

## Granules for tiles from the Eirich granulating mixer

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The low-cost dry preparation EcoPrep®  
is for all tile grades and sizes suitable.  
Enormous savings are available.



Free-flowing granules  
just like out of the spray tower

## 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 advantages

Dry grinding of low-soluble clays without the use of additives

Free-flowing granules just like out of the spray tower

Granule distribution flexibly adjustable over wide ranges

Removal of need  
for evaporation energy  
reduces production costs

All tile grades and sizes  
can be produced

Further savings through  
the use of local raw materials



EcoPrep®  
The granules  
for good tiles

**EcoPrep® press granules  
for all tile grades and sizes**

- 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 <math>< 0.5\%</math> 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



# Flow properties of press granules: EcoPrep<sup>®</sup> granules and spray granules in comparison

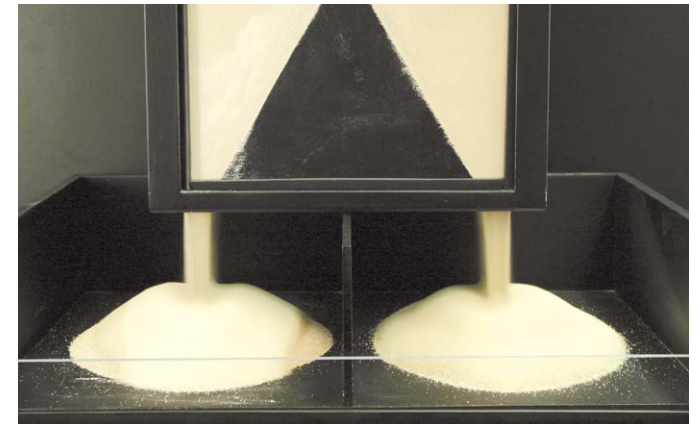
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The flow properties of EcoPrep<sup>®</sup> granules are comparable to those of conventional spray-formed grain. The flow properties of EcoPrep<sup>®</sup> granules ensure that the press mold is filled evenly without additional equipment and that the granules are well pressed.



EcoPrep<sup>®</sup> granules enable the press mold to be filled evenly.

Test set-up for testing the flow properties



Spray-formed grain

Press granules prepared with EcoPrep<sup>®</sup>



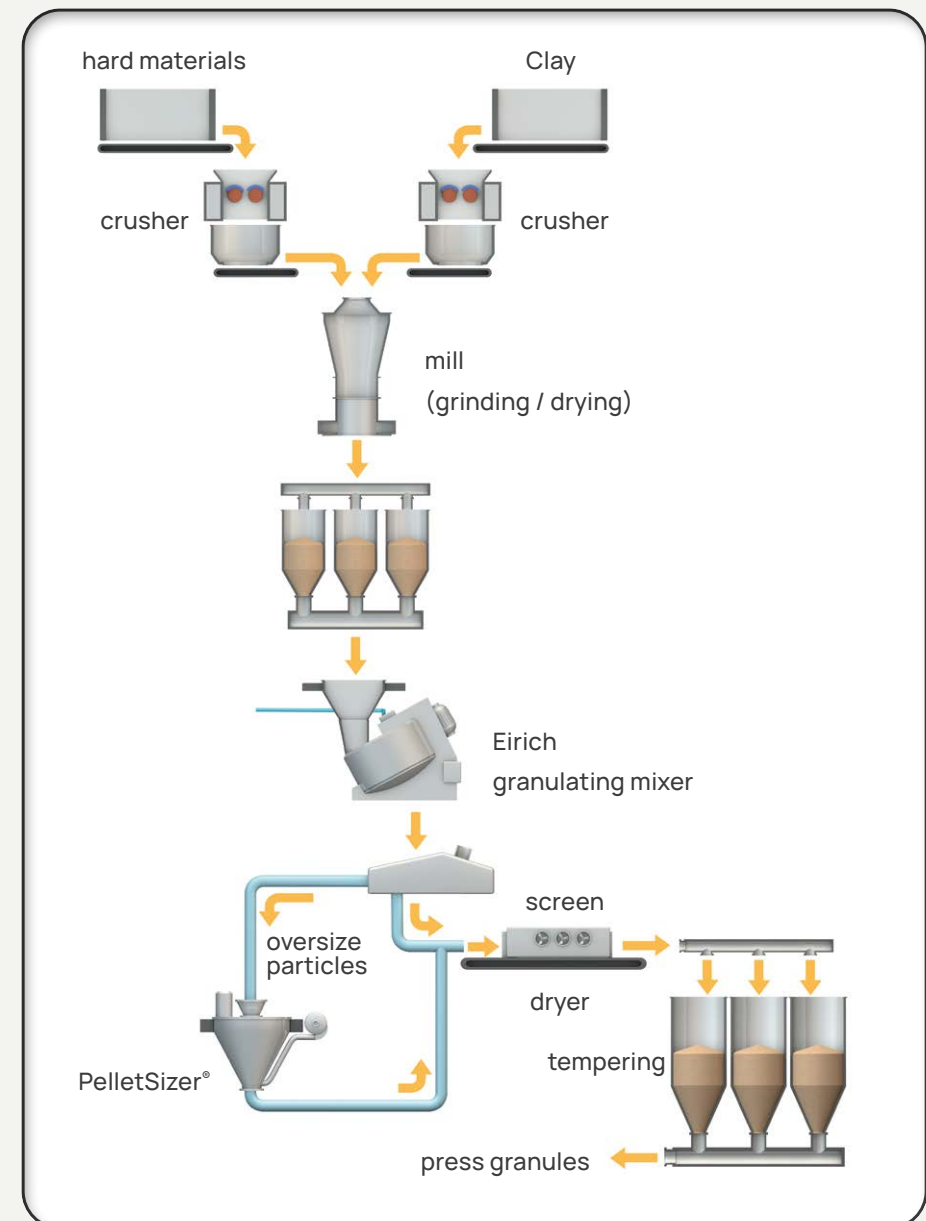
The dimensional stability of the tiles is guaranteed.

## EcoPrep® dry preparation – Quality like from the spray tower – but more sustainable

### 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

Process  
diagram: EcoPrep®





**Saving energy,  
additives and water**



**EcoPrep®**  
The granules  
for good tiles



# The EcoPrep® process:

## Dry grinding the raw materials

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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 finenesses, 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

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## 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.

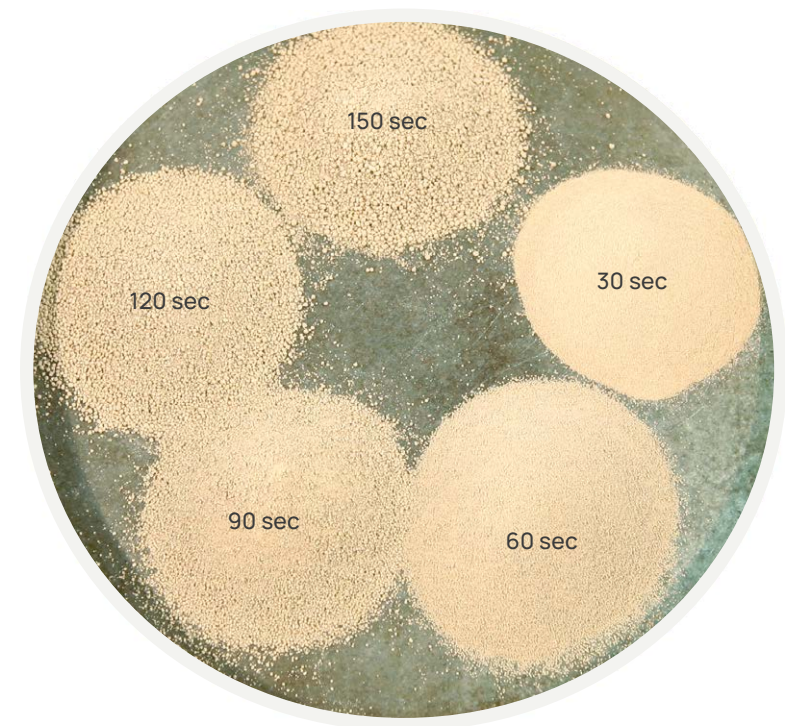


The process results in compact press granules with a greater bulk density and the best possible granule size distribution. Optimum pressing of the tiles, even with difficult sizes, is thus possible. The greater bulk density of EcoPrep® granules means that a much lower filling level than with spray-dried 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



quick and easy cleaning  
after the preparation of  
colored compounds

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

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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.

Eirich's test facilities  
in Hardheim





Mobile pilot plant on a semi-industrial scale



Lab container

## EcoPrep® - Test the quality with your raw materials

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!**

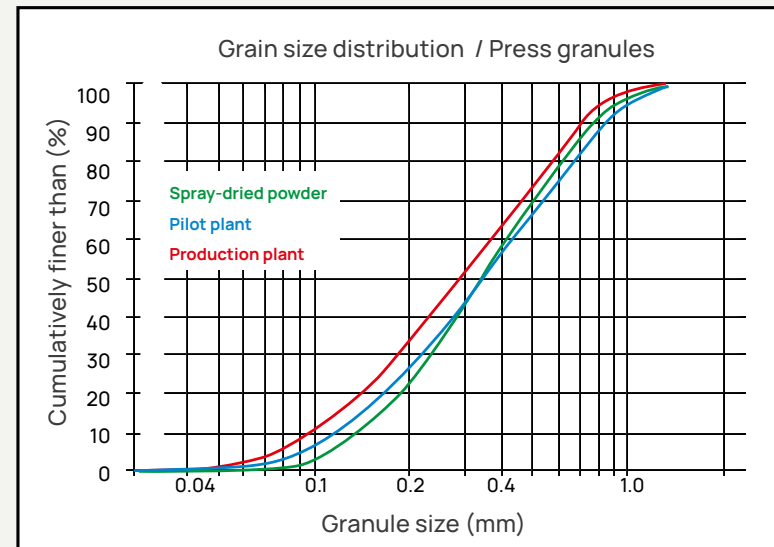


## EcoPrep® dry preparation

### 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





The Eirich Group, with the Gustav Eirich machine factory as a strategic center in Hardheim, is a supplier of machines, systems and services for mixing technology, granulating/pelleting, drying and fine grinding. Our core competencies are procedures and processes for the treatment of loose materials, sludge and sludge. We are a family-run company with 15 locations worldwide.

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More information at  
**[www.Eirich.com](http://www.Eirich.com)**