

Promotion of Cool Roofs in the EU - The Cool Roofs Project



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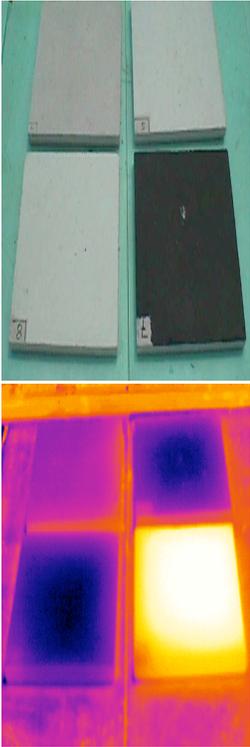
National and Kapodistrian University of Athens

Second International Conference on Countermeasures to Urban
Heat Islands –Berkeley, USA, 21-23^d September 2009



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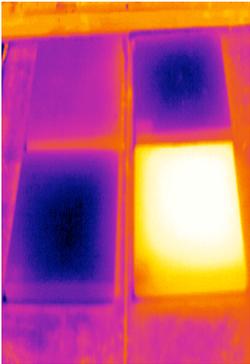
The cool roofs technology is well known and applied in the U.S.:

- **measurement standards related to cool roofs (ASTM Standard E1980-01, E903-92, E408-71(2002), G159-91 etc.),**
- **part of the energy code in many states (ASHRAE Standard 90.1 and 90.2, California's Title 24, Chicago Energy Conservation Code etc.),**
- **organizations like the USEPA Energy Star, the U.S. Cool Roof Council and programs (e.g. LEED) and incentives are promoting it**





In Europe, this technology is not extensively known and very little information exists on cool roof products and their benefits



COOL ROOFS BARRIERS:

- Lack of awareness
 - Lack of experience
 - Lack of incentives
 - Skepticism
- **The lack of a legislative framework results in owners and developers choosing roofs that minimize initial construction cost, rather than the aggregate cost of construction and lifetime energy consumption**



➤ **“We can not paint the cities white”**

- Glare problems
- Aesthetic preferences especially for steep slope roofs
- ✓ **Cool colored roofing materials already exist!**



➤ **“Cool roofs are more expensive”**

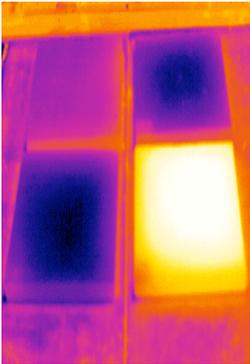
- ✓ **Many cool roof varieties cost the same amount as other comparable roofing materials, and for those that cost slightly more. When life cycle costs for cool and traditional roofs are compared, cool roofs are usually less expensive**

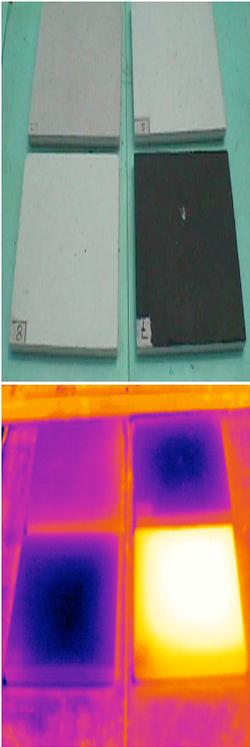
Standard	Cool	Standard	Cool
Orange		Anthracite	
Light blue		Brown	
Blue		Chocolate brown	
Green		Light brown	
Black (1)		Black (2)	





- **“Cool roofs will significantly increase my heating bills in the winter months ”**
- ✓ **even in colder climates the cooling benefits of a cool roof far outweigh the potential winter month heating benefits of a less reflective, or black, roof surface**
- **The conservative building industry does not want to change the conventional roofing techniques used for decades or does not have the experience regarding the availability and benefits of cool roof products**





COOL ROOFS PROJECT aims to remove these barriers:

1. **Technical axis** for the continuous updating concerning the new technological developments in the sector.
2. **Market axis** for provision of reliable data concerning the innovative technologies in the roofing sector and increase market penetration of the innovative technologies created in scientific laboratories.
3. **Policy axis** for provision of standards and policies that should be adopted in EU level or should be integrated in existing EU, local and regional policies.
4. **End-users axis** for promotion of the innovative technologies in the municipalities, cities, etc.



MAIN RESULTS OF THE PROJECT

- The creation of EU Cool Roofs Council (EU CRC) as well as the development of the EU CRC's Action Plan and strategic plan.
- Five cool roofs pilot studies to serve as examples of cool roofs benefits, a database of cool roofing materials and manufacturers, a handbook and a toolkit to assist the better understanding of the technical aspects of cool roofs technology
- A market promotion plan for the market aspect of cool roofs that will be based on the mapping of key players in the field and the analysis of the existing market situation in EU.
- A proposal for a successful strategy to overcome possible policy barriers and engage with key stakeholders who could support and accelerate the creation of an EU policy and regulatory friendly environment to Cool roofs.
- Workshops and seminars and participation to an EU Conference and an exhibition to disseminate the results of the project. Creation of a web portal providing visitors with information about the Cool Roof project: <http://www.coolroofs-eu.eu/> and the EU-CRC: <http://coolroofs-eu-crc.eu/>.



- **The EU -COOL ROOFS COUNCIL (EU-CRC) will bring together all the relevant actors in the field, i.e. industry, research institutes, market actors and cool roofs manufacturers, end users etc. and merge all the driving forces for the promotion and adoption of cool roofs in EU targeting to accelerate the transfer of knowledge, to remove the market barriers, to help manufacturers to develop cool roofs products, to educate the public, policy makers and to develop incentive programs.**
- **The 1st EU Cool Roofs Council meeting was held in London, UK, in February 2009 with important participations from the industry. (BASF, Akzo Nobel, Daikin, Hambleside Danelaw, the Cyprus Institute, Monier Technical Center, Sonnergy Ltd., SOPREMA, Bioni CS GmbH and others)**



■ The EU CRC at its present form has established 6 Committees in order to fulfill its objectives:

- a) A Technical Committee to define Cool Roofing materials
- b) A Documentation Committee to compile information on Cool Roofs technology
- c) A Policy Committee to prepare, propose and influence new policies in EU
- d) A Marketing Committee to identify market barriers in order to overcome them
- e) An End users Committee for the dissemination to the relevant stakeholders
- f) A Legal Committee for the legal matters of the EU CRC.



The specific objectives of the cool roofs Action Plan are:

- to support policy development by transferring experience and improving understanding of the potential contributions by cool roofs to heating and cooling consumption in the EU**
- to remove market barriers and simplify the procedures for cool roofs integration in construction and building's stock**
- to change the behaviour of decision-makers and stakeholders so to improve acceptability of the cool roofs**
- to disseminate and promote the development of innovative legislation, codes, permits and standards, including application procedures, construction and planning permits concerning cool roofs.**



- What are CoolRoofs

- Glossary

- Cool roofs in the news

- Cool Roof Council

- Technical aspects of cool roofs

- Market challenges on cool roofs

- Policy legislation and cool roofs incentives

- Resources

- CoolRoof Project

Doc&Publications

- Database for cool roofing materials

- Contact Us

CRC MEMBER

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EU-CRC presentation

Thursday, 30 October 2008 21:58  Emmanuel Bozonnet [CRC Articles](#)   

There are no translations available.

The EU-CRC deals with the following aspects of the cool roofs technology, by formulating the relevant groups:

- **Technical aspect:** The EU-CRC groups the EU Universities and institutions with the relevant market that are dealing with the development of cool highly reflective coatings in order to uptake the transfer of knowledge. This will be formulated systematically by the development of a **database for cool roofs materials and coatings** that will be continuously updated by the scientific experts of the Consortium. Furthermore links with other Universities in EU and worldwide will be established. Pilot actions to "create" EU cool roofs case studies will be performed.
- **Policy and legislative aspect:** The EU-CRC monitors and reviews the regulatory framework worldwide, the mandatory, prescriptive requirements and or credits and to analyse the steps and lessons learnt from the introduction of cool roofs standards. A thorough landscape assessment will be developed assisting the identification of the potential policy issues and opportunities for introducing the cool roof technology in the EU.
- **Market aspect:** The EU-CRC monitors the EU market and will perform a market research for the acceptability of such innovative technologies by manufacturers, construction companies, building

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PROJECT LINK

[COOLROOFSPROJECT WebSite](#)

CRC NEWS

- [LONDON\(AFP\)](#)
- [Contact us](#)
- [Welcome to the CRC](#)
- [Policy Committee](#)
- [Perspectives of cool roof market](#)
- [What is a cool roof?](#)



TECHNICAL ASPECT OF COOL ROOFS

■ A database of cool roofing materials has been developed representing an important tool for all the key actors; they can be informed about the products available on the market with all the relevant information. More than 100 materials have been measured by specialized labs.

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CoolRoofs Project

- ▶ What are CoolRoofs
- ▶ Glossary
- ▶ The Project
- ▶ Project Partners
- ▶ EU Cool Roofs Council
- ▶ Database of cool materials
- ▶ Market Aspect of Cool Roofs
- ▶ Survey
- ▶ Sondage (FR)
- ▶ Policy, legislation and cool roofs incentives
- ▶ Demo projects
- ▶ Technical Guidelines Handbook

Database of cool materials (WP3)

[Requirements for cool roof material properties](#)

Database of cool materials (WP3)

Written by michele zinzi

Thursday, 27 November 2008 16:41

There are no translations available.

One of the usual definitions for cool roof is: *a roof with reflective and emissive properties that help improve the energy efficiency of the building and/or mitigate the urban heat island effect.* One of the outputs of the Cool Roofs Projects and of the Work Package 3 - Technical Aspects, in particular, is a database of cool roof materials. The database will contain a number of information, including the required physical properties of these materials.

Usual construction materials (asphalt, concrete, stone or clay tiles, rubber, felt, etc.) are characterised by low solar reflectance and high infrared emittance. Metals, conversely, are high reflecting and low emitting materials. Cool materials are characterised by high solar reflectance and high infrared emittance. The former keeps most of the solar radiation impinging on the roof surface away from the building, reducing its thermal load. The latter helps the building envelope to radiate the heat away.

Performances of cool roofs are hence a combination of these two properties and one of the tasks of Work Package 3 is to assess the coolness of a material, by establishing minimum requirements for the reflectance and the emittance. The database will not include, in fact, generic roof material but cool materials only.

Some indications on requirements come from the USA activity in this field.

A	B	C	D	E	F	G	H	I	J	K	L
	Name of the product	Manufacturer	Country	Type of product	Colour	Roof slope	Substrate	SR (%)	IE (-)	ST (°C)	SRI (-)
1	Cool Barrier 024	ABOLIN	Greece	paint	black	flat and steep slope	cement, concrete, tiles, plaster, wood, metal	29	0.91	70.7	31
2	Cool Barrier 018	ABOLIN	Greece	paint	sea green	flat and steep slope	cement, concrete, tiles, plaster, wood, metal	39	0.89	66.1	43
3	Cool Barrier 007	ABOLIN	Greece	paint	terracota	flat and steep slope	cement, concrete, tiles, plaster, wood, metal	42	0.89	64.4	47
4	Cool Barrier 010	ABOLIN	Greece	paint	brown	flat and steep slope	cement, concrete, tiles, plaster, wood, metal	43	0.89	64.0	49
5	Cool Barrier 004	ABOLIN	Greece	paint	blue	flat and steep slope	cement, concrete, tiles, plaster, wood, metal	45	0.90	62.9	52
6	Cool Barrier 023	ABOLIN	Greece	paint	gray	flat and steep slope	cement, concrete, tiles, plaster, wood, metal	60	0.89	55.3	72
7	Cool Barrier 008	ABOLIN	Greece	paint	dark salmon	flat and steep slope	cement, concrete, tiles, plaster, wood, metal	62	0.89	54.3	75



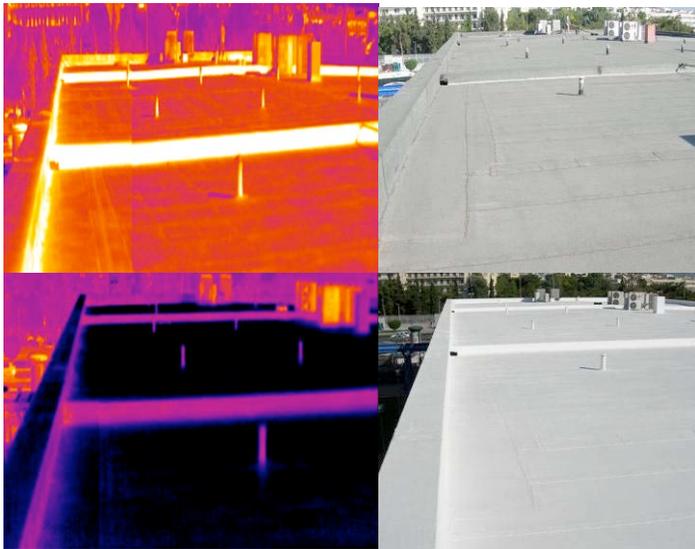
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TECHNICAL ASPECT OF COOL ROOFS

■ 5 demonstration projects - shining examples of the cool roof capabilities in improving the thermal conditions in not-cooled buildings and in reducing the energy consumption in cooled buildings.

■ The demonstration activities take place at two levels: experimental monitoring in real buildings before and after the application of cool roof techniques and numerical analysis of the same buildings with a number of variants (comparison analysis will be performed towards other urban heat island mitigation techniques, i.e green roofs).



- ✓ Cooled office building in a school campus in Trapani, Sicily, Italy.
- ✓ Cooled laboratory in Chania, Crete, Greece.
- ✓ One not cooled elementary school buildings in Kessariani, Greece.
- ✓ Not cooled laboratory in London, England.
- ✓ Not cooled 100 m² residential unit in La Rochelle, France



TECHNICAL ASPECT OF COOL ROOFS

■ A tool-kit dedicated to a simplified evaluation of the potential benefit of cool roof has been developed, which allows the evaluation of the energy and economic assessment of the cool roof applications.

■ A technical guidelines Handbook will be developed and will be continuously updated during the project's lifetime. The contents of the handbook are:

1. Introduction to the heat island problem and overview of cool roofs characteristics and technical aspects
2. Cool Roofs materials state of the art
3. Implementation of cool roofs in the framework of this project
4. Tool-kit description and operational recommendations
5. Cool Roofs in the EU



- A report on the main cool roof products features has been created including a general description, major benefits and the technical characteristics per product category, description on the distribution system and ordering, the pricing and delivery, and the promotion, branding and labeling of cool roofs products.
- A list of data on the “key players” in the market transformation has been created. The list contains a) Target groups: Market actors in the field of roofs, end users, building engineers, scientists and experts and local and EU policies stake holders. b) Key actors: scientific organizations, International institutions. (more than 1000 contacts)
- An on-line survey has been initiated in order have a quantitative measure on the potential of incorporating cool roofs.



Survey

Dear Colleague,

In order to benchmark our market and help us understand what we can do better in the future we are conducting a survey among over 1.000 key market players asking you to please share your views with us. It is a short survey and we would greatly appreciate you taking part.

Your response to the survey will be treated confidentially and will be reported in aggregate.

[+] **1.Has the roof of your house or the covering of your commercial/ industrial building been waterproofed with a roof system? ***

Yes (go to Q.2)
 No (go to Q.3)

[+] **2.Please specify the material used. (MULTIPLE ANSWERS)**

Ceramic Roof Tiles
 Metal Roof
 Bitumen
 Wood
 Waterproofing Coating
 Single Ply Membrane
 Other

[+] **3.Do you know that there exist roof products and technologies available**

CR Newsletter

Cool Roofs Project Newsletter

Name
 E-mail

Receive HTML?

Link

EU-CRC Web Site (coolroofs-eu-crc.eu)

Countries

19.2%		GREECE
15.3%		FRANCE
13.6%		UNITED KINGDOM
8.9%		ITALY
7.5%		UNITED STATES

Visitors

•A marketing plan will be also developed to maximise the promotion of cool roofs. It will include advertising, investigation of the role of public relations and incentives and it will set the methods for promotion in the market



- The aim of the policy axis is the analysis of the policy framework in the EU and in particular Member States and to recommend clear and concrete policy measures and initiatives that can assist the overall work of the Cool Roofs Action Plan.
- The main target of the end users axis is the wider projection of results of the proposed work through the project's and EU-CRC web sites, publications of hardcopy and electronic brochures, newsletters of briefing and information and a multimedia spot on the benefits of cool roofs, articles in local magazines and electronic publications.
- These actions will also include the organization of local workshops and seminars b) participation to EU Conference with distribution of brochures and an oral presentation c) Participation in an International Exhibition.





3rd International Conference

PALENC 2010

Cooling the Cities - The absolute Priority



Passive & Low Energy Cooling for the Built Environment

Jointly Organised with:

5th European Conference on Energy Performance & Indoor Climate in Buildings (EPIC 2010)

& 1st Cool Roofs Conference

29 September - 1 October 2010 | Rhodes island, Greece

- **Cool Roofs project web site:** www.coolroofs-eu.eu/
- **EU Cool Roofs Council web site:** <http://www.coolroofs-eu.eu>
- **Contact:** eucrc@phys.uoa.gr



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PARTNERS

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PROJECT PARTNERS:

- Technological Educational Institute of Crete (TEIC), Greece
- Perdikis Bros CO (ABOLIN), Greece
- Municipality of Kaissariani (MoK),
- GreeceBrunel University (UBRUN), United Kingdom
- Greater London Authority (GLA), United Kingdom
- University of La Rochelle (ULR), France
- SIPEA HABITAT (SIPEA HABITAT), France
- Ente Nazionale per le Nuove Technologie, l' Energia e l' Ambiente (ENEA), Italy
- The Provincia Regionale di Trapani – Settore Territorio Ambiente Riserve Naturali (Provincia di Trapani), Italy
- Laboratori Ecobios s.r.l. (ECOBIOS), Italy
- Federation of European Heating and Air-conditioning Associations (REHVA), The Netherlands
- Athena Consulting Group (ACG), Belgium



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