions and their low maintenance costs result in a positive eco-balance over their entire life cycle. Further advantages are easy maintenance and low emissions of volatile organic compounds. Sustainability is a complex interplay of environmental, social and economic aspects. We have analyzed them, applied them to our flooring systems and finally generated Environmental Product Declarations (EPDs), that have been certified by an independent third party authority (SVR – Committee of Experts; EPDs issue date 22.07.2013). This means the greatest possible transparency and convincing arguments – for you and your customers.

**“Meeting the needs of the
present without compromising
the ability of future generations
to meet their own needs.”**



Our reference in Dresden (Germany):
80. elementary school Dresden



Our reference in Rüsselsheim (Germany):
Catering kitchen in GPR Gesundheits- und Pflegezentrum



Resources



The production of goods requires resources such as raw materials, energy and human capabilities. Our task is to deal with these resources carefully and considerately.

A particular focus of Master Builders Solutions experts is therefore the selection of raw materials required to manufacture the products, since some of these resources are finite. The objective is for these resources to remain available to future generations on a sufficient scale.

That is why our MasterTop and Ucrete flooring systems consist largely of renewable raw materials such as castor oil. In addition, natural mineral fillers are used such as calcium carbonate (limestone), quartz, barium sulphate – and water.

The use of renewable raw materials reduces dependency on fossil resources and can help to mitigate climate change. In addition, our flooring systems with a high proportion of natural, renewable resources ensure low emissions and result in high indoor air quality.

Throughout the production process, we also set great store by energy saving and continuously optimize our use of energy. We at Master Builders Solutions operate on a consistently sustainable basis, meaning that it remains in control of energy utilization, from selection of the raw materials to production, thus achieving maximum efficiency and being able to conserve precious resources.

Decorative floors: PU systems

PU – short for polyurethane. This material is convincing in its individually adaptable properties such as elasticity and tear and scratch resistance. Moreover, it provides a wide variety of colors for a range of applications. For instance, polyurethane resins offer highly resilient, optically appealing and durable floor coatings which are pleasant to walk on. PU systems form a 100 % homogenous surface – without weak spots such as joints or edges. Classic areas of application include the health, care and education sectors, office and administration buildings as well as industry and commerce.

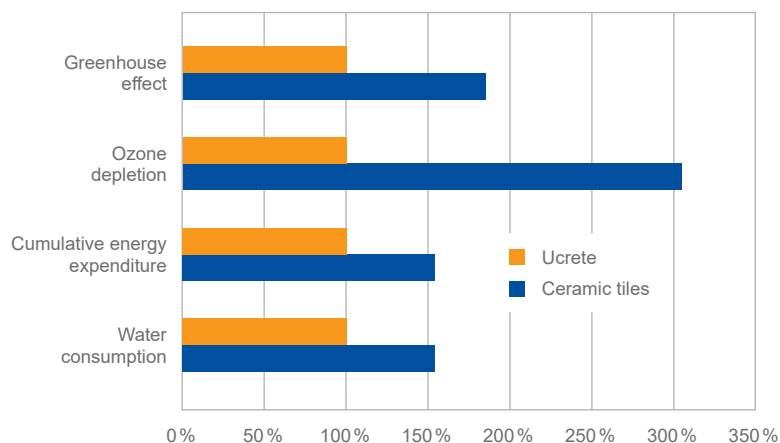
- e.g. MasterTop 1325
- approx. 30 % renewable raw materials

Special floors: Ucrete polyurethane concrete

Ucrete stands for polyurethane concrete systems from Master Builders Solutions. They have an exceptional resistance to simultaneous mechanical, chemical and thermal loads. Ucrete floors remain dimensionally stable at temperatures of up to 130 °C, and are proven to meet the highest standards of hygiene and cleanliness. This makes them ideal for use in the food and beverage industry, chemical industry and pharmaceuticals industry.

A significant proportion of Ucrete floors consists of natural raw materials such as water and castor oil.

Environmental indicators



Comparison of various environmental indicators for the entire product life cycle
Source: BMG Engineering, Life-Cycle Assessment Ucrete, 2012.



Durability



Resources
Durability
Efficiency
Health

To calculate realistically the cost and efficiency of a floor covering, the entire life cycle of the system needs to be considered. In this context, the cost of maintenance is taken into account in addition to investment costs, repairs and life expectancy. Only on this basis can different flooring systems be compared meaningfully.

Our MasterTop and Ucrete flooring systems have an extremely long lifetime of up to 50 years. While the consumption of resources during the initial process – i.e. when the floor is laid – is similar to that of other floor coverings, cumulated energy expenditure is considerably lower over the entire life cycle. When related to the entire life expectancy of the floor, this means lower overall costs per square meter per year.

Whole life cycle analysis and ecological balance sheets, emission checks and environmental declarations provide evidence of our products' sustainability, as they analyse and assess the life expectancy, consumption of resources etc. The evidence proves that in the long run, the

Initial laying –

consumption of resources comparable to that of other floor coverings

Maintenance

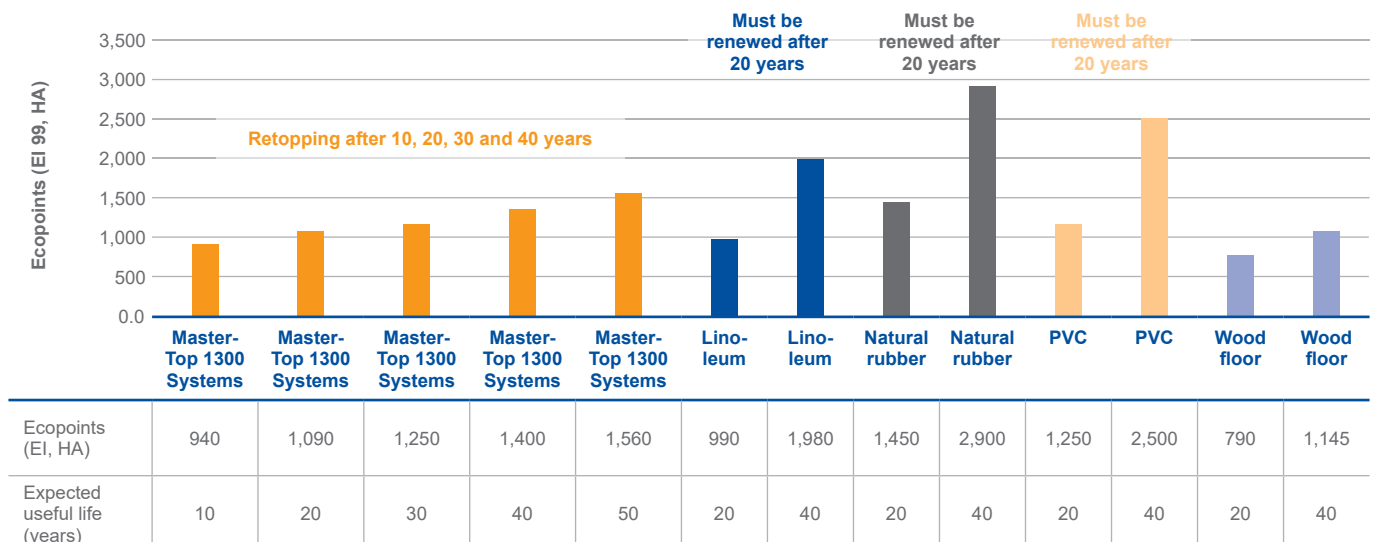
- + efficient cleaning thanks to seamless surfaces saves cleaning media, energy, work, time and costs
- + easy to maintain: spot repairs to damaged areas are possible
- + lower resource expenditure: re-topping (application of a new top layer) is possible

Stripping / Disposal

- + saves work expenditure and removal costs: new floor coverings can be laid onto MasterTop, i.e. stripping and disposal of the old floor are not required

extreme durability, low material consumption and efficient maintenance of MasterTop floors result in reduced environmental impact in comparison to other flooring systems. By choosing our MasterTop floors, you act in a long-term, economically and ecologically responsible manner.

Floor coverings in comparison: relative environmental impacts



Source: BMG Engineering, MasterTop Study, 2004 updated 2011.





Our reference in Salzburg (Austria):
Reichegger Dental surgery



Efficiency



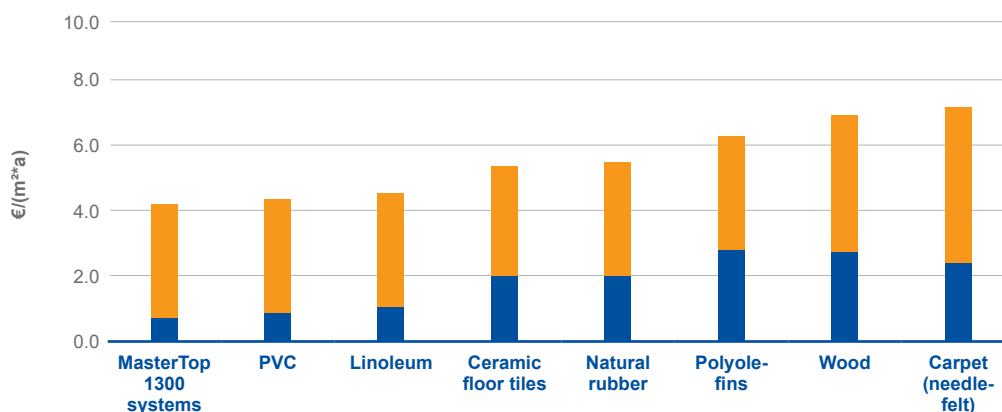
Did you know that approximately 80 % of all floor covering costs are attributable not to the installation of the floor, but to its cleaning and maintenance? As a result, these aspects are also decisive factors when it comes to selecting the right floor covering for your project.

MasterTop and Ucrete make low maintenance costs a matter of course. As they have a sealed surface and are laid smoothly with a minimum number of joints, you only need a small amount of water and detergent to clean them. This reduces environmental pollution and saves

energy, work, time and consequently costs. Tests have revealed that proper care can also extend the already extraordinarily long life expectancy of our floor coverings and thus have a sustainable effect on the environment.

MasterTop surfaces that are exposed to high levels of traffic or unusual loads may need to be repaired from time to time. This can easily be done by repairing individual sections. Using MasterTop and Ucrete flooring systems, you choose an efficient solution and achieve much with little effort and expenditure.

Floor coverings in comparison



| | | | | | | | | |
|------------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|
| Expected useful life (years) | 50 | 25 | 25 | 40 | 25 | 20 | 40 | 15 |
| ■ Maintenance (cleaning) in €/m²*a | 3.5 | 3.5 | 3.5 | 3.2 | 3.5 | 3.5 | 4.2 | 4.9 |
| ■ Floor covering costs in €/m²*a | 0.7 | 0.9 | 1.0 | 2.0 | 2.0 | 2.7 | 2.4 | 2.4 |

Source: BMG Engineering AG



Health



Resources
Durability
Efficiency
Health

Every day, we spend about 90 % of our time indoors: at home, in the office, in school, in shops or in the fitness centre. The quality of air inside buildings is therefore of particular importance, as it has a direct impact on our health and wellbeing.

Whilst we are able to identify for ourselves irritating factors like cold or hot air or unpleasant smells, other factors can have a negative impact on air quality without us noticing them. Construction products such as wall paints, furniture varnishes or floor coverings often contain volatile organic compounds that can pervade indoor air or impair our health.

Low emissions for high demands

With our MasterTop and Ucrete systems, you can breathe a sigh of relief: all our products have been tested according to the stringent AgBB (Committee for the Health Assessment of Construction Products) regulations and also ensure low emissions under the AFSSET protocol, the Nordic Eco Label and the French VOC regulations. We offer non-solvent systems for sustainable construction which comply with low-emission standards. As a result, indoor air remains free of volatile organic compounds. Furthermore, installation of the flooring systems is almost odour-free. In particular, this makes refurbishment more pleasant while the building remains in use.



IACG

The entire Ucrete product range bears the seal "Indoor Air Comfort Gold" label certified by independent analysts Eurofins Scientific. This certification covers the criteria of all the usual

European standards such as the Blue Angel, M1, AgBB and AFSSET. So the certified products offer the maximum possible standard of user safety and air quality in indoor rooms.



AgBB

The Health Assessment Committee offers a systematic plan for health assessment of VOC emissions from construction products used in indoor areas. Ucrete and MasterTop 1300 flooring

systems have been tested according to the AgBB scheme and fulfill all the requirements of this stringent regulation.



afsset

The French directive for the limitation of VOC emissions from construction

products in indoor air is comparable to the German AgBB and is fulfilled by Ucrete and MasterTop 1300 systems.



VOC emission class

The French regulation on VOC emission classes requires that all construction

products used in indoor space are labelled with their respective emission class. Our flooring solutions for sustainable building and construction are labelled with the best emission class A+, which means very low VOC emissions.



M1

All products tested according to the Finnish emission classification of construction products are granted in three categories: M1, M2 or M3.

For example, products of MasterTop 1325 are certified with the M1 label. This means the best category with the lowest emissions.



Our reference in Deurne (The Netherlands):
Residential building



Research and competence centre of
Master Builders Solutions in Trostberg (Germany)



Continuous Research and Development

We attach particular importance to research and development and continuously work towards the development of new, sustainable product solutions – always considering the relevant economic, social and environmental aspects. We have already achieved a lot this respect and are now able to offer you a comprehensive range of flooring systems for sustainable building and construction.

Furthermore, we play an active role in expert groups and are members of various boards and committees around the world such as LEED or DGNB, with the objective of finding joint international solutions for sustainable building and construction.

In a good position to support you

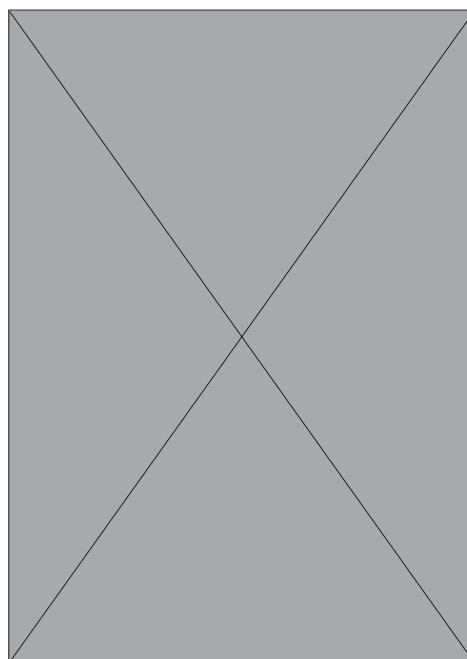
Since September 2013, Master Builders Solutions provides Environmental Product Declarations (EPDs) for almost all MasterTop flooring products in accordance with the standards DIN EN 15804 and DIN EN ISO 14024. These EPDs have been developed in collaboration with Deutsche Bauchemie (German Construction Chemicals association), approved and published by the Institut Bauen und Umwelt (Institute of Construction and Environment). For further information, please visit the following web site: www.bau-umwelt.de

These EPDs contain information about the product and its environmental impact. They play an increasingly important role in the certification of sustainable buildings. Leed and DGNB are just 2 of the most popular building certification standards that provide guidance in this regard. EPDs are mandatory for DGNB approvals.

You build for the future with Master Builders Solutions, because our products offer very high performance whilst saving materials and energy and reducing waste and emissions.



Approval of MasterTop 1327 C for use in recreation rooms from the DIBt (German Structural Engineering Institute) with evidence of emission behaviour.



EPDs are available for most MasterTop products.



Planning the Future

No two floors are alike: the environment, its location within the building and the loading requirements merge to form a unique specification – from the entrance, production zones and office rooms right down to the parking areas.

To make full use of the many opportunities offered by Master Builders Solutions, we have developed various services by which we support building owners, production engineers, architects and applicators – from the first concept to finalization of the project. Within this integrated advisory concept, we can support you at all planning and decision-making levels.

Assisting you all the way

We can also support you when it comes to sustainable building and construction. The sustainability of property is becoming increasingly important in marketing and sales. More and more, investors and architects are seeking certification of their buildings. To support you in this complex process, we have compiled the crucial information on our flooring systems for the most important building certification standards, which include LEED, DGNB and HQE. You can request this information from us.

Our flooring systems have a positive impact on the certification of buildings. For instance LEED letters of MasterTop flooring systems, which allow you to obtain credit points in the following five categories of the LEED quality seal, are available:

- MR – Credit 1 – Building Reuse
- MR – Credit 2 – Construction Waste Management
- MR – Credit 4.1 – Recycled Content
- MR – Credit 6 – Rapidly Renewable Materials
- EQ – Credit 4.2 – Low Emitting Materials



DGNB

(Deutsche Gesellschaft für nachhaltiges Bauen/German Sustainable Building Council)

For assessment of a building, up to 60 criteria are taken into consideration. The entire life cycle of a building is reviewed, with ecological as well as economic, socio-cultural and functional aspects playing a role.



HQE

(Association pour la Haute Qualité Environnementale des bâtiments)

The objective is to construct safe and comfortable buildings, whose influence on the environment is as low as possible when looking at the entire life cycle. The products used influence the assessment of the building based on information provided in the FDE&S, a local French document comparable to EPDs (environmental product declarations).



LEED

(Leadership in Energy and Environmental Design) This seal of quality awarded by the US Green Building Council is the most widely used

international certification. Through the use of appropriate construction products, points can be obtained, the overall number of which establishes on the certification of a building.

Moreover since 2015 all our MasterTop flooring products are granted the DGNB Navigator Label. This label allows us to demonstrate our commitment to sustainability and gives you the necessary guidance and transparency when selecting products.





Our reference in Affalterbach (Germany):
Mercedes-AMG



Our reference in Altshausen (Germany):
Leopoldschule



Notes

[illegible]



Master Builders Solutions for the Construction Industry

MasterAir

Complete solutions for air entrained concrete

MasterBrace

Solutions for concrete strengthening

MasterCast

Solutions for the manufactured concrete product industry

MasterCem

Solutions for cement manufacture

MasterEase

Low viscosity for high performance concrete

MasterEmaco

Solutions for concrete repair

MasterFinish

Solutions for formwork treatment and surface improvement

MasterFlow

Solutions for precision grouting

MasterFiber

Comprehensive solutions for fiber reinforced concrete

MasterGlenium

Solutions for high performance concrete

MasterInject

Solutions for concrete injection

MasterKure

Solutions for concrete curing

MasterLife

Solutions for enhanced durability

MasterMatrix

Advanced rheology control for concrete

MasterPel

Solutions for hydrophobization, anti-efflorescence and surface protection

MasterPolyheed

Solutions for mid-range concrete

MasterPozzolith

Solutions for water-reduced concrete

MasterProtect

Solutions for concrete protection

MasterRheobuild

Solutions for high strength concrete

MasterRoc

Solutions for underground construction

MasterSeal

Solutions for waterproofing and sealing

MasterSet

Solutions for set control

MasterSphere

Solutions for guaranteed freeze-thaw resistance

MasterSuna

Solutions for sand and gravel in concrete

MasterSure

Solutions for extraordinary workability retention

MasterTop

Solutions for industrial and commercial floors

Master X-Seed

Advanced accelerator solutions for concrete

Ucrete

Flooring solutions for harsh environments



QUANTIFIED SUSTAINABLE BENEFITS ADVANCED CHEMISTRY BY MASTER BUILDERS SOLUTIONS

Let the numbers do the talking: We have portrayed some of our most eco-efficient product solutions for concrete and precast production, construction, civil engineering, and flooring.

sustainability.master-builders-solutions.com



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MBS-01-2021-PF-0029-EN