

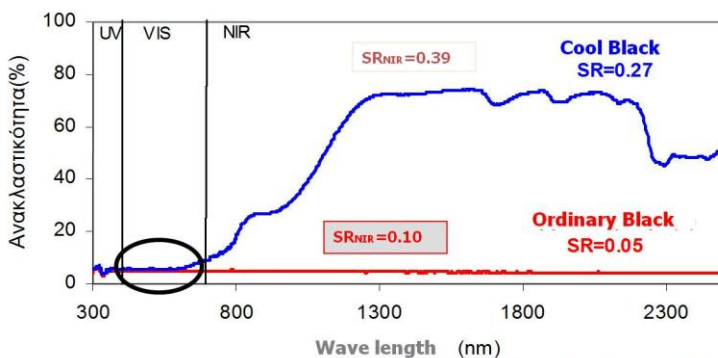
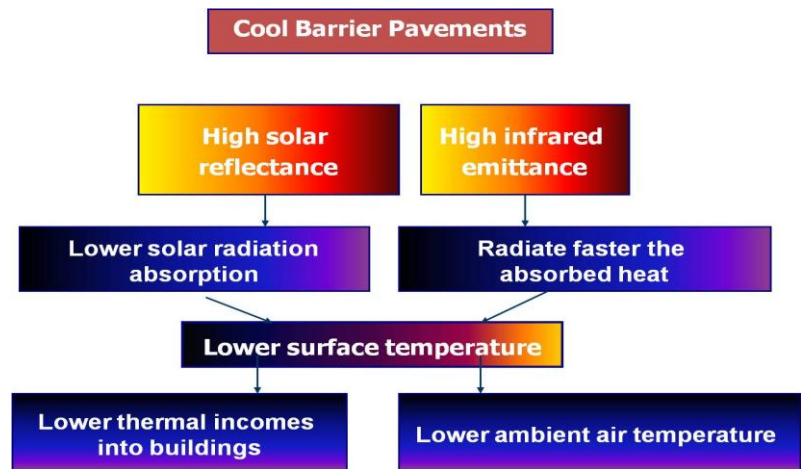
# COBAMER Pavements

Intelligent Materials for Urban Environment

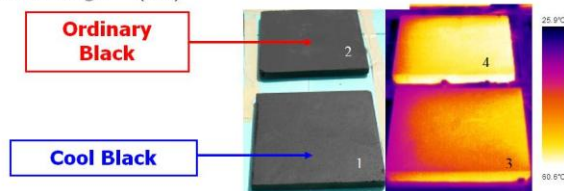


# Cool Barrier Pavements

- Contributes to “Urban Heat Island” mitigation
- Mitigates the consequences of the Global Warming phenomenon
- Creates thermal comfort conditions
- Cool & Colored
- Environmentally and user friendly



$\Delta T_{max} = 10\text{ }^{\circ}\text{C}$



## What is Cool Barrier Pavements

Cool pavements refer to a range of construction materials. These pavement technologies tend to store less heat and may have lower surface temperatures compared with conventional products. They can help address the problem of urban heat islands, which result in part from the increased temperatures of paved surfaces in a city or suburb.

## Why to Need Cool Barrier Pavement

The conventional pavement surface temperature is generally 20-30°C [68-86°F] higher than the air/surrounding temperature due to pavement solar energy absorption during daytime, especially in the summer. Also, the absorbed heat energy from pavement surface, which stored in the pavement subsurface, will be re-released into the atmosphere after sunset, keeping heating the atmosphere at nighttime. Due to the large area covered by pavements in urban areas, they are an important element to consider in heat island mitigation. Cool Barrier pavements can help to address heat islands effect through reducing pavement and air temperature, if used in a large scale. Also the cool pavements with lower surface temperature could reduce the chance of heating stormwater as it runs off the pavement into the local waterways. Besides these effects contributing to address the problem of urban heat islands and improve water quality, the lower temperature in the pavements also would reduce pavement damage/deterioration and improve pavement service life/durability.

# We can make the World Cooler

## • Cool Barrier Concrete Blocks



### DOUBLE T

The new **“heavy weight”** champion of Abolin Co.

With a height of 80 millimeters (20 more than the height of all our pavers) is ideal for industrial exterior flooring in spaces with especially high demand in loads and traffic.

So, we recommend its application for exteriors of factories, logistics centers, hypermarkets, transport companies, etc.



### CLASSIC

The simplicity of the **classic paver** with a rectangular shape and dimensions 100x200x60 mm combines advantages of installation and aesthetics. Classic squared style, with edges and right angles and 5 different installation patterns that will add finesse and glamour to your space.

### TRI STAR

The **best-seller** of Abolin Co! *Why? Because you have chosen it to be!* Is it the modern shape of the three hexagons, bound together forming a star? Or is it the 12 side faces which guarantee excellent interlocking features? What about its peculiar symmetry and its installation advantages? Maybe, it is all of these altogether!



### WAVE

**The wave!** If, instead of corners and edges, you prefer curves and continuity, this is the ideal shape to choose. Consecutive wavy curves installed as a running bond or as a herringbone pattern may be some of the choices that fit you most!

### COBBLESTONE

The **new rising “star”**. Demonstrating a rustic surface resembling small natural stone cubes, this new paver type has started to steal the show! It reminds us the traditional cobblestone pavements and alleys therefore, we named him “cobblestone”.

Particularly non-skid due to a quite rough surface and possessing excellent interlocking properties after installation, it is recommended for exteriors we wish to have a traditional look, for especially inclines floors as well as modern layouts with a tradition redolent of the past...



# Cool Barrier Pavements

- Cool Barrier Concrete Tiles (flags)



## PLAIN FINISH

Coming straight out of the production line, without any further processing with a **flat surface**. The produced standard color palette includes tile-colored, white and beige. It is recommended for exterior flooring applications that do not hold dirt and can be easily maintained and cleaned.

## TEXTURE FINISHES

Coming straight out of the production line, without any further processing with various surface textures. The standard color palette includes tile-colored, white, grey and beige. So, depending on your space and taste you may choose among “**Porolithos**”, “**Lithos**”, “**Karo**” and “**Kadreto**”. In this product range one may also find the “**Tactile Paving Flags**” for the blind and partially sighted people.



**POROLITHOS**



**LITHOS**



**KARO**



**KADRETO**



**TACTILE**

## SANDBLASTED

This is the **ideal type** for personalized exteriors possessing high with anti-slip properties and simultaneously intriguingly classy. One may blend the lively colours which provide happy and delicate combinations with an air of chaste style:

**IRIS**



**ERGANI**



**ERATO**



# We can make the World Cooler

## Characteristics

Product	Test Certifications		Available Colours	Dimensions	LEED CREDITS
Concrete Blocks	European EN 1338	Standard	Yellowish brown, grey, off white, green, beige	Variable	Sustainable Sites (SS) Credit 7.1 Heat Island Effect: Non-Roof  Solar reflectance Index: SRI ≥ 29
Concrete Tiles (flags)	European EN 1339	Standard	Yellowish brown, grey, white, green, beige	40cmX40cmX3,5cm, 33cmX33cmX1,8cm	Sustainable Sites (SS) Credit 7.1 Heat Island Effect: Non-Roof  Solar reflectance Index: SRI ≥ 29

## An Example of a success story

### FANEROMENIS AVENUE HOLARGOS - ATHENS

**PROJECT NAME:** REFORMATION OF FANEROMENIS AVENUE

**PERIOD OF THE PROJECT:** August- September 2010

**AUTHOR:** MUNICIPALITY OF HOLARGOS, Athens Greece

**CONTRACTOR:** KAT CONSTRUCTIONS

**PROJECTS PRODUCT CHARACTERISTICS:**

APPLICATION OF COOL CONCRETE BLOCKS AND TILES

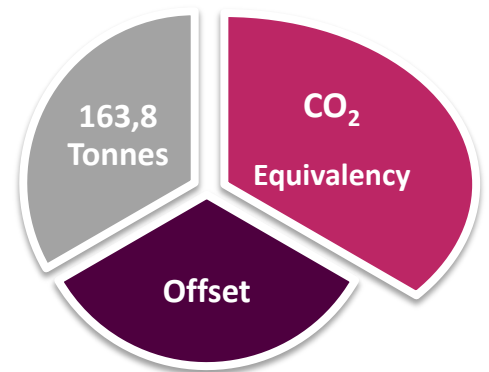
**TOTAL SURFACE:** 5.000 SQUARE METERS

**TECHNICAL SPECIFICATIONS AND PLANNING:**

The project's proposal had drafted from Abolin Co and the technical service department of the municipality of Holargos. The approval of the proposal is implemented through the "GREEN LIFE IN CITY PROGRAMM" and the contract is co-funded by the European Regional Development Fund and by national resources through the "National Strategic Reference Frame 2007 -2013 Program" as well as by own resources of the municipality of Holargos. The core target of the specific project, in terms of sustainability, was the increasing of the surface Albedo by 0, 2. At the end of the Project there was an estimation of the CO<sub>2</sub> equivalency offset, using Albedo offset calculators.

**TEST MEASUREMENTS AND STANDARDS:**

The solar reflectance of the cool pave blocks and tiles measured according to the ASTM E903-96 and ASTM G159-98. The infrared emittance of the cool blocks and tiles measured was measured according to the ASTM E408-71 (2002). **Projects Requirements:** SOLAR REFLECTANCE INDEX VALUE more than 60.

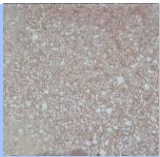
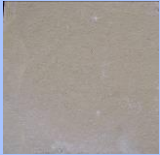
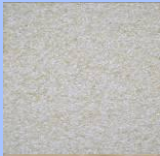


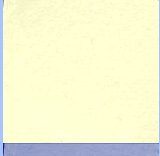

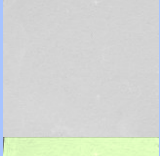



# COOL BARRIER PAVEMENTS

## Optical Properties

### Cool Barrier Pavement Tiles



i	SAMPLE	TYPE	SR	E±0,02	SRI
1		COOL BARRIER Sandblasted RED TILE ERGANI FINISH	0.53	0,89	62
2		COOL BARRIER FLAT FINISH YELLOW TILE (BLIND PEOPLE)	0.69	0,89	84
3		COOL BARRIER Sandblasted YELLOW TILE IRIS FINISH	0.68	0,89	83
4		COOL BARRIER YELLOW LITHOS FINISH	0.53	0,89	62
5		COOL BARRIER DARK YELLOW KARO FINISH	0.42	0,89	47
6		COOL BARRIER FLAT FINISH BEIGE TILE CB 002	0.68	0,89	83
7		COOL BARRIER FLAT FINISH SAUMON TILE CB 021	0.65	0,89	79
8		COOL BARRIER FLAT FINISH LIGHT GREY TILE	0.61	0,89	73
9		COOL BARRIER FLAT FINISH LIGHT GREEN TILE	0.63	0,89	76

# COOL BARRIER PAVEMENTS

## Technical Specifications

### Cool Barrier Pavement Tiles

i	Property	Test Method	Product Specification	Class
1	Length (mm)	Greek National specification 62588/1959/219	333mm or 400mm	
2	Width (mm)	Greek National specification 62588/1959/219	333mm or 400mm	
3	Water absorption (% weight)	EN 1339/Greek National specification 62588/1959/219	5,92 gr	CLASS 2/CLASS B
4	Abrasion Resistance(mm)	Greek National specification 62588/1959/219	233 gr	CLASS A
5	Bending Resistance	EN 1339/Greek National specification 62588/1959/219	49Kg/m <sup>2</sup>	CLASS 30/CLASS B
6	Abrasion Resistance(mm)	EN 1339	20,9	CLASS 3
7	Resistance to Slip/Skid*	EN 1339	90	Class U 3

#### \* About slip resistance and relative indexes according EN 1339

Slip resistance under wet conditions is a crucial quality performance essential to the safety of pedestrians. Cool Barrier Tiles have been subjected to the pendulum friction test according to test standard EN 1339 annex I, in order to determine the “unpolished slip resistance value (USRV)”. The pendulum friction test equipment is believed to be the only portable instrument that accurately simulates the action of a foot slipping on a wet floor. Unpolished concrete tiles classes according to EN 1339: class U 0 USRV < 35 unsafe, class U 1 USRV = 35-45 unsafe, class U 2 USRV = 45-55 secure, class U 3 USRV > 55 secure.

COOL BARRIER TILES USRV=90 SECURE