



Grothe Rohstoffe

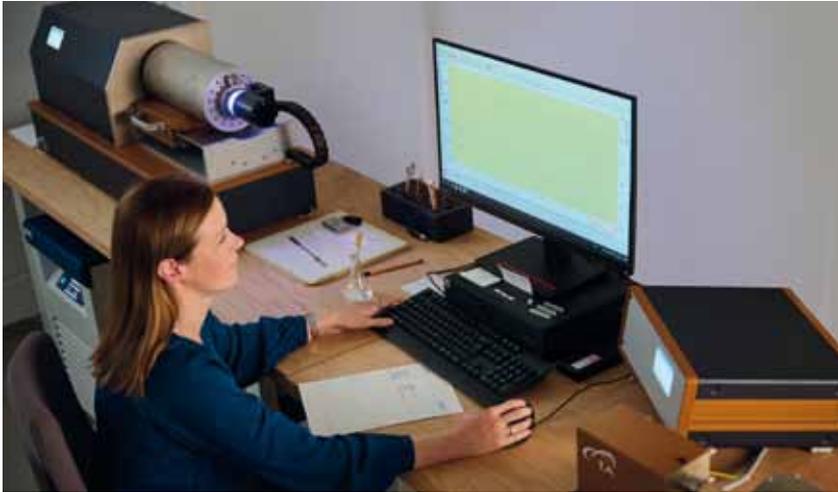


An aerial photograph of a forest floor, showing a dense carpet of green moss and ferns. Sunlight filters through the canopy, creating a dappled pattern of light and shadow across the forest floor. The overall tone is natural and earthy.

Raw materials and refinement

Good cooks know that it all comes down to good ingredients. The quality of raw materials varies. At Grothe they are precisely analysed and inspected before passing on to further processing in-house or to the customer. Only outstanding raw material will give a perfect end product.

Certification



No goods are received without thorough evaluations in all directions. The dilatometer is a fixture of the test routines at Grothe.

Grothe raw materials are not only of exceptional quality. They are also thoroughly certified and inspected to European standards for processing that is harmless to health. A ceramics engineer who has been specially trained and employed for this task analyses the quality of new raw materials and checks their data sheets on the basis of the EU Regulation on chemical substances (REACH), including with regard to health and safety measures. Her practical experience and knowledge of the substances pass directly into the development and quality assurance processes.

Production methods that preserve resources and the environment are another guiding principle for Grothe. From the very outset, for example, the use of lead additives was avoided in the production of colours.



Temperature and tonal value

Raw materials are prone to change. The quality of clay changes all the time, since new deposits have to be opened up and, given the varying nature of clays, different firing parameters arise. To maintain reliable colour accuracy over long periods is a costly, complex and demanding undertaking. With Grothe products, production of the long-lasting bond of clay substrate, colour and finish remains constant over many years.



Colour through and through. With their extremely fine powder form, metal oxides provide optimal coloration for all ceramic products. The colour nuances range from light to blackish brown, light to dark red, and light to dark grey. Mixing the oxides and firing in an oxidising or reducing environment can extend this colour spectrum further.

Here again, Grothe takes great care over customer requirements and maintains a logical infrastructure that ensures constant storage conditions and the handling of large volumes.

Archiving, storage and follow-up work are an absolute must. The archive of over 20,000 recipes is the basis for ongoing follow-up deliveries of Grothe products.

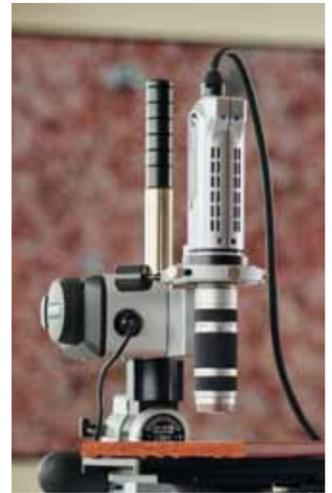
Decades of experience in X-ray fluorescence analysis secure every single product at Grothe. And every step of the testing process is carried out at our Bückeberg site.



Outer surface and optimisation

New technology enables us to accelerate test runs and analyses. The development and quality assurance processes become shorter. Working with the customer, Grothe can bring variable or new raw material qualities into production faster and with better stability.

Quality assurance



Which material belongs in which production system? Is there a fault in the clay body or in the glaze? Does the new raw material exhibit consistent values during processing?

Using suitable technology, production processes are simulated in our in-house laboratory based on the customer's production environment. Alternatively, to give an illustration, different raw material properties are investigated and evaluated with an analysis procedure. The results are then sent for production optimisation and tested at the customer's site.

A ceramics working group consisting of Grothe specialists from the sales team and from research and quality assurance meets regularly to collect information and to coordinate and work together on questions and solutions to specific customer requirements.

The number and qualifications of the sales team members enable them to be present frequently at customers' sites. Available as contact partners practically 24 hours a day, they can respond quickly to any request and, if necessary, consult the analysis team at Grothe headquarters.

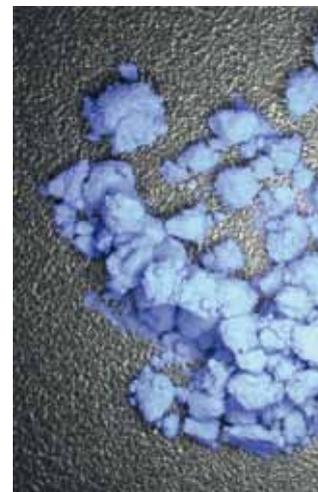
In quality assurance also, we rely on team know-how. All raw material investigations are carried out by laboratory personnel with specialist training using equipment such as our new digital 3D microscope.





High-tech and hardness

The finished surface is the outcome of a complex interplay of very different parameters. The moisture content of the clay, thermal expansion, surface tension, onset of sintering, ball point, yield point are just a few of the adjusting screws needed for a perfect composite material of ceramic and glass.



Some 90% of the frits used by Grothe are own developments. This know-how is drawn from decades of experience working closely with customers and suppliers. The data gathered over this period on already-tested process technologies, recipes, process conditions and material behaviour is all carefully archived. For customers, this knowledge pays off when individual product variants must be developed or new trends established.

Intensive communications with the customer and high-precision analysis equipment are the basis for purposefully targeted developments.

Grothe supports this process, from the initial idea through to production maturity, using a development sheet that records all important production parameters.

You can find the relevant download link here:



Engobe and developement

The new hybrid. ENGOSYN[®]-R is a type of hybrid formed of glaze and engobe. Rather than the dry application of engobes formerly used for particular purposes, coarse particles can now also be processed wet.



Evaluation of the results of the first laboratory tests.

An example of how experience from other developments, combined with new additives and raw materials, flows into new recipes is the ENGOSYN®-R engobe, recently added to our programme. Building on findings about the surfaces required by the customer, Grothe responded, and now offers, in addition to the formerly 'dry'-applied melting colours, a 'wet' variant. With its unique properties, this engobe offers a number of advantages for processing and new possibilities for surfaces.

It is innovations of this kind, together with the complete archiving and tracking of recipes, the combined high-level specialist knowledge, the intensive, expert customer support, minimisation of supply bottle-necks thanks to extensive warehouse stocks and, of course, our dependable, well-educated and committed employees that make the Grothe company one of the most successful suppliers of engobes and glazes in the heavy clay industry.





Product overview



M-Fritte
WE 15.03.22

ENGOSYN[®]-R

The new hybrid

Knowing its customers' requirements exactly, Grothe searches constantly for new developments. The new ENGOSYN[®]-R product is an engobe that is normally supplied like all other Grothe engobes in powder form, but can also be provided on request in a ready-to-use state.

By adding only water, ENGOSYN[®]-R is processed on site into a slurry that is as easy to handle during the subsequent processing as conventional engobes. Thanks to the special recipe, however, rustic-style effects are formed on the fired clinker surface that could previously be obtained only by the scattering of powders. In its 'wet' application, this product variant has the advantage of not creating any dust during processing. This means that existing production systems can be used without modification. With Engosyn[®]-R, many sanded and/or rustic-style looks can be produced with a high-quality, abrasion-resistant surface.

Following an intensive development phase and the production of hand samples, the first highly positive reactions from the industry led ultimately to the decision to present this new Grothe product to a large circle of customers at the trade fair.

CHARACTERISTIC

PRODUCTS	ENGOSYN [®] -R
matt	■
silk-matt	■
semi-gloss	■
high-gloss	■
metallic shine	■
Properties	granular and fine-grained
Powder	
Slurry	■
Application	Clinker Roofing tiles Facing tiles Fillets Hand-moulded bricks



Laboratory tests for machine application using 'airless' spray technique.



Engobes

Strong pigments – long-lived, high quality and kind to the environment

Engobes consist of finely-ground clay powders finished with pigments and high-quality glass materials which are applied to the ceramic body. In this process, the brick or tile is not completely sealed, but acquires a colour-fast, air-permeable surface through which it 'breathes'. The product can be applied by centrifuging, spraying, dipping, immersion, pouring – or even by sprinkling. ENGOSYN® is an environmentally-friendly engobe for almost all basic ceramic bodies, firing curves and kiln types in the heavy clay industry. It consists of top-quality raw materials for processing in factories making roofing tiles, clinker bricks and floor tiles and is suitable for firing temperatures from 850°C to 1250°C.

All pigments are prepared for our customers on request to suit their individual requirements and production parameters. The range of colours is limitless; these pages show just a small selection of the colours and options which can be used to refine an enormous range of ceramic surfaces. The gloss scale ranges from matt to high gloss to satin.

As a finished product, all engobes are supplied either in powdered form or as a slurry ('ready-to-use'). They are easy to process because it is not necessary to add viscosity-regulating and stabilizing additives. Powdered engobes are simply mixed with water and are then easy to process. Slurries can be processed immediately after stirring.



ENGOSYN® Engobes – for special applications too



great colours – ENGOSYN®

Special Engobes ENGOSYN® with best properties to allow plenty of room for design:

- frost-resistant on the appropriate basic bodies
- still breathable after firing, even with the satin finish
- suitable for fast firing
- can be mixed with one another
- can be applied each on top of another



long-standing success story – ENGOSYN®-V

ENGOSYN®-V has properties of particular benefit in facing clinkers. Optimized for long kiln times, this product allows particularly innovative further processing.



CHARACTERISTIC

for special applications too

PRODUCTS	ENGOSYN®	PRODUCTS	ENGOSYN®-V	ENGOSYN®-P	ENGOSYN®-M
matt	■	matt	■	■	■
satin	■	satin	■	■	■
semi-matt	■	semi-matt	■		
high-gloss	■	high-gloss	■		
metallic gloss		metallic gloss	■	■	■
Properties	universal	Properties	for long firing times	copers with extreme mechanical load	with special effects
Powder	■	Powder	■	■	■
Slurry	■	Slurry	■	■	■
Sphere of application	Roof tiles Facade tiles Clinkers Hand-moulded bricks Fillets	Sphere of application	Clinkers Facade tiles Fillets Hand-moulded bricks	Paving clinkers Floor tiles	Roof tiles Facade tiles Clinkers Hand-moulded bricks Fillets



metallic effect for style – ENGOSYN®-M

This product, made of high-quality raw materials combined with a unique metallic effect, has convincing depth of colour and luminosity – as well as amazing changes of colour depending on light incidence.



extremely strong – ENGOSYN®-P

A product which is absolutely resistant to heavy mechanical load, extreme weathering and high UV radiation. Its high degree of abrasion resistance means that this highly robust engobe can withstand the harshest conditions.

complementary products

PRODUCTS	ENGOSYN®-S	ENGOSYN®-T
matt	■	■
satin	■	
semi-matt		
high-gloss		
metallic gloss		
Properties	body sealant	engobe to prevent adhesion
Powder	■	■
Slurry	■	■
Sphere		
of application	Facing clinkers Facade tiles Fillets Hand-moulded bricks	Roof tiles Firing process aid

waterproof colour range – ENGOSYN®-S

This product acts as a ceramic body sealant to prevent water penetrating the body once fired. ENGOSYN®-S also provides subtle nuances of colour with a low application weight. This makes it possible to manufacture a wide variety of facing clinkers and facade tiles.

flawless surfaces – ENGOSYN®-T

ENGOSYN®-T has proved to be the perfect engobe to prevent adhesion during firing. It is used to keep ceramic bodies away from adhering material during firing. The result: no disturbing points of adhesion on the end-product, just perfect surfaces.



Glazes

Gleaming gloss for light – or matt elegance

Glazes GRONAT® can be applied by centrifuging, spraying, dipping or immersing. Glazes GRONAT® are suitable for firing temperatures from 950°C in both conventional and fast firing processes. The top limit for firing temperature is 1250°C. The degree of gloss of Glazes GRONAT® is individually adjustable depending on firing temperature and the composition of the glaze. High-gloss surfaces are just as easy to realize as satin or matt glazes. And of course all Glazes GRONAT® are lead-free.

If gloss-finish surfaces do not suit the design concept, matt glazes can be a fine alternative. This is because compared to high-gloss glazes, matt glazes blend unobtrusively into a roof, avoiding undesired dazzle from reflections. The sophisticated style and accentuated shapes of glazed surfaces draw the eye at once.



GRONAT® Glazes



fine milled – GRONAT®

As a finished product, all glazes are supplied either in powdered form or as a slurry ('ready-to-use'). They are easy to process because it is not necessary to add viscosity-regulating and stabilizing additives. Powdered glazes are simply mixed with water and are then easy to process. Slurries can be processed immediately.

CHARACTERISTIC

PRODUCTS	GRONAT®
matt	■
satin	■
semi-matt	■
high-gloss	■
metallic gloss	■
Properties	universal
Powder	■
Slurry	■
Sphere of application	Roof tiles Clinkers Facade tiles Filletts Decorative ceramics



GRONAT® melting colours



wide-ranging colour effects GRONAT®-S | GRONAT®-ES

The perfect product if individual bricks with a special surface are to be used. These melting colours produce both changing colour effects and a variety of surface textures, creating unique effects which are especially suitable for producing rustic, rough surfaces on facing bricks. Melting colours GRONAT®-S are fine-grained grades with a particle size of up to approx. 3 mm. GRONAT®-ES are relatively coarse-grained products with a particle size of approx. 5 mm. They create a particularly rustic effect by forming small irregularities in the brick. Melting colours GRONAT®-S and GRONAT®-ES can also be mixed together or with sand to achieve completely individual effects. Combinations with glazes GRONAT®, special engobes ENGOSYN® and tarnishing colours REDOX® increase creative options still further.

Application methods: sprinkling and pressing in
Melting colours GRONAT®-S and GRONAT®-ES are supplied exclusively in powdered form. The powder should be stored in dry, frost-free conditions.

CHARACTERISTIC

PRODUCTS	GRONAT®-S	GRONAT®-ES
matt	■	■
satin	■	■
semi-matt	■	■
high-gloss	■	
metallic gloss	■	
Properties	fine-grained (up to 3 mm)	coarse-grained (up to 5 mm)
Powder	■	■
Slurry		
Sphere		
of application	Facing clinkers Roof tiles Facade tiles Fillets Hand-moulded bricks	Facing clinkers Facade tiles Fillets Hand-moulded bricks



Tarnishing colours

The versatile all-rounders REDOX[®] Tarnishing colours

In contrast to engobes or glazes, the special composition and individual effects of tarnishing colours REDOX[®] make them a completely separate type of product.

In 1972, Martin Grothe was experimenting in the lab when he succeeded in making the tarnishing colour now with the registered trademark 'REDOX[®]'. This product finishes many surfaces of quite different kinds and makes the results as unique as a fingerprint. After firing, tarnishing colours REDOX[®] bond permanently to ceramic bodies, penetrating deep inside them.

The colours can be mixed together and can be applied on top of one another to achieve quite individual colour effects depending on the thickness of the application. Dry scattering through a fine sieve also leads to outstanding results. The colours can be fired in both reducing and oxidizing atmospheres, with a huge variety of firing colours resulting. Tarnishing colours REDOX[®] can also be used to outstanding effect in fast firing applications in combination with special engobes ENGOSYN[®]. They are of outstanding quality and quick to process.

REDOX[®] grades can be supplied for a huge variety of kilns and firing curves at temperatures between 980°C and 1320°C. They are supplied in powdered form and after preparation with water, can be centrifuged, sprayed, poured, immersed or painted on in suspension. A very recent development is the ability also to supply tarnishing colours REDOX[®] in the form of a slurry.



CHARACTERISTIC

PRODUCTS	REDOX®
matt	■
satin	■
semi-matt	■
high-gloss	■
metallic gloss	■
Properties	universal
Powder	■
Slurry	■
Sphere of application	Roof tiles Clinkers Floor tiles Stove tiles Facade tiles Fillets Hand-moulded bricks



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