







Grothe –  
has been Europe's  
leading supplier of  
engobes and glazes  
for four decades

- ★ individual products
- ★ reliable and extraordinary product quality
- ★ high level of competence in development and consulting
- ★ speed and precision
- ★ stability and customer trust







The company is run by qualified engineer Uwe Grothe, the third generation of his family to fill the post of Managing Director.

## Grothe Rohstoffe GmbH & Co. KG

Founded as a trading company in 1946, the family firm is now in its third generation. With a dense network of agencies abroad, we supply customers on five continents from our site in Bückeberg, Northern Germany. Over 50 employees produce some 10,000 tonnes of ceramic pigments a year using a samples archive of over 20,000 formulations. The sustainability of this process is important to us – these days, a successful business is measured among other things by a frugal and efficient use of resources.

Grothe develops and produces special engobes (ENGOSYN®), glazes and melting colours (GRONAT®) and tarnishing colours (REDOX®) for the heavy clay industry. Commercial products such as manganese oxide (MANGRONAT), iron oxide and chromite also form part of our product range.

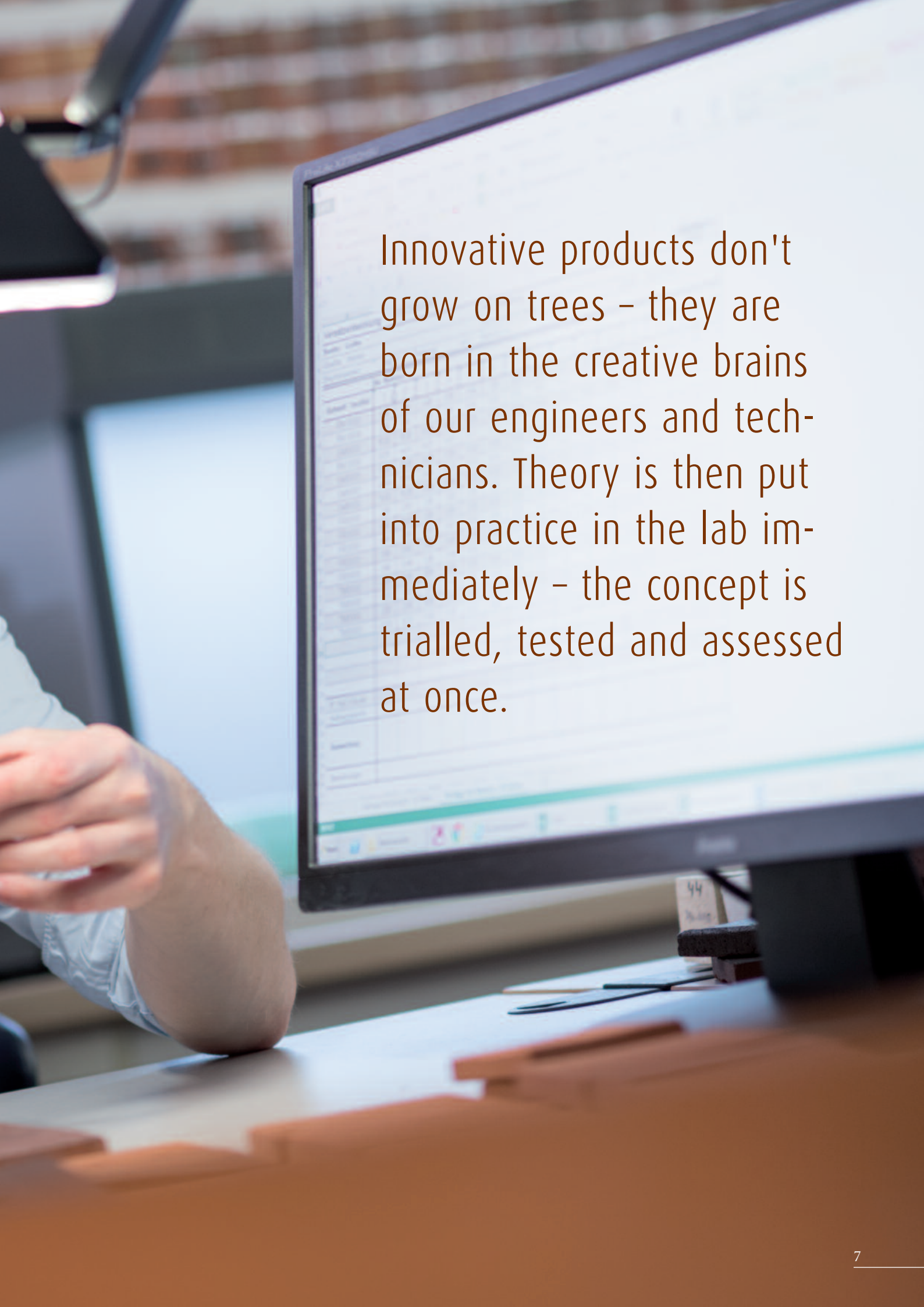
Customer-focused product development requires a sensitive interface between demand and production. Grothe employs a committed and highly-qualified engineering team to keep customer contact running smoothly.



Our highly qualified and dedicated team of ceramic engineers and ceramic technicians for a direct link to our customers.





A person's arm and hand are visible on the left, resting on a desk. In the background, a computer monitor displays a software interface with various data fields and graphs. The scene is set in a laboratory or office environment with a brick wall visible in the background.

Innovative products don't grow on trees – they are born in the creative brains of our engineers and technicians. Theory is then put into practice in the lab immediately – the concept is trialled, tested and assessed at once.



Supported by the latest metrology equipment, our materials testing staff work with a high level of concentration.



## Product development

Expert knowledge – specific expertise for the perfect product

Our employees know how ceramic body composition, firing temperature, dwell time, settlement behaviour, firing atmosphere and other production parameters affect the colour and surface of your ceramic products, which is why they have processing fluctuations well under control.

Some 90 per cent of the frits used by Grothe are in-house developments. This expertise is fed by decades of experience in close collaboration with customers and suppliers. The data acquired on tried and tested process techniques, formulations, process conditions and material behaviour over this period is carefully archived and then examined, expanded and used innovatively, both in our in-house lab and in parallel with production.

This knowledge pays off for our customers when developing individual product variants and setting new trends. A huge variety of parameters and properties need to be precisely harmonized with one another for a product to be an accurate match for customer requirements. Grothe accompanies this process from the concept all the way through to serial production maturity, and employs a committed and highly-qualified team of people to keep customer contact running smoothly.

The path to an optimal product runs over a Development-Sheet, which captures every important production parameters. Please find the corresponding QR-Code on page 26.

## Quality assurance

Production control, maximum care and strict checks

At Grothe, every production step is prepared, approved and documented in line with strict quality assurance standards. In a department dedicated specifically to this task, six members of staff subject the whole of production, from the arrival of raw materials to the finished product, to continuous checking to the latest technical standards and using state-of-the-art testing equipment. For special tests (such as heating microscopy tests or CTE measurements, for example), Grothe works in close collaboration with respected institutes.

To ensure the precision of our instruments and that our results are always correct, we run continuous internal monitoring using calibrated standards and participate regularly in round-robin tests. All test processes are performed strictly in accordance with our in-house quality assurance manual. Before being released for production, every batch of raw material is subjected to a standardized inspection process based on quality agreements with our suppliers.

All the samples taken are archived long-term, together with the results. To ensure that we can still deliver on time, every batch is also checked in the course of production itself, thus ensuring the high quality of our products by means of seamless, strict monitoring of process parameters. Grothe also takes the subject of compliance during this process very seriously, ensuring strict adherence to REACH and GHS regulations, in particular, at all process levels at a very early stage.





## Ceramic raw materials

### Colour through and through

The extremely fine nature of metal oxide powders makes them ideal for colouring all ceramic products thoroughly. The colour nuances extend from pale brown to blackish-brown, pale red to dark red or pale grey to dark grey. The range of colours can be increased still further by firing in oxidizing or reducing atmospheres and also by mixing colours together.

Manganese oxide (MANGRONAT) = brown

Iron oxide = red

Chrome oxide = grey

Here too, Grothe takes the greatest possible care to satisfy customer requirements and maintains a logistics infrastructure to guarantee constant storage conditions and the movement of large quantities.

In our modern warehouse we hold a great variety of every necessary raw materials.



## Archiving & storage

### Traceability, a must-have

The archive with over 20.000 recipes is the foundation for the constant subsequent delivery of Grothe products.

### Warehouses

Raw materials require perfect storage. Our specially-built new halls 7+8 house large quantities of raw materials under constant conditions to guarantee consistent raw material quality.



The sample archive of over 40.000 formulations is the base for the consistently high quality of Grothe products.











Our company has a strong





# ng foundation!

Its well-trained team of reliable staff who perform their tasks every day with enormous commitment.





**Grothe**  
Immer einen Ton voraus  
Nr. 102201  
Prod.-Datum: 16.02.18 / 02

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**Grothe**  
Immer einen Ton voraus  
Nr. 102201  
Prod.-Datum: 16.02.18 / 01

**Grothe**  
made in Germany

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Immer einen Ton voraus  
Nr. 102201  
Prod.-Datum: 16.02.18 / 01

**Grothe**  
Immer einen Ton voraus





**Grothe**

Immer einen Ton voraus

Nr. 102201

Prod.-Datum:

16.02.18/04

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**Grothe**







# 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, painting – or even by a dry method. 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 flooring 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 here 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.



## 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 one 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.



## Special Engobes ENGOSYN®

for special applications too

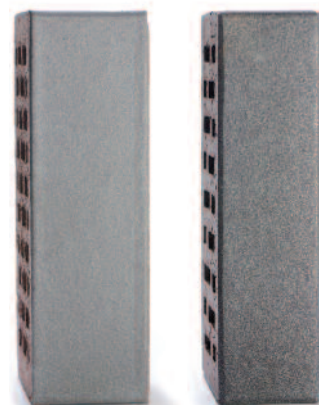
PRODUKTE	ENGOSYN®	PRODUCTS	ENGOSYN®-V	ENGOSYN®-P	ENGOSYN®-M
matt	■	matt	■	■	■
satin	■	satin	■	■	■
semi-matt	■	semi-matt	■		
high-gloss	■	high-gloss	■		
metallic gloss		metallic gloss	■	■	■
Properties	universal	Properties	for long firing times	cope with extreme mechanical load	with special effects
Powder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

## 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 irritating 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.

Glazes GRONAT® – fine milled, free of pollutants and environmentally friendly. 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.





# 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.

## GRONAT® Glazes

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



# GRONAT® melting colours



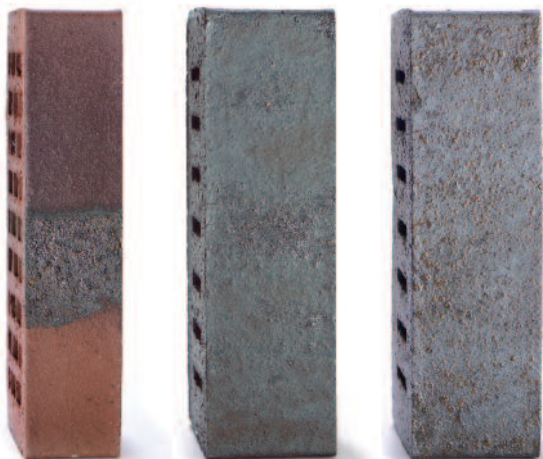
## wide-ranging colour effects GRONAT®-S | GRONAT®-ES

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:** scattered and compacted.  
Melting colours GRONAT®-S and GRONAT®-ES are supplied exclusively in powdered form. The powder should be stored in dry, frost-free conditions.

## GRONAT® melting colours

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 Filletts Hand-moulded bricks	Facing clinkers Facade tiles Filletts 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®“. Nowadays, four modern high-performance mixers of various sizes work on the production of 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.



REDOX® tarnishing colours

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 Fillels Hand-moulded bricks





We develop raw materials, which make your product unique. Contact us.  
Best directly over our Development-Sheet, with which we develop  
product characteristics precisely to your production conditions.  
Just scan the QR-Code and download the file.

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