



Granules for tiles from the EIRICH granulating mixer



EcoPrep[®], the low-cost dry preparation
For all tile grades and sizes
Enormous savings available



The Pioneer in Material Processing[®]

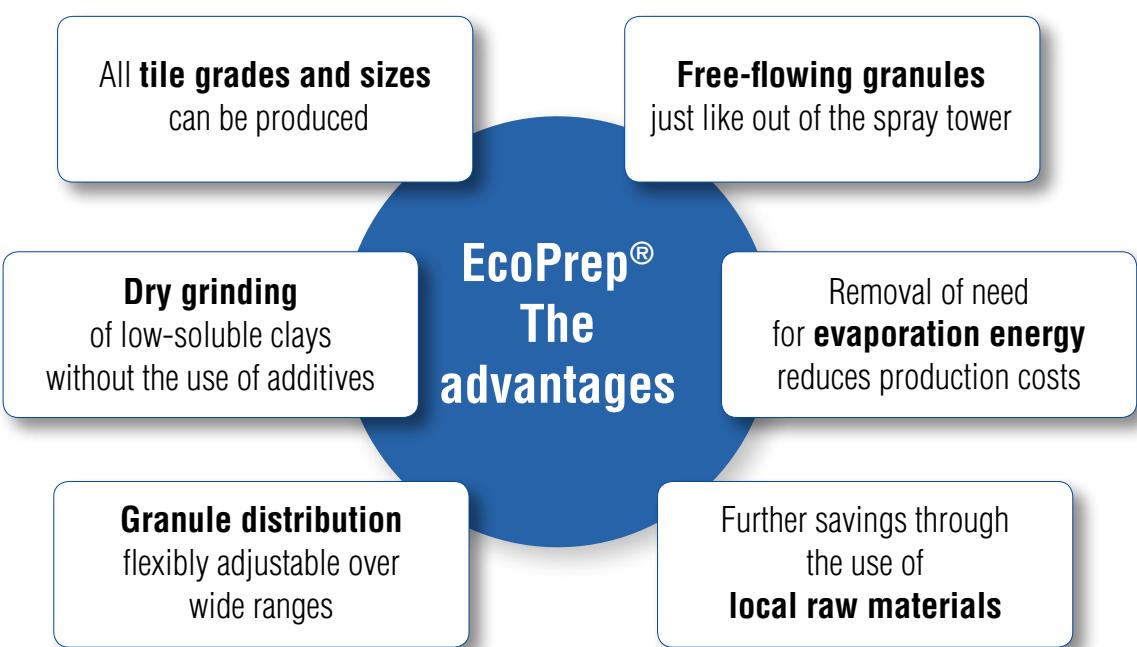
CERAMICS

Press granules for tiles EcoPrep® dry preparation consumes up to 60 % less energy

Premium quality press granules at drastically reduced production costs - the **EcoPrep® dry preparation** opens up a new dimension in energy efficiency and resource conservation, making it the pioneering method for the production of press granules, particularly for tiles. The quality of the granules prepared in the EIRICH granulating mixer corresponds to that of high-grade spray granules when it comes to flow properties and workability in the pressing and firing process.

Compared with conventional preparation methods using a spray tower, what the **EcoPrep® dry preparation** offers in particular is an outstanding improvement in the energy balance. The enormous reduction in production costs that this achieves ensures that investment in this method pays off after just a short time.

**Quality just like out of the spray tower –
much cheaper with EcoPrep®!**





EcoPrep®
The granules for
good tiles



... maximum surface quality - even bright high-gloss surfaces suitable for tiles from the wet process are achievable



... the greater strengths of the unfired blanks allow a lower body thickness and a reduction in green scrap



... the outstanding flow properties mean tiles of the highest quality can be produced - with a water absorption of <0.5% and the largest dimensions

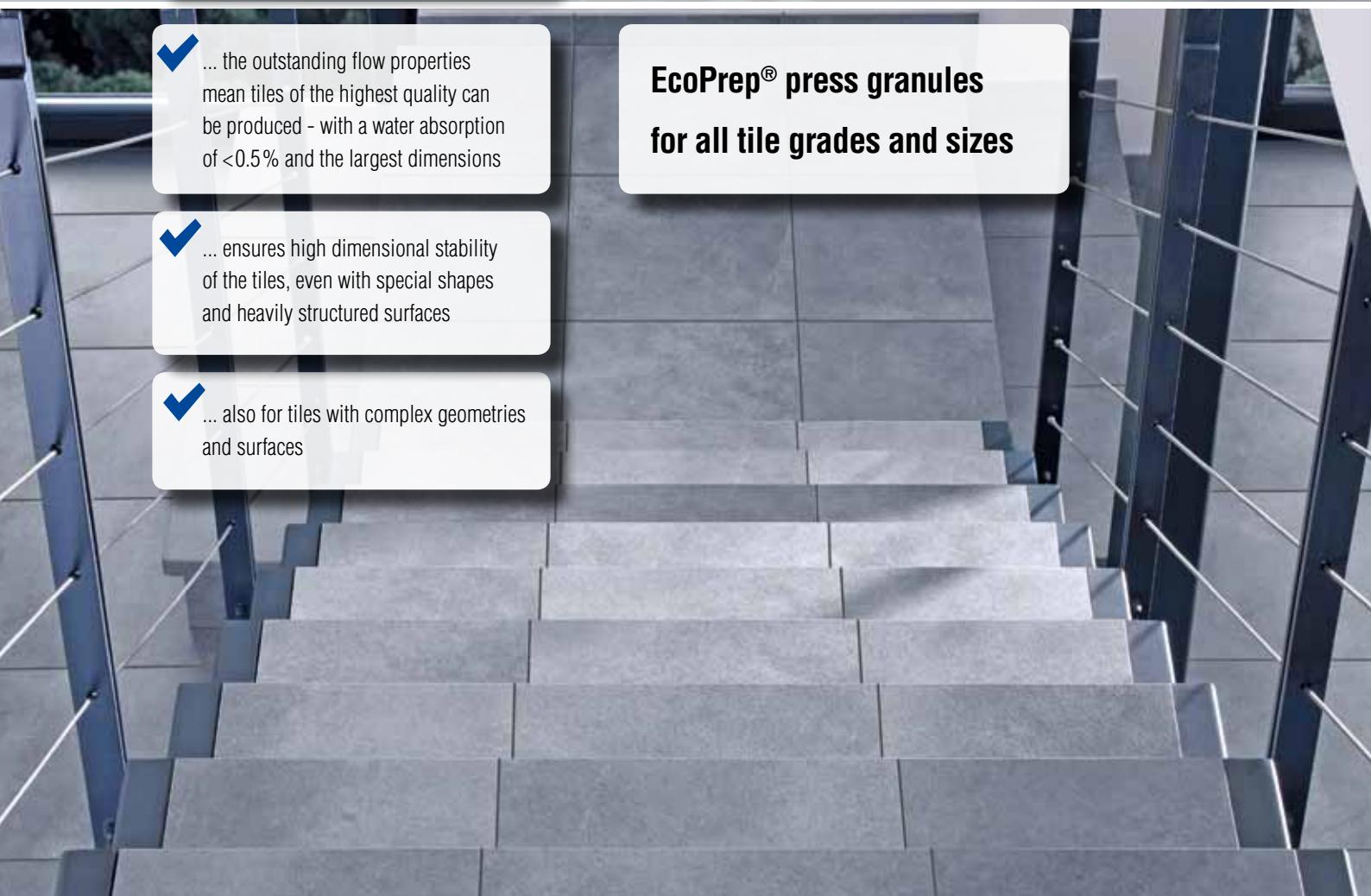


... ensures high dimensional stability of the tiles, even with special shapes and heavily structured surfaces



... also for tiles with complex geometries and surfaces

EcoPrep® press granules for all tile grades and sizes

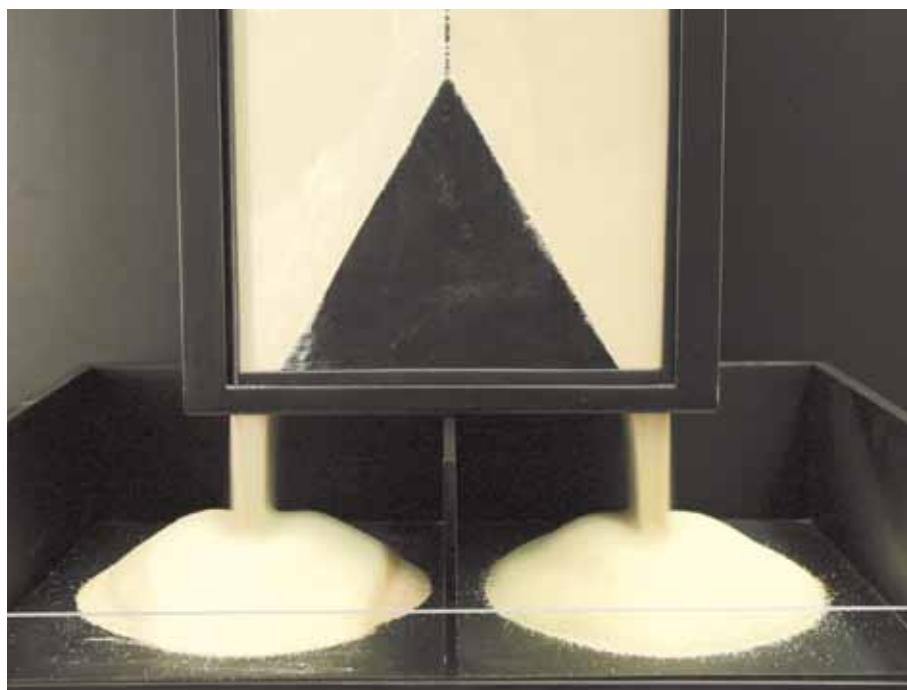


Flow properties of press granules: EcoPrep® granules and spray formed grain in comparison

The flow properties of EcoPrep® granules are comparable to those of conventional spray-formed grain. The flow properties of EcoPrep® granules

ensure that the press mold is filled evenly without additional equipment and that the granules are well pressed.

Test set-up for testing the flow properties



Spray-formed grain

Press granules prepared with EcoPrep®



EcoPrep® granules enable the press mold to be filled evenly.



The dimensional stability of the tiles is guaranteed.

EcoPrep® dry preparation – Quality just like from the

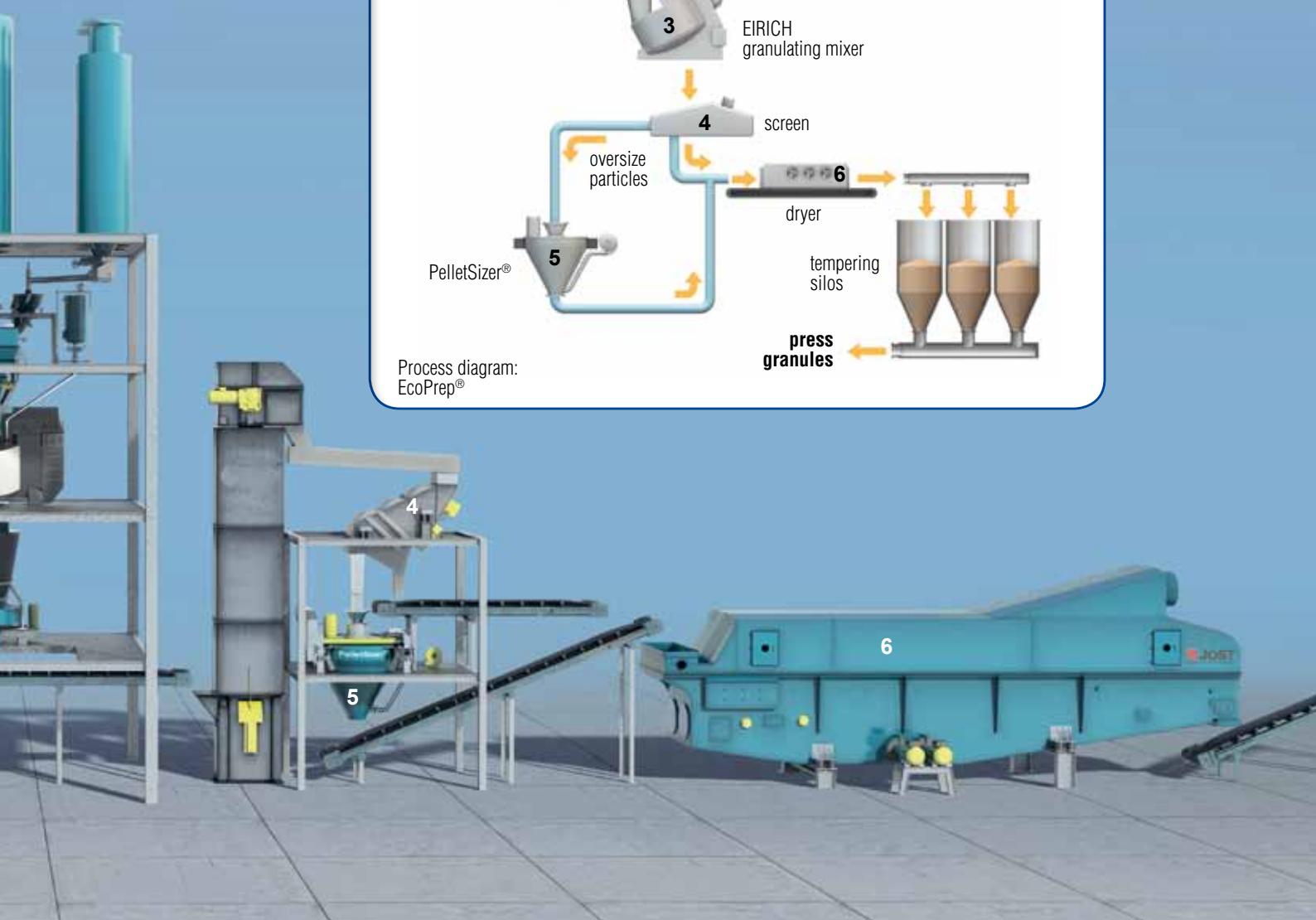
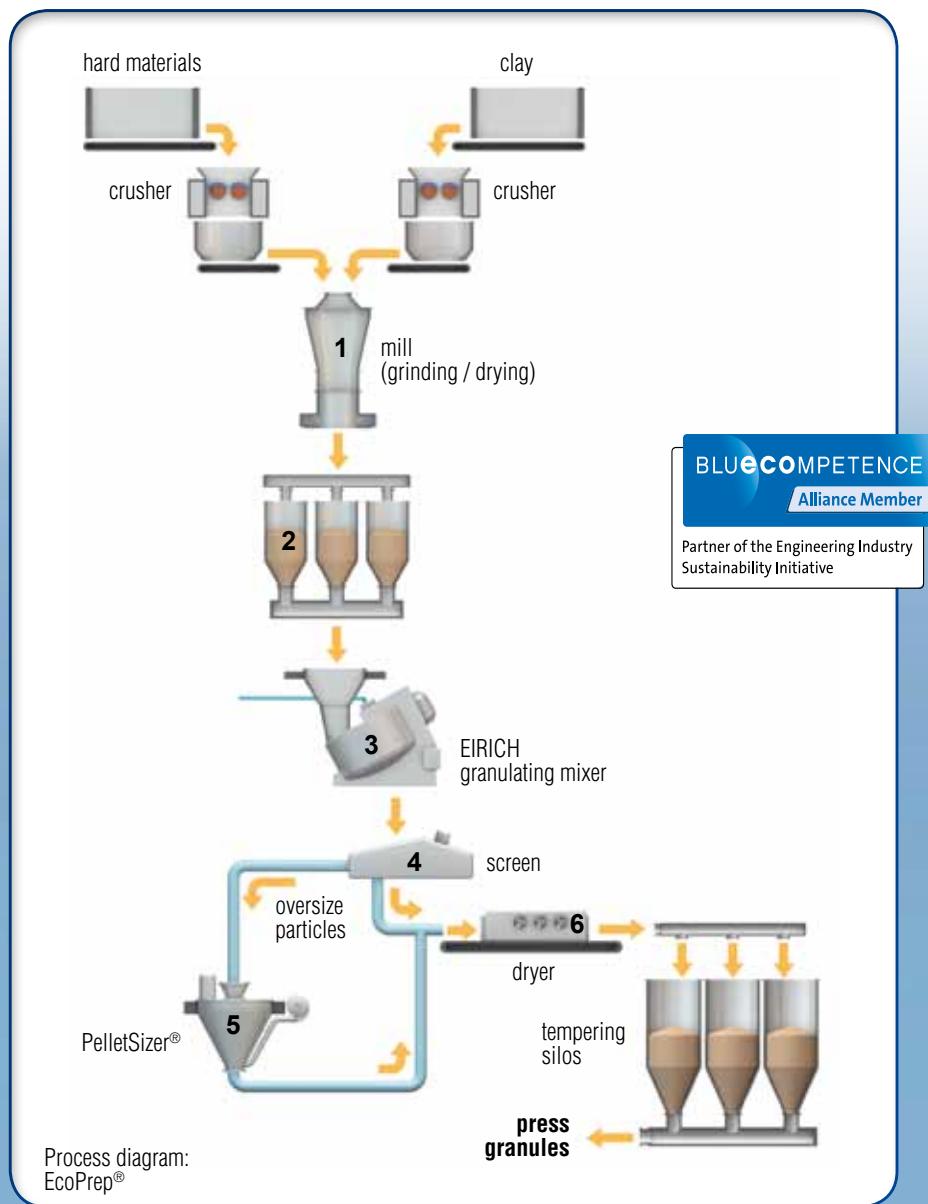
The advantages compared with wet preparation

- Up to 60 % less energy used
- Up to 80 % less water used
- 100 % saving in additives
- Existing formulas for wet preparation can be adopted 1:1
- Further savings through the use of local raw materials

Save
up to
60%
of energy



spray tower – but much cheaper





EcoPrep®
The granules for
good tiles

The EcoPrep® process: Dry grinding the raw materials

Dry grinding is performed without the use of additives. Even low-soluble clays can be ground, allowing them to be used for tile production.

Depending on the proportion of hard materials in the formula, it may be possible to grind the whole batch in one go or each raw material separately. If the proportion of hard materials is high, a combination of the **pendulum mill** and **ball mill** grinding systems represents an optimum plant configuration. If there is a high plastic proportion,

however, it is better to grind the entire formula in a pendulum mill. The grinding systems involved in dry preparation allow the same particle distribution to be achieved as in wet grinding.

The choice of the grinding system that is best suited to the particular situation is flexible and can be determined in collaboration with EIRICH partners.

Pendulum mill

For grinding complete batches to a constant fineness of 99 % < 63 µm, for instance.

The main advantage of this grinding system is the ability to ensure very **efficient drying** of the moist raw materials **during grinding**.

Ball mill

The grinding of hard ceramic materials requires constant and reproducible particle finesses, which are easy to achieve with a ball mill. The various hard materials can be ground to the required fineness without contamination from iron.



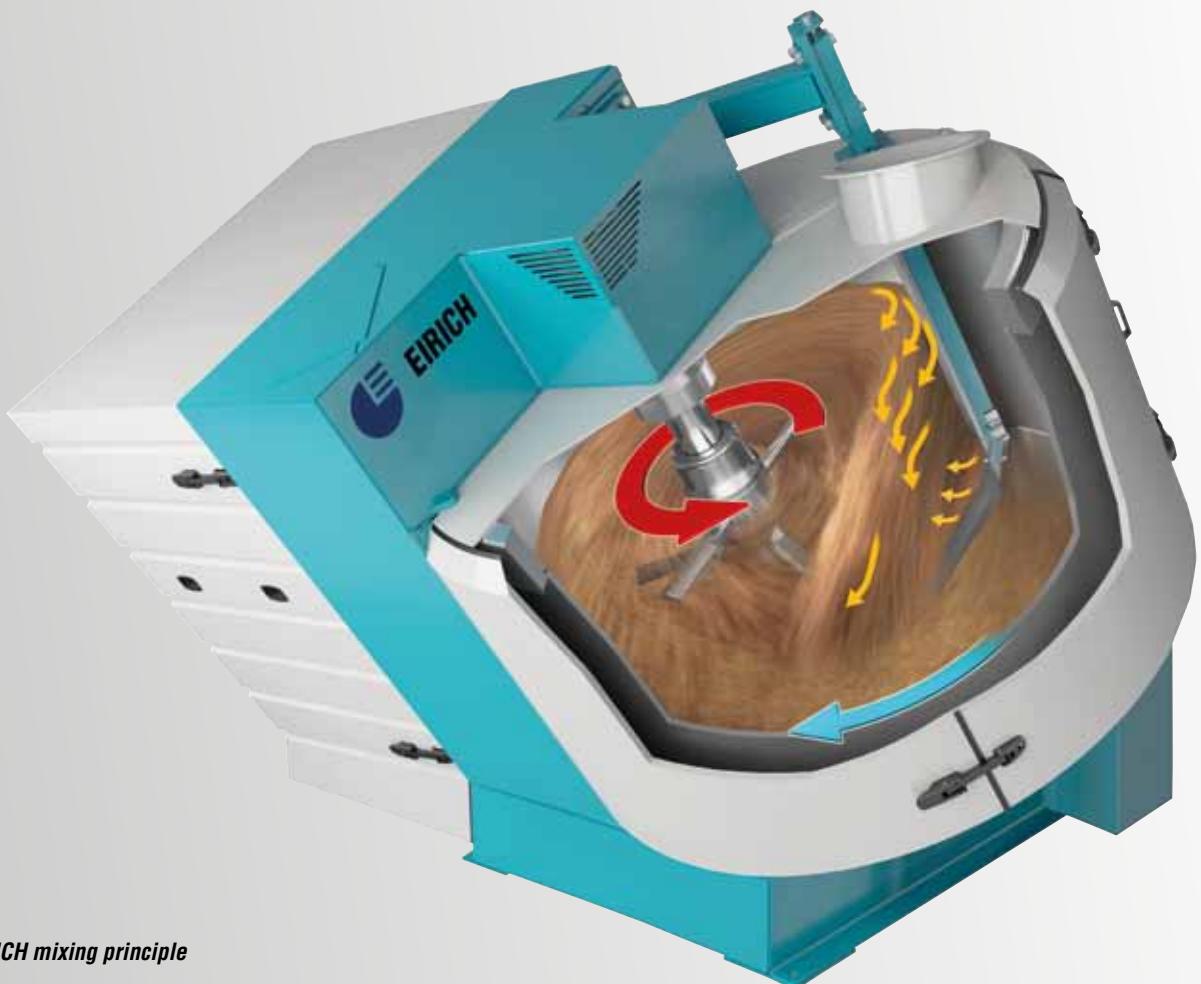
The EcoPrep® process: Mixing and granulating in the EIRICH granulating mixer

Dry mixing

Dry mixing produces a homogeneous mix of raw materials. Even very small quantities of additives and pigments – right down to the ppm range – can be mixed in homogeneously.

Granulating

After the batch composition has been homogenized, it is granulated by adding water until a granule moisture content of approx. **11 – 13 % is achieved.**



The EIRICH mixing principle

Rotating mixing pan for transporting the mix and rolling the granules

Variable, slow to fast-running mixing tool for mixing, granulating and increasing the rolling energy

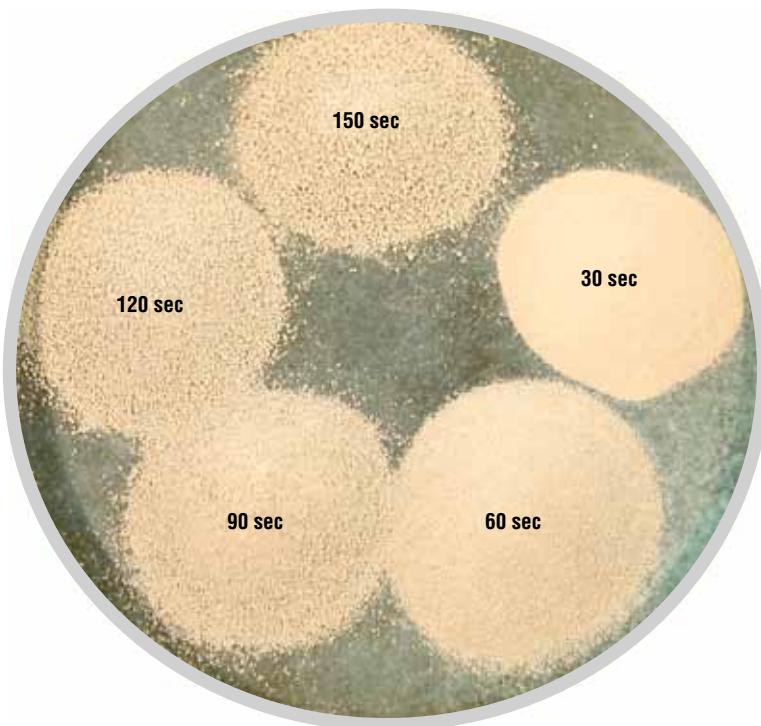
The effect

The separation between material transport and the mixing process allows the speed of the mixing tool (and thus the power input into the mix) to be varied within wide limits.

The process results in **compact press granules** with a greater bulk density and the **best possible granule size distribution**. Optimum pressing of the tiles, even with difficult sizes, is thus possible. The greater bulk density of EcoPrep® granules means that a much lower filling level than with spray-dried compounds is needed when filling the molds. The ratio of filling level to pressed tile for build-up granulated compounds is approx. 1.8 compared to 2.5 - 2.8 for spray compounds. The lower filling level makes it much easier to eject the pressed tile from the mold. Even on thinner tiles, the tile code on the rear of the tiles does not have a shine-through effect.

The advantages of build-up granulation in the EIRICH granulating mixer

- flexible adjustment of grain size and grain distribution to the requirements of the end product
- reproducible production of granules in different colors and sizes
- complete coating of the granules with pigments
- quick and easy cleaning after the preparation of colored compounds



The granulating time determines the granule size, making flexible grain sizes and distributions achievable.



EIRICH's test facilities in Hardheim



Mobile pilot plant on
a semi-industrial scale

Testing and optimizing on the move around the world or in the EIRICH Test Center

The high quality of the EcoPrep® press granules can be demonstrated by tests with your raw materials.

EIRICH maintains process engineering test centers at seven locations around the world for precisely this purpose. Here, experienced engineers and process technicians join forces with the customer in producing suitable granules. EIRICH also offers the option of conducting tests on the customer's premises on a laboratory or semi-industrial scale. A **fully equipped lab container** is available for tests on a laboratory scale. The **semi-industrial tests** are performed using a **pilot plant** with an output of up to 1 t/h.

Many years of cooperation with universities and leading research institutes in the field of ceramics ensure that the latest research findings are taken into account.

You, too, can make the most of the many different possibilities offered by EIRICH machine technology for the performance of tests with your materials and arrange a no-obligation consultation with us – and it can take place on your premises if you wish.

Our professional team will be glad to advise you!



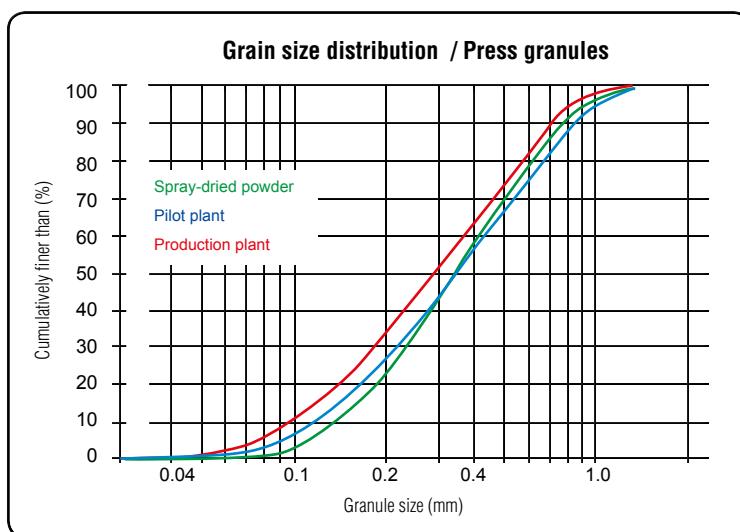
EcoPrep®
**Test the quality with
your raw materials**

EcoPrep® dry preparation

The advantages based on the example of a production plant for 32 t/h of press granules for SGC/TCC Saraburi

The customer confirms:

- comparable flow properties of the granules
- the savings calculated beforehand are exceeded
- tile sizes of up to 800 x 800 mm are achieved without any additional equipment (mainly for filling the press mold) and without any need to adapt downstream processes significantly
- the formulas of the former wet preparation could be adopted 1:1



Grain size distribution by comparison

Spray-dried powder
EIRICH pilot plant
EIRICH production plant on the customer's premises

Schematic diagram of the production plant with the EIRICH granulating mixer at its heart





Industrial Mixing and Fine Grinding Technology

Tradition and innovation since 1863

EIRICH stands worldwide for a comprehensive range of products and services in the field of preparation technology. Its particular focus is on mixing and fine grinding technology, with know-how developed over 150 years of close cooperation with industrial users, universities and research institutions.

Pursuing a corporate philosophy of operating internationally and thereby ensuring close proximity to every customer, the EIRICH Group has secured its place in all the key economic regions of the world.

The focus is on innovative technology for machinery and systems engineering designed to offer solutions for high-standard preparation tasks from a single source. Applications and process technology with own test centers, a high vertical range of production and comprehensive after-sales service provide the ideal basis for the development of modern and economical processes for a multitude of industries.

**Building materials – Ceramics – Glass – Carbon paste – Battery paste
Friction linings – Metallurgy – Foundries – Environmental protection**

The EIRICH Group worldwide:



Maschinenfabrik Gustav Eirich
GmbH & Co KG
Postfach 11 60
74732 Hardheim, Germany
Phone: +49 6283 51-0
Fax: +49 6283 51-325
E-mail: eirich@eirich.de
Internet: www.eirich.com



Eirich France SAS
Saint-Priest, France



OOO Eirich Maschinentechnik
Moscow, Russia



OOO Eirich Maschinentechnik
Dnepropetrovsk, Ukraine



Eirich Machines, Inc.
Gurnee, IL, USA



Eirich Industrial Ltda.
Jandira S.P., Brazil



Nippon Eirich Co. Ltd.
Chiba, Japan



Eirich East Asia/Pacific
Seoul, Republic of Korea



Eirich Group China Ltd.
Shanghai & Beijing, P.R. China
Eirich Machinery Jiangyin Co., Ltd.
Jiangyin, Jiangsu Province, P.R. China



Eirich India Pvt. Ltd.
Mumbai, India



H. Birkenmayer (Pty.) Ltd.
Isando, Republic of South Africa

www.eirich.com



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