

## Cool-R

### TECHNICAL DOCUMENT 7/2016/EN

**Cool-R is one component, highly reflective, seamless, waterproofing coating for new and refurbished roofs. It can be use on flat and slope roofs.**

#### TYPICAL APPLICATION

- Flat and slope roofs of new and renovation building.
- Warehouses, industrial public, residential buildings.
- Bitumen, concrete, PVC, metal, ceramic surfaces.
- Renovation of roofs covered with asbestos. Restoration of hydroinsulation properties while binding the loose fibers in the material.

#### BENEFITS

- High reflectance of sunlight [85,7%], and high heat emissivity [0.85]. SRI value 107.
- Prevents overheating of the roof.
- Resistant to UV rays.
- Extended working life - cat. W2 according to ETAG 005.
- Resistance to external fire B<sub>Roof</sub>(t<sub>1</sub>).
- Creates a waterproof and seamless coating thickness of 1mm.
- Low weight (1.42kg / m<sup>2</sup>).
- High elasticity 300%.
- Temperature resistance -35°C to +80°C.
- Short drying time of one layer 120 min.
- Resistance to rain after 90min.
- Ecological friendly – solvent free, does not emit volatile substances.
- Easy to apply with the possibility of mechanical applying.
- Prolongs the life of roofing coverings 10 years.
- Resistant to permanent dirt, easy to clean.
- Easy to repair any mechanical defects.

*Parameters established to temperature of application 23°C and 50% relative humidity*

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## APPLICATION

### SURFACE PREPARATION

#### **BITUMEN MEMBRANES**

It must be drained and cleaned of all inconsistent elements and particles by thorough sweeping. Visible bloating and folds of bitumen membrane should be cut, dried and levelled appropriate by bitumen mastic Abizol G or roof sealant X-Treme. If the roof is covered with old bitumen membrane, which has lost most topping - priming is required, we recommend to use primer Cool-R Primer BP. All gaps of bitumen membrane overlaps must be re-welded using a torch or hot air. All stretch marks and cracks should be reinforced by Cool-R RF on flat surfaces and Cool-R RV on vertical surfaces for further strengthened.

#### **SYNTETIC MEMBRANES (PVC)**

It must be drained and cleaned of all inconsistent elements and particles by thorough sweeping. In case of large damages occurring on the substrate , insert a patch of the same material as the substrate is.

#### **METAL SURFACE**

It must be drained and cleaned of all inconsistent elements and particles by thorough sweeping. It is necessary to remove rust, moss, lichens, sharp edges and cleaned by organic cleaner based on Isopropanol. Surface should be roughened.

#### **CONCRETE**

It must be dry (humidity < 3%) , clean, without moss, lichens, sharp edges and degreased. Surface must be priming with Cool-R Primer BP.

## PRODUCT PREPARATION

Cool-R is one component product, ready to use after opening. No mixing required. Do not add any additives changing its density or properties of product.

## APPLICATION

For application quality control purposes Cool-R should be applied in two layers with different colors. For first layer (underlay) use Cool-R in grey color. For second layer (top layer) use Cool-R in white color. Applied manually (roller, brush) or by machine (airless, type - HDA 633/823 nozzle, pressure 200 bar). In case of application by spraying, notice that works cannot be made on windy day.

### **Metal surface, concrete, synthetic membranes (PVC)**

- Without the application reinforcement (metal, synthetic membranes)

	Color	Consumption	Thickness of single layer
Cool-R Underlay	Grey	0,9 kg/m <sup>2</sup>	0,5mm
Cool-R Top layer	White	0,9 kg/m <sup>2</sup>	0,5mm

A total thickness of dried coating has to be  $\geq 1,0$  mm

- With the application reinforcement (concrete)

	Color	Consumption	Thickness of single layer
Cool-R Underlay	Grey	1,5kg/m <sup>2</sup>	0,8mm
Cool-R Top layer	White	0,8kg/m <sup>2</sup>	0,5mm

A total thickness of dried coating has to be  $\geq 1,2$  mm

### **Bitumen membrane (substrate with mineral topping)**

- With the application reinforcement

	Color	Consumption	Thickness of single layer
Cool-R Underlay	Grey	1,5kg/m <sup>2</sup>	0,8mm
Cool-R Top layer	White	0,8kg/m <sup>2</sup>	0,5mm

A total thickness of dried coating has to be  $\geq 1,2$  mm

- Without the application reinforcement

	Color	Consumption	Thickness of single layer
Cool-R Underlay	Grey	1,0 kg/m <sup>2</sup>	0,5mm
Cool-R Top layer	White	0,9 kg/m <sup>2</sup>	0,5mm

A total thickness of dried coating has to be  $\geq 1,0$  mm

The application of the second layer may be performed after first layer is dried. According to the manufacturer's guidelines in the Cool-R system according to the ETAG 005 full-surface must be reinforced by Cool-R RF, allowing you to maintain full performance of the product. It is permissible to apply Cool-R without reinforcement – in order to confirm possible application please contact the Technical Department of manufacturer. For all flashings and detail treatments use reinforcement Cool-R RV.

### Application of Cool-R with reinforcement

- 1. Application Cool-R (underlay- grey).** The roof surface must be coated with Cool-R (underlay - gray) mechanically or manually using the appropriate tools.
- 2. Application Cool-R RV or Cool-R RF.** Reinforcement should be completely sink in Cool-R underlay – grey. All overlaps should have approx. 10cm.
- 3. Application Cool-R (surface - white).** After the first layer of Cool-R underlay grey is dried apply next top layer of Cool-R white.

## WORKS AFTER APPLICATION

Tools, clothes and dirt cleaned with water before products dries. In case the product is dried use petrol or xylene, we recommend to provide the test before cleaning. Machine for spray application to be purged in accordance with the manufacturer guidelines. Empty bucket can be cleaned with water. Refer to Safety Data Sheet.

## TECHNICAL DATA

LEED Certification			
According to 7.2 of LEED certification : [SS Credit 7.2: Heat Island Effect—Roof]			
THE TEST PARAMETER	Norm	Result	Fulfills
SRI (Solar Reflectance Index)	ASTM E1980-11	107	YES
Reflectance	ASTM E903-12	85,7% ± 0,2	YES
Emissivity	ASTM C1371-04a (2010)e1	0,85 ± 0,03	YES
MRc5 Regional Materials			
For projects located in Poland (place of manufacture and the origin of raw materials) - 5%			
Place of production - Poland - 100%			
Place of origin of the raw materials - Poland - 5%			
As supplied - tested at 23°C and 50% relative humidity			
PARAMETER	NORM	COOL-R Underlay grey	Cool-R Top layer white
Consistency	MB/02/1/2015	Semiliquid paste	Semiliquid paste
Density, [g/ml]	PN EN ISO 2811-1:2012	1,43	1,51
Viscosity spindle 20 RPM, 25 0C, 6 [mPas]	PN-EN ISO 3219:2000	20 000	20 000
Slumping [angle 90° , temp 70°C]	PN-EN ISO 28199-3:2010	pass	pass
Tack free [h]	PN-EN ISO 9117-3:2010	1.0	1.0
Resistance to rain, [h]	PN-EN 115816:2011	1.5	1.5
Curing time of first layer [h]		2.0	2.0
Curing time of coating [h]	ASTM D1640		24
As cured - tested after 4 weeks at 23°C and 50% relative humidity			

PARAMETER	Norm	COOL-R coating
Modulus @ 100% [MPa]	PN-ISO 527-1 2012	<b>1,8</b>
Elongation at break [%]	PN-ISO 527-1 2012	<b>300 ± 10</b>
Elasticity in low temperatures [°C]	PN-EN 1109:2013-07	<b>-35</b>
A Shor hardness	ISO 868	<b>70</b>
Water tightness [kPa]	EN-PN 1928:2002	<b>200</b>
User Load - Moderate	ETAG 005	<b>P2</b>
Working life of product	ETAG 005	<b>W2</b>
Resistance to external fire	EN 13501-5+A1:2010	<b>BRoof(t1)*</b>
Weight burden to 1m2 of roof [kg]		<b>1,42</b>

\* Test report ITB 16400/15/Z00NP

TEMPERATURES	MIN	MAX
Application temperature of air [°C]	+ 5	+ 40
Temperature resistance after curing [°C]	-35	+ 80
Temperature range in service [°C]	+ 5	+ 25

CHEMICAL RESISTANCE	Result
Water	pass
Salt water	pass
Diluted acids and alkalis	pass

In the presence of aggressive environments other than those listed above, please contact the Technical Department.

## ADHESION

Cool -R can be applied on most building materials and roof coating such as: bitumen membranes,

synthetic membranes PVC, stainless steel sheets, galvanized steel sheets, ceramic and cementous tiles, concrete roofs.

## TRANSPORTATION AND STORAGE

### *PACKAGING*

Cool-R is delivered in two pails:

- Cool-R Underlay (color grey) – plastic pail with grey lid 15 kg (10l) name of color on a sticker
- Cool-R Top Layer (color white) – plastic pail with white lid 15 kg (10l)

Other type of packaging could be deliver at the individual request.

### *STORAGE*

Store up to 24 months in a dry place at temperature +5°C to + 25°C, protect from overheating. Before using the products has to be preconditioned for 24 hours at room temperature.

Note : Transport is not subject to ADR.

## LIMITATION OF USE

Product used on sensitive surfaces e.g. copper and its alloys, can cause discoloration of the substrate.

The coating is used to cover roofs excluded from any traffic movements. It is allowed to enter the surface in the case of making maintenance or necessary repairs.

## REMARKS

- This product has a safety data sheet MSDS-D-213-EN
- The product is manufactured according to the standards: ISO 9001 and ISO 14001.
- The product corresponds to the LEED certification in accordance with clause 7.2 to Combat

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Urban Heat Islands and MRc Regional Materials for Poland (5%)

- Tested in accordance with EN-PN 13501 BROOF (t1)