



## THERMO CERAM

### Heat Protection through a high-reflective coating

Ofentimes it is experienced – THERMO CERAM PROTECT cools the house.

Without energy input, without expensive insulation or even stonewalls – only 0,3 mm coating cools.

#### How is this possible?

THERMO CERAM PROTECT shows its ability to reflect effectively mid-wave and short-wave beams of the sun. This means the wall and roof cannot be heated up that much and through the shift of heat phases during the 24hours of a day an effective cooling during the night takes place.

This phenomenon can be explained analysing the degree of light absorption **-a-** and of emission of heat **-e-**.





## Reflection of heat waves during the day

THERMO CERAM PROTECT ( $\mathbf{a} = 0,15$ ) absorbs less light that is less heat energy than pure white ( $\mathbf{a} = 0,20$ ). The effect of the reflection of ceramic paint is even double worth in comparison with ordinary white coatings.

### This asks for explanation:

The degree of absorption is been counted from the absolute degree of a black body, that is taking in all light ( $\mathbf{a} = 1,0$  or 100 %).

Pure white stays visible as it absorbs in reality a certain amount of light. A theoretical 100% reflection would mean, that our eye could not distinguish the object from its neighbours.

### Diffuse Reflection

As light is never perfectly reflected back to the shining body a factor of 10 % (0,1) is been taken into consideration as diffuse beams are hard to measure. The amount of diffuse reflection cannot be measured to be reflection and therefore it lessens the degree of absorption. This degree is even higher the more rough the surface is shaped. THERMO CERAM PROTECT provides a big surface with ceramic bubbles reflecting strongly. For this reason the factor of 10 % is even to be counted as relatively low.

### Absorbtion of heat

Light/Heat – Absorption Test: Fraunhofer Institut	
coating	Degree of absorption <b>-a-</b>
THERMO CERAM PROTECT outside	0,15
Dispersion coating F1	0,20

This explains the effect of reality. A house coated on the roof and walls with ThermoProtect can be felt to be much cooler. Up to 10 K distinction can be sensed.

## Emission of warmness to the clear night

### Emission of Heat

But not only the reflection of the day is important working for the effective cooling of a house. The ability of giving away the heat back to the clear sky is important to be considered as the phase of heating up is completed and sun sets. The heat storage of a body hinders drastically energy efficient cooling.

The big emission degree of THERMO CERAM says that the warmth is been given quickly away to the clear skies. This is been felt especially in those areas of the world where cool clear summer nights are the rule – like the desert. In the South due to both reasons the cooling ability of THERMO CERAM is best seen and most wanted.

Emission of heat Test: Fraunhofer Institut	
coating	Degree of Emission <b>-e-</b> 18 % less heat storage of THERMO CERAM
PROTECT	0,91
F1	0,89

For this reason the basis of any comparison of absorption needs to be counted as following:

1,0 (black body) - 0,1 (diffuse light)	= 0,9 (90 %)	<b>THERMO CERAM PROTECT absorbts heat only half of normal white.</b>
1,0 (black body) - 0,1 (diffuse light) - 0,8 reflection of normal white	= 0,1 <b>a</b> (10 %) absorption.	
1,0 (black body) - 0,1 (diffuse light) - 0,85 reflection of THERMO CERAM	= 0,05 <b>a</b> (5 %) absorption.	