



# KEIM SOLDALIT<sup>®</sup>-ME

SOL-SILICATE PAINT WITHOUT BIOCIDAL ACTIVE  
SUBSTANCES FOR ALGAE- AND FUNGUS-FREE FACADES

„Problems cannot be solved  
with the same mindset that  
created them.““

Albert Einstein



# KEIM SOLDALIT®-ME – COATING WITH ADDED VALUE

## PREVENTING ALGAE AND FUNGAL INFESTATION

Most insulated facades are affected by microbial growth, as algae and fungi encounter favourable growing conditions on these surfaces. Such facades are often coated with biocide containing paints. Biocide-containing facade paints can release biocides into the environment through wash-out (according to the risk assessment of the German Environment Agency). KEIM Soldalit-ME contains no added biocides.



## AVOIDING AIR POLLUTION

Our modern-day environment is characterised by high traffic volumes, industrial mass production and high energy consumption. These factors are the main causes of man-made air pollution. Traffic plays a decisive role in this, as it pollutes our air with nitrogen oxides, carbon monoxide, sulphur dioxide and particulate matter. Studies show that pollution of the air we breathe with particulate matter and nitrogen oxides affects our health. In addition, nitrogen oxides play a significant role in the formation of ground-level ozone and acid rain and have a considerable impact on the environment.

**Innovative technology prevents growth on facades and leads to a reduction of air pollutants such as nitrogen oxides – KEIM relies on the power of photocatalysis for this.**

# PHOTOCATALYSIS – NATURE LEADS THE WAY

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## USING THE POWER OF THE SUN

Similar to photosynthesis in plants, photocatalysis also initiates a reaction process using light. While photosynthesis uses sunlight to build up a substance (glucose), photocatalysis breaks down or converts substances. The term photocatalysis describes a principle of action in which a substance (catalyst) is stimulated by light (photo) to trigger or accelerate a chemical reaction without being consumed itself.

**A photocatalytically hydrophilic surface, in combination with the antistatic properties and low thermal plasticity of silicate coating systems, ensures long-term clean facade surfaces.**

## PHOTOCATALYSIS → FOR CLEAN FACADES

Under the influence of light, the photocatalyst leads to hydrophilic surface effects. Put simply, this means that the surface tension of the water on the facade is reduced and water droplets spread out to form a flat film. This promotes self-cleaning of the facade surfaces when they are wetted by rain or dew. The photocatalytically active surface makes it easier to remove dirt. It is simply washed off the facade.

Due to the larger evaporation surface, which absorbs water in a spread-out form, the drying speed is higher than with hydrophobic coatings. The extremely large specific surface area of a microporous silicate coating (compared to petrochemical based coatings) further increases the drying speed significantly. The overall drier surface provides unfavourable conditions for algae and fungal growth. Silicate coatings are antistatic and non-thermoplastic. This makes it difficult for dirt particles to adhere to the surface.

## ADVANTAGE 1 CLEAN FACADES

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Without photocatalyst



With photocatalyst

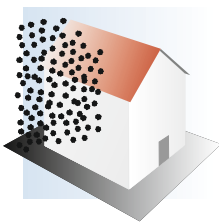
Photocatalytically active surfaces can support better air quality and contribute to reducing selected air pollutants.

**PHOTOCATALYSIS  
→ FOR CLEAN AIR**

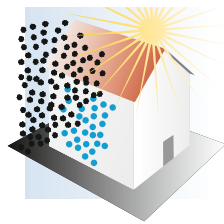
Natural light activates a photocatalyst in the facade paint. It converts harmful nitrogen oxides from the air into harmless nitrate – and even produces oxygen. Since the photocatalyst, unlike biocidal ingredients, does not wash out, the effect remains for the entire service life of the facade coating.



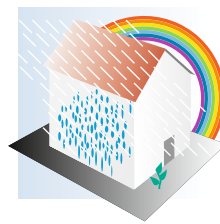
**ADVANTAGE 2  
CLEAN AIR THROUGH THE MINOX EFFECT**



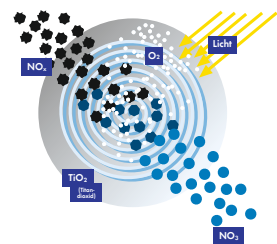
Nitrogen oxides accumulate on the surface of the paint.



When exposed to light, nitrogen oxides are converted into harmless nitrate (NO<sub>3</sub>). In addition, this reaction turns ozone into oxygen.



The easily soluble nitrate (NO<sub>3</sub>) is then washed off the surface by rain.

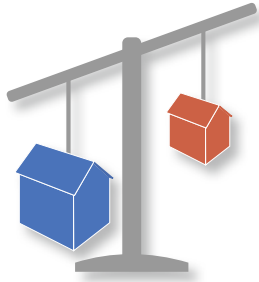


The titanium dioxide catalyst is not consumed. As long as the crystals are supplied with energy by electromagnetic waves (light), the process remains active.

# PHOTOCATALYSIS IN PAINTS – OPPORTUNITY AND CHALLENGE

## PHOTOCATALYTIC, ORGANICALLY BOUND PAINT

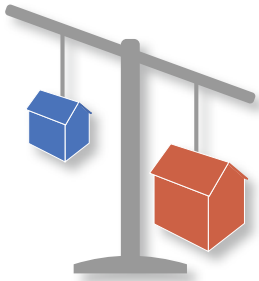
■ Activity  
■ Life span



Either ... good activity (sufficient pigment), but very reduced life span

## PHOTOCATALYTIC, ORGANICALLY BOUND PAINT

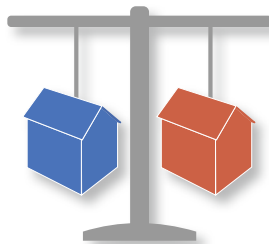
■ Activity  
■ Life span



or ... long life span, but reduced activity (too little pigment)

## PHOTOCATALYTIC, SILICATE-BOUND PAINT

■ Activity  
■ Life span



→ Good life span, optimum activity



**Inorganic pigments are particularly suitable for photocatalytically effective and durable coatings.**

### LONG-TERM CLEANLINESS AND COLOUR STABILITY

Photocatalytically active paints can break down pollutants such as nitrogen oxides, which can contribute to improved air quality. The catch: organic binders are themselves susceptible to the process and degrade over time. The result: chalking, premature weathering, and reduced service life. Inorganic, silicate binders from KEIM are more robust – they are unaffected by the photocatalyst and do not decompose. This preserves the principle of action and increases the paint's service life.

# KEIM SOLDALIT®-ME – MINERAL FACADE PROTECTION



## KEIMFARBEN – EXPERIENCE PAYS OFF

KEIMFARBEN has been researching photocatalytic pigments that are permanently stable and efficient in paints for many years. In KEIM Soldalit-ME, selected photocatalysts are optimally integrated into a stable, inorganic binder matrix.

The result: photocatalytically high-performance coatings with high colour stability and a pollutant-reducing effect – the so-called MiNOx effect ("Minimizes NOx").

## PROTECTION AGAINST DIRT AND MICROBIAL GROWTH

The photocatalytic effect of KEIM Soldalit-ME helps prevent dirt and growth because microorganisms do not find nutrients. The silicate surface remains clean over the paint's lifetime. Positive for people and the environment: it does not use biocides. Unlike organic binders, which are attacked and weakened by photocatalysis, inorganic binders are stable and durable.

## RESPONSIBILITY FOR SUSTAINABLE BUILDINGS

KEIM Soldalit-ME is awarded with Cradle to Cradle Certified® Silver and C2C Certified Material Health Certificate™ Gold.

For further information visit us at [www.keim.com](http://www.keim.com).





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