HEAT REFLECTIVE ROOFS AND FACADES WITH THERMAL PRODUCTS
(THERMAL COAT, PROOF W THERMAL, CEMENTPROOF THERMAL)

What is a heat reflecting cover?

The main characteristics of a heat reflective coating are a high solar reflectance (ability to reflect solar radiation, thereby reducing the heat transfer into the interior of the building) and high ability to release heat absorbed.
Unlike a conventional coating, very sensitive to the increase of temperature due to solar radiation during the day, a heat reflecting cover allows you to control and maintain it at a lower temperature.
Cooling the covers is an effective alternative to improve insulation heat in the warmest climates and consequently an energy saving in air conditioning.

Solar reflection, is expressed as a decimal fraction or a percentage. A value of 0.0 indicates that the surface absorbs all radiation solar, and a value of 1.0 represents total reflection. Thermal emission also expressed as a decimal fraction between 0 and 1, or a percentage.
The index of solar reflection is a value that incorporates reflection and emission in a single value to represent the temperature of a material in the sun. This index quantifies how hot it can put a surface relative to standard black and white. Is calculated using equations based on previously measured values of reflection and emission. It is expressed as fraction (0.0 to 1.0) or percentage (0% to 100%).

THERMAL TECHNOLOGY (Roofs and Facades of Solar Reflection)

THERMAL Technology is the result of a technological development of PLCI based on the formulation of coatings with special pigments that facilitate a greater reflection of the rays of sun and additives of last generation that contribute to diminish the tendency to accumulate dirt and impurities and consequently control color stability and thermal properties.

SOLAR REFLECTION OF THE COATINGS

Through the tests carried out according to UNE EN 410: 1998, the measurement of the hemispheric reflectance of solar radiation over the total spectrum, including specular and diffuse reflection, was performed. The solar reflection index registered in THERMAL products far exceeds that achieved by conventional paint for roofs.

PRODUCT	INDEX OF REFLECTION		TERMICAL EMITANCE
	INITIAL	FINAL	
Regular painting	**0,35**	**0,25**	**-**
Thermal Coat	**0,82**	**0,74**	**0,92**
Proof W Thermal	**0,70**	**0,63**	**0,91**
Cementproof Thermal	**0,76**	**0,74**	**0,88**

CORK ELITE PRO

TESTING CERTIFICATE

THERMAL COAT

Norm Requisite 1504-2, the generally used within the EEC market.

DSC, (Tg)		-10ºC
HARDNESS SHORE D		25 – 30
HARDNESS SHORE A		70 – 90
Permissibility to water steam.	Norm EN 7783-1/2	(Sd<5m) **:** Clase I (permissible to water steam)
Determination to the traction resistance	Norm UNE-EN ISO 527	High 2.0 N/mm²
Determination to the breaking resistance	Norm UNE-EN ISO 527	Elongation 140%
Artificial aging through the exposing to uv and moisture (*)	Norm UNE-EN ISO 4892-3	Positive at 10.000 Hrs. or 10 years.
Pullingh off testing Requisite of a miminum of charging traffic 1,5 n/mm2	Norm EN 1542	Adherence 2.0 N/mm²
(*) EOTA TR010 Exposure procedure for artificial weathering.		

MICRONS	EMPIRICAL DIMENSION			REAL DIMENTION
ACTIVE PRINCIPLE	25	55	95	105

	THERMAL CONDUCTIVITY	DIELCTRIC CONSTANTE
ACTIVE PRINCIPLE	**0,066**	**1,30**

TECHNICAL STUDY CONDENSING TESTING		
TEST DATA **RECIPIENT –Temperature 22 ºC – Dew Point 19 a 20 ºC** **FREEZING BOX – Temperature 3 ºC.** **WE MESURE THE FIRST FALL OF THE FIRST DROP OF CONDENSATION.**		
STANDARD PAINTING (A)	**PROOF W THERMAL (B)**	**THERMAL COAT (C)**
1,49	**0,98**	**0,90**
2,42	**0,95**	**0,79**
56,0 %	**37,0 %**	**43,0 %**
34,4 %	**38,3 %**	**48,7 %**
24	**29**	**44**

CONDENSATIONS RESULTS

- **(A) 20 min. Without anti condensation properties**
- **(B) 29 min. Anti-condensation Product.**
- **(X) 44 min. Excellent Anti condensation Properties.**

Results Low Thermal conductivity and Anti-Condensing Effect

Conclusions:

The effectivness of the product is given by the effect of two principal actions

First. The low thermal conductivity.

Condctivity 0,05 to 0,36 w/m.K To 0ºc based on theoritical calculations.
Comparative scheme of the thermal conductivity coefficient between the main building and sealing materials, versus our isolating products, hereunder shaded.
The contctibility coefficient (lamba) are unvariable for each type of material, isolating or not, and it unable us to calculate theoritically the thermal isolation that could be taken using a specified material.
As an example, we will list some of them, underlying that the quality of the isolating material inversely proportional to the lambda value, that the lower is the lambda the better are the isolating characteristics.
The lambda coefficient depends on the material and is completely irrelevant the thickness.
With the coefficient lambda spead sheeted, we could calculate theoritically the thermal transmission coefficient of the heat “k” (kcal. /n m2 ºc) using the following formula:

$$K = \frac{1}{\frac{1}{a} + \frac{Si}{lambda\ i}}$$

PRODUCT	**Kcal/h m ºC**
CEMENT PARGING	1.20
PLASTER PARGING	0.26
PLAIN BRICKWALL	0.75
PERFORATED BRICKWALL	0.65
PLASTER CARTON	0.16
PLASTER SLABS	0.26
GLASS SHEET	0.82
STAINLES STEEL SHEET	50.0
COPPER	330.0
ALLUMINIUM	175.0
PINE /FLIR TREE WOOD	0.12
AGGLOMERATE	0.07
CARPETS	0.04
SPHALT SHEET	0.16
EXPANDED CLAY	0.09
THERMAL COAT	**0.066**
PROOF W THERMAL	**0.060**
CEMENTPROOF THERMAL	**0.060**
GLASS FIBER	0.0312
ROCK WOOL	0.034
ISOLATION	**0.034**
EXPANDED POLYESTIRENE	0.038
EXTRUDED POLYESTIRENE	0.028
POLIURETHANE SHEETS	0.020
PROJECTED POLIURETHANE	0.020

Second. Isolation by the effect of the infra red rays.

These rays are the reason why there are heating up and carriers of thermal energy. These rays are basically produced by all the organique or inerte living material, which temperature is above the absolute 0ºc,-273c.

The infrared radiation that reach us from the sun, is what heats up the earth surface, and for which thermal coat, applied outside, refracts most of it. The higher is the radiation, the higher is the refraction, consequently the high is the effectiveness reached.

Appliying the latter principle, we use this energy to create a comfort temperature (heating systems and air conditionning), we reach the optimum point of energy saving by making the energy generated in an closed space migrate to the space components (wall, roof) creating then a simple and aesthetic thermal islation with very high effectivness.

Product : thermal coat

Description: interior and exterior membrane created for thermal isolation.

Methodology: apply the product following the specified protocols. Yields according to the fact files.