



APPLICATION MANUAL **COOL-R BC 710**  
VERSION 2019



**HIGHLY REFLECTIVE**  
**WATERPROOFING COATING**



Cooling



Waterproofing



Reflection



Non spreading fire



Durability



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## Three strengths of Selena



### 1. Global experience, local solutions

Selena is a worldwide company – a producer and a supplier of the wide array of chemical construction products for professionals as well as non-professionals. Our offer includes polyurethane foams, adhesives and sealants, insulation systems and a wide choice of waterproofing materials. Our leading brands are: Tytan, Quilosa, Artelit, and Matizol. Selena was established in Poland, in 1992. Since then, we have gained experience across four continents and in various areas of business. We are one of the three major producers of polyurethane foams in the world. Our global experience gained in diverse markets is an incentive for seeking new pathways of development.

### 2. Innovative products

At R&D Selena Labs we constantly develop new products to improve our offer. We strive to ensure that the highest expectations of our customers are met. We provide customized, innovative product formulas for markets in Asia, Europe, and North and South America, suited to the specific climates and specific construction technologies of each country.

#### Our latest achievements in waterproofing products include:

- ▶ COOL-R: high reflectivity, waterproof roofing coating
- ▶ MS Liquid Silicone: seamless protective roofing coating
- ▶ High quality, self-adhesive roofing membranes
- ▶ KDT 12: foamed roofing adhesive for quick application of thermal insulation
- ▶ TACK-R FLASHING - bitumen-polyurethane waterproof resin



### 3. Wide choice of waterproofing products

For 25 years we have been a major producer and supplier of a wide array of products destined for roof construction, renovation and waterproofing.

#### Our offer includes:

- ▶ Bituminous felts
- ▶ Bituminous compounds
- ▶ Shingles
- ▶ Breathable membranes and roofing films
- ▶ Roofing sealants and adhesives
- ▶ Roofing tapes and other professional roofing materials used for waterproofing

## **1. Introduction**

### **1.1 General notes**

Selena is a producer and supplier of COOL-R – a waterproofing roof coating to which the following manual is dedicated. To ensure durability of a roof covering and optimal technical parameters a quality workmanship is of key importance.

User of the product is obliged to use the product in accordance with its intended purpose and recommendations. The rationale for this manual is complementing the know-how acquired during training and providing solutions to issues that may arise during application. This manual presents good practices of workmanship, detail treatment schemes and other important information

### **1.2 Legal framework**

This information, instructions and application guidelines of our products are given in good faith and in conformity with the current knowledge and experience and they relate to products which are stored, kept and used in accordance with guidelines provided by the producer.

Due to the diversity of practical application conditions and storage methods or other circumstances beyond the control of Selena, the company shall not be held responsible for altered properties of the products resulting from non-compliance with guidelines and instructions provided by Selena.

Our products should be used in accordance with the requirements presented in the current Technical Cards of products. The copies of the current Technical Cards are provided upon request.

## **2. General application notes**

### **2.1 Compliance with European performance norms**

ETA 16/0906 – GUIDELINE FOR EUROPEAN TECHNICAL APPROVAL OF LIQUID APPLIED ROOF WATERPROOFING KITS

### **2.2 Proper application conditions**

#### **2.2.1 General information**

- Substrate must have sufficient load bearing capacity and strength
- Substrate must be clean, dry and degreased (see point 5.2, SUBSTRATE PREPARATION).
- Dew point must be controlled during application (see point 15, DEW POINT DURING APPLICATION).

## 2.2.2 Power supply

For mechanical application constant power supply must be provided to avoid the malfunctioning of spraying device.

## 2.3 On-site storage

Protect from excessive heat, store at +5 to +25°C. Protect from freezing.

## 2.4 Restrictions and exclusions

**COOL-R BASE COAT 710** is used for roofing. It can also be used as a waterproofing for balconies and terraces after applying a suitable layering system. **COOL-R BASE COAT 710** cannot be applied directly to EPS and XPS thermal insulation.

Product name	COOL-R BC 710	COOL-R BC 710 with fabric
Capacity	P3:TH2 P2: TH3 P1: TH4	P4: TH2, TH3 P3: TH4

**Legend:**

Category	Payload
P1	Small
P2	Moderate
P3	Normal
P4	Special

## 2.5 Compatibility of COOL-R BASE COAT 710 with other materials

**COOL-R BASE COAT 710** can be applied to most building materials and roofing materials such as bituminous membranes, acid-resistant sheets, coated sheets, concrete and cement surfaces.



### 3. Tools and machinery

Depending on tools used, application can be:

- manual
- mechanical

#### 3.1 Manual application

- Short bristle velour roller (25 cm) with telescopic frame,
- Small short bristle velour roller-10cm,
- Brushes of various widths for flashings,
- Scissors, paint trays, polyethylene pails, rubbish sacks, masking tape,
- Telescopic roller frame ,
- Polarized sunglasses.

#### 3.2 Mechanical application

**Device type:** hydrodynamic spraying machine - "airless" with air, electric or combustion drive.

The average pressure on the machine during spraying is approx. 120 bar. This is a variable parameter and depends on the length of the pipe, the height of the building, the storage temperature of the product and the air temperature.

##### Device characteristics

Machine with an operating pressure of at least 230 bar::

- Capacity for dense liquid materials (density approx. 1.45 g/ml) approx. 5.5 l/min,
- 5 kW motor,
- Spray nozzles: HD 633 or HD 523,
- Maintains a uniform structure of painting without creating edges (does not scratch),
- At least three people (machine, hose, shower) are needed for a spray application.



Additional equipment:

- Polarized sunglasses,
- Short bristle (25cm) velour roller + telescope,
- Small short bristle velour roller – 10 cm,
- Brushes of various widths for flashings,
- Scissors, paint trays, polyethylene pails, rubbish sacks, masking tape ,
- Telescopic roller frame,
- Two-way radio for communication between applicator and unit operator,
- Recommended spray hose about 25m or longer – the hose length is correlated the efficiency of the sprayer.

### 3.3 Measuring devices

- Hygrometer to measure substrate external moisture
- Hygrometer to measure air relative humidity
- pH test to check acidic pH of concrete
- Pyrometer to measure substrate temperature
- Thermometer to measure air temperature
- Pull off to check quality of concrete and cement surfaces
- Dew point gauge or an application to calculate dew point temperature:
  - AppStore - Dew Point Calc (Unlikely Reality Software)
  - Google Play - Dew Point - Punto de Rocio (Juan Carlos Anazco Pazos)

### 3.4 General control points

- Check if all necessary tools and electrical devices are available and functioning correctly
- Check if all protective elements, such as protective films and tapes, clothes, protective masks, gloves, shoes and safety elements are available



## 4. Produkty

The following products must be used for coating COOL-R BASE COAT 710:

- **COOL-R Primer W 700** (for wet surfaces - 10 %)
- **COOL-R Primer C 700** (for concrete surfaces)
- **COOL-R Primer M 700** (for metal surfaces)
- **COOL-R Primer R 700** (for corroded metal surfaces)
- **COOL-R BASE COAT 710**
- **COOL-R TOP COAT 107 (SRI 107)**
- **COOL-R RV** – reinforcement fabric for winding and processing,
- **COOL-R RF** – Reinforcement fabric on a flat surface (if the roof requires reinforcement).

## 4.1 Packaging of COOL-R product

- **COOL-R Primer W 700**
- **COOL-R Primer C 700**
- **COOL-R Primer M 700**
- **COOL-R BASE COAT 710 g**
- **COOL-R TOP COAT 107 (SRI 107)**
- **COOL-R RV** – reinforcing fleece for winding and machining
- **COOL-R RF** – reinforcing fleece on a flat surface

## 5. Application manual

### 5.1 Estimated consumption of materials

- Roof surface should be precisely measured taking into account the height of trapezoids in case of trapezoid sheets, flashings, gutters, chimneys, parapets and other elements which increase the consumption of material. The trapezoid of 2 cm height increases the material consumption by 25%.
- Measure the exact number of linear meters of flashings and consult the height of sidewall flashings with the investor. Standard height is 15 cm of COOL-R for flashing nonwovens 15 cm wide (7,5 cm vertically and 7,5 cm horizontally) .
- Measure the exact number of linear meters and the total surface of troughs to estimate the total consumption of material. Full-scale pasting of troughs with reinforcing fabric is recommended at all times.
- For bitumen felts, approximate thickness of granulate topping affects the amount of COOL-R consumption. The thicker the granules the more product must be used to form proper coating.
- When calculating reinforcement consumption for embedding with fabric strips 115 cm wide , over 100 square meters of roof surface, add extra 10 square meters for overlaps.
- In flashings overlaps COOL-R RV should be made every 3-5 linear meters and the width of an overlap should be 10 cm.
- Product quotation should include extra 1-3 pails for unforeseen consumption depending on the roof surface (this is an estimate value).

## 5.2 Substrate preparation

### 5.2.1 To obtain properly prepared substrate

**Properly prepared substrate should be:**

- clean and degrease,
- stabilized and dried,
- remove air bubbles and blisters,
- weld all leaking welds,
- fix and waterproof walls and plasters,
- remove all mosses and lichens – application of fungicides may be necessary,
- remove loose granulate or debris,
- all holes and cavities are sealed,
- loose parts in the gutter-ribbed belt must be re-tightened with suitable screws,
- The permissible surface cracking for concrete surfaces is 1 mm,
- **COOL-R BASE COAT 710** can be applied on all slopes (S1 - S4 - in accordance with ETAG 005)

**To properly prepare the substrate:**

- Remove and clean roof drains and overflows.
- Check the condition of all overlaps and welds and assess whether they need to be repaired or re-welded. These are areas where water may have accumulated or leaked under the waterproofing. These areas must be repaired or, if possible, re-welded before work begins.
- Check whether the top-cover membrane is fully welded and whether there is no water between the layers of membrane. The presence of water or moisture may preclude **COOL-R BASE COAT 710** from being laid until the substrate is dried.



Leakage in an overlap



Damaged chimney flashing



Elements to be removed before the application of COOL-R

Blistered pattern on a chimney

- In the case of roofing felt surfaces, it is necessary to make 2-6 (depending on the roof surface) control openings in order to check if there is water under the roofing felt and in what condition the roofing felt is below it.
- All open pits should be secured by heating the roofing felt patch.
- Check the condition of the plaster on the surface of chimneys and walls. Will it be necessary to repair the flashings and, if necessary, whether the walls and chimneys will have to be covered again with glue with netting.
- All identified problems or vulnerabilities should be photographed.
- All opencast pits should be photographed and present at the time they are made.
- - Ordering material for the customer should only take place after the above points have been verified, repaired and accepted by the investor.

## 5.2.2 Metal sheet substrate

- Metal sheet substrate must be washed and cleaned before COOL-R application
- Wash metal sheet roof with detergents. Rinsing and spraying with water does not remove grease from the roof surface.
- Wash metal sheets roof with detergents (active foam) and then rinse with clean water.



Example of soiled roof

- Constant access to water and electricity should be provided
- The roof should be cleaned at least one day in advance (depending on prevailing weather conditions). The primer must not be applied on the same day as the roof was washed.
- If there is corrosion on the sheet, remove it mechanically beforehand and check how deep the material has been exposed to the corrosion -> see section 5.2.3 [Degree of corrosion]..
- Do not apply **COOL-R BASE COAT 710** without first priming the corroded substrate as there will be discoloration on the top coat of **COOL-R BASE COAT 710**, and its adhesion can be severely restricted (depending on the scale of corrosion).
- If **COOL-R BASE COAT 710** is placed on a corroded sheet without primer, it may cause its flaking..
- After cleaning the sheet metal roof, possible repairs, tightening of farm screws, installation and disassembly of antennas and other elements may be commenced. If it is necessary to replace the roof elements (rusted sheet metal, bent, with large mechanical damages), the damaged areas should be cut out and new elements of the same or better load capacity should be built in.
- Loose parts on the plate or in the guttering strip must be re-tightened with suitable screws
- Unclog and clean roof drains, overflows and gutters



Roof washing - active foam



Roof washing - rinse the active foam with clean water

### 5.2.3 Stage of corrosion

**Surface in very good condition. No rust. Dirty, greasy, possible organic residue such as flies**

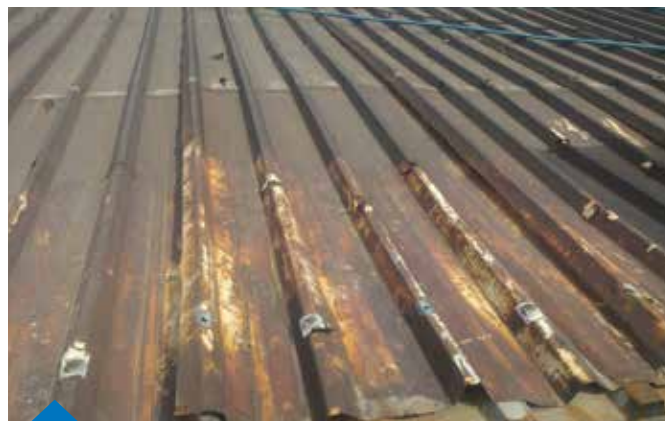
Wash roof with active foam and rinse with water under high pressure.





Surface in good condition. Small groupings of rust. Dirty, greasy, possible organic residue such as flies. Wash surface with active foam and rinse with water under high pressure.

Clean places of corrosion mechanically and prime with **COOL-R Primer R700**.



Surface in bad condition. Corrosion on the entire roof surface. No rust flaking. Dirty, greasy, possible organic residue such as flies.

Wash surface with active foam and rinse with water under high pressure. When it is dry (after at least 2 days) prime with **COOL-R Primer R700**.



Surface in bad+ condition. Corrosion on the entire roof surface. Paint flaking. No rust flaking. Dirty, greasy, possible organic residue such as flies. Remove flaking paint mechanically, wash surface with active foam and rinse with water under high pressure. .

When it is dry (after at least 2 days) prime with **COOL-R Primer R700**.



Surface in very bad condition. Corrosion on the entire roof surface. Rust flaking. No or very weak load bearing of metal.

Application of **COOL-R Primer R700** is not possible.

## 5.2.4 Roofing felt substrate

- Before washing of the roof all brickwork and plastering repairs should be made and any devices which may cause re-soiling should be dismantled.
- For washing bitumen felt roofs do not use detergents. Use only clean water.
- Use powerful blower for cleaning roofing felt waterproofing in order to remove loose granulate, leaves, dirt, residues and water.
- After using pressure washer, leave the tar felt to dry
- Wash roof (in good weather) at least 24hs before the application of **COOL-R BASE COAT 710**.
- During washing of the tar roof loose granulate may clog gutters, so the gutter outlets should be properly secured and loose granulate should be removed immediately after washing is completed.
- Use washers with rotary nozzles – they are more effective for large scale washing of tar felt roofs .
- After washing tar roof incise all blisters and air bubbles and dismantle all devices that may disturb the application of **COOL-R BASE COAT 710**.
- Heat seal all incisions if possible, or caulk and seal with new patches of tar felt.
- Unclog and clean roof drains, overflows and gutters.



Moisture on the substrate after washing



The substrate inspection. Air blisters removal



Substrate repair

## 5.2.5 Concrete substrate

- Before application, all overlapping and protruding reinforcement must be removed
- The minimum load capacity of the screed or concrete must not be less than 1.5 MPa.
- In the case of newly poured concrete, the cement milk must be removed by shot blasting or surface grinding.
- If the cement milk is present on older concrete surfaces, it must also be removed mechanically.
- In the case of old concrete surfaces, additional cleaning with a pressure washer may be required to remove mosses or other residues on the concrete
- Before priming, check the moisture content of the concrete using a hygrometer.a.
- Depending on the absorbency and quality of the concrete, different priming products may be used.
- All process and construction joints must be taken into account for the **COOL-R BASE COAT 710** waterproofing.
- In the case of encircling and antispasmodic joints, we pass over them by sinking a reinforcing insert in the first layer
- In the case of structural dilatations, an appropriate solution should be selected from the details book.
- In case of lack of technological expansion joints it may be necessary to make them or transfer them to the coating and/or waterproofing **COOL-R BASE COAT 710**,
- The concrete surface before priming must be clean, dry, free of loose elements and dedusted.
- We recommend using blowers to remove loose fractions from the concrete.
- Before priming, check the acidity of concrete surfaces using PH test. The correct value is between 9 and 12 pH.

## 5.3 Substrate control points after cleaning

### 5.3.1 Roofing felt

- Remove loose grit
- Remove possible blisters
- Dedust and/or clean the surface



- Unclog and clean inlets, gutters and flumes
- Check roofing felt surface dryness
- Check roofing felt adhesion to substrate
- Check adhesion between roofing felt layers
- Check stiffeners tightness
- Check area for processing
- Check cleanness before and after washing the roof

### 5.3.2 Metal sheet substrate

- Determine surface degradation stage
- Unclog and clean inlets, gutters and flumes
- Determine stage of corrosion
- Repair damages
- Replace screws if necessary
- Tighten loose metal sheets
- Replace damaged sheet elements if necessary
- Check paint adhesion on the sheet surface
- Check cleanness before and after washing the roof

### 5.3.3 Concrete substrate

- Remove any possible sprue and protruding reinforcements
- Check concrete load bearing
- Check concrete surface humidity
- Check cleanness before and after washing the roof

## 6. Priming substrates.

The purpose of priming is to create a bonding layer and to bind dust on the surface and fill in any voids.

Every substrate must be primed. Depending on the substrate, the following primers are used:

- **COOL-R Primer W 700** (for damp surfaces - up to 10 %)
- **COOL-R Primer C 700** (for concrete surfaces up to 4 %)
- **COOL-R Primer M 700** (for metal surfaces)
- **COOL-R Primer R 700** (for corroded metal surfaces)
- The maximum surface moisture content of concrete for **COOL-R Primer C 700** application must not exceed 4%.
- The maximum surface moisture content of concrete for **COOL-R Primer W 700** application must not exceed 10%.
- The primer can be applied on a dry surface after all the preparatory work has been carried out.
- To prime the surface we use velour rollers or spray the product (check the chemical base and drying time of the primer in case of machine application).
- Metal surfaces should be primed by spraying.
- The drying times of the land are described in the Technical Data Sheets for each land.
- Pay attention to shaded areas, as the soil may dry there longer than on sunny parts of the roof (under the same weather conditions). Shaded areas should be checked before starting work.

	Bitumin membrane with mineral grit	Metal sheet	Concrete
COOL-R PRIMER W700	Do not apply	Do not apply	0,20 kg/m <sup>2</sup>
COOL-R PRIMER C700	0,20 kg/m <sup>2</sup>	Do not apply	0,20 kg/m <sup>2</sup>
COOL-R PRIMER M700	Do not apply	0,15 kg/m <sup>2</sup>	Do not apply
COOL-R PRIMER R700	Do not apply	0,30 kg/m <sup>2</sup>	Do not apply

### Caution!

GIVEN USAGE IS ESTIMATED AND MAY DIFFER FROM ACTUAL CONSUMPTION.

## 7. COOL-R consumption and coat thickness

	Bitumin membrane with mineral grit	Metal sheet	Concrete
COOL-R BASE COAT 710 (bottom layer)	0,8 kg/m <sup>2</sup>	0,8 kg/m <sup>2</sup>	0,8 kg/m <sup>2</sup>
COOL-R BASE 710 (top layer)	0,8 kg/m <sup>2</sup>	0,8 kg/m <sup>2</sup>	0,8 kg/m <sup>2</sup>
COOL-R BASE COAT 710 (bottom layer with reinforcement)	1,0 kg/m <sup>2</sup>	Do not apply	1,0 kg/m <sup>2</sup>
COOL-R BASE COAT 710 (top layer with reinforcement)	1,0 kg/m <sup>2</sup>	Do not apply	1,0 kg/m <sup>2</sup>
Consumption without reinforcement	1,6 kg/m <sup>2</sup>	1,6 kg/m <sup>2</sup>	1,6 kg/m <sup>2</sup>
Consumption with reinforcement	2,0 kg/m <sup>2</sup>	Do not apply	2,0 kg/m <sup>2</sup>

Consumption estimates may slightly vary from here presented data due to varied porosity of substrates and varied thickness of granulate topping of roofing felts.

### Caution!

DO NOT APPLY RESIN THICKER THAN APPROX. 0.7 MM IN ONE COAT, I.E. APPROX. 0.8 KG/M<sup>2</sup> AND APPROX. 1.0 KG/M<sup>2</sup> FOR THE NON-WOVEN LAYER. IF IT IS NECESSARY TO APPLY A THICKER LAYER, AN ACCELERATOR SHOULD BE USED. THE APPLICATION OF A LAYER GREATER THAN THAT SPECIFIED ABOVE MAY CAUSE AIR BUBBLES IN THE RESIN.

#### DRYING TIMES

Weather conditions	Basic drying time	Drying time with accelerator
High temperature (>30C) and humidity (>70%)	6h - 8h	2h - 4h
High temperature (>30C) and humidity (<50%)	6h - 8h	2h - 4h
High temperature (<10C) and humidity (>60%)	8h - 10h	6h - 8h
High temperature (<10C) and humidity (<50%)	12h - 24h	8h - 10h

The use of the accelerator is optional and depends on the weather conditions during the application. For temperatures below 10°C the use of an accelerator is recommended.

#### Caution!

ASSUME AN ACCELERATOR CONSUMPTION OF 2% TO THE RESIN WEIGHT (I.E. 1 KG OF RESIN IS 20 G OF ACCELERATOR). A HIGHER AMOUNT OF RESIN CAN CAUSE YELLOWING OF THE RESIN, WHICH IS PARTICULARLY VISIBLE ON LIGHT COLOURS. THIS DISCOLOURATION MAY APPEAR EVEN ON SUBSEQUENT LAYERS.

## 7.1 COOL-R thickness

Total coating thickness without reinforcement fleece after drying  $\geq 1,4$  mm

Total coating thickness with reinforcement fleece after drying  $\geq 1,6$  mm

## 8. COOL-R PES RV and COOL-R PES RF reinforcing fabric

Numerous roof elements need special treatment and reinforcement

1. Flashings, walls, external walls, attics etc.
2. Chimneys
3. Skylights
4. Roof elements, substructures etc.
5. Ventilation chimneys

## 8.1 Application of COOL-R PES RV reinforcement in flashings

Reinforcement is necessary in all flashings except metal sheet roofs where **COOL-R PES RV** is optional.

### Caution!

APPLICATION OF COOL-R SHOULD ALWAYS BE STARTED WITH PERFORMING PROCESSINGS AND SIDEWALL FLASHINGS.

### 8.1.1 Application of COOL-R RV reinforcement

- The **COOL-R PES RV** reinforcement fleece should be cut to the desired shape depending on the type of detail on the roof.
- Rolls are made at a height of 7.5 cm for a tape with a width of 15 cm.
- All cracks in the concrete should be reinforced with **COOL-R PES RF** or **PES RV** fabric.
- Higher sidewall flashings are permitted.
- The **COOL-R PES RV** reinforcement fabric is glued with **COOL-R BASE 710** resin.
- After the **COOL-R PES RV** reinforcement fabric has been glued in, it should be closed with another layer of **COOL-R BASE COAT 710** resin on the same day. The purpose of the closure is to prevent the fabric from getting wet.
- If the non-woven fabric gets wet, it should be allowed to dry completely before the next layer is applied.
- Only after the proper execution of all treatments and excavations can we proceed to the next stage - execution of the first layer of **COOL-R BASE COAT 710**.

## 8.2 Application of full-scale COOL-R PES RF reinforcement

- The reinforcing fabric COOL-R PES RF is glued manually with rollers and brushes. The COOL-R RF reinforcement fabric should be glued with COOL-R BASE COAT 710 resin.
- Full scale reinforcement strengthens the roof surface and increases the strength parameters of the system.

- On roofs made of metal sheet it is not possible to place the reinforcing fabric on the whole surface. We use it only for possible processing, sidewall flashing and, if necessary, joining briquettes and locks in layered panels.
- The use of other reinforcing unwoven fabrics than those authorised by SELENA is considered a total loss of warranty for the entire system.
- It is permissible to omit full-surface melting of COOL-R RF fabric, which results from different thermal insulation hardness, roof types and other factors resulting from the building operation. For this purpose, please consult SELENA Technical Department.

### 8.2.1 Full scale flooding of COOL-R PES RF reinforcement

For full-scale embedding of COOL-R RF reinforcement instruction see point 9.1

## 9. Application of COOL-R coats

DETAILED APPLICATION TECHNIQUE IS PRESENTED DURING TRAININGS, IN HOW-TO VIDEOS, AND DIRECTLY ON SITE.

- Control the dew point during application (see point 15, Dew point during application). Complete application at least 2h before the sunset

TEMEPRATURES	MIN	MAX
Air temperature	+10	40
Temperature resistance	-35	80
Maximum air humidity		85%



- On the actual drying time of COOL-R BASE COAT 710 is affected by 5 factors: :thickness of applied coat, sunlight, temperature, humidity and wind (especially in mountainous and seaside regions)

## 9.1 Application of first layer of COOL-R BASE 710

- The first layer can be laid after the substrate has been properly prepared.
- The first layer can be laid by machine or by hand.
- During the application of the first layer, **COOL-R PES RF** fabric is also embedded.
- A sufficient amount of **COOL-R BASE COAT 710** resin should be distributed under the fabric to sink and filter it properly -> see point 7 [COOL-R consumption and coat thickness].
- Apply the **COOL-R PES RF** reinforcement fabric using the grey COOL-R resin (optionally white).
- When melting the **COOL-R PES RF** unwoven fabric, the front overlaps of 15 cm in width and longitudinal of 10 cm in width.
- Press the fabric embedded in the first layer of **COOL-R BASE COAT 710** with a velour roller to push out any air bubbles and evenly distribute **COOL-R BASE COAT 710** under the fabric.
- Do not walk on the newly embedded fabric. All works are performed while standing on the side of the unwoven fabric.
- We do not allow deadheads of the resin **COOL-R BASE COAT 710** underneath and above the fabric.
- After gluing the **COOL-R PES RF** fabric, close it on the same day with another layer of **COOL-R BASE COAT 710**.
- The purpose of the closure is to prevent moisture in the fabric.
- If the reinforcing fabric gets wet, it should be allowed to dry before applying the next layer.
- Only after proper execution and full drying of the first layer of all treatments can the next stage - execution of the second layer be commenced.
- Before entering the applied resin, check whether it has completely dried out.
- It is recommended to measure the required amount in relation to the surface. It is easier to divide the quantity into two or more layers. This allows you to control consumption.

## 9.2 Laying the second layer of COOL-R BASE COAT 710

- The second layer should be applied at least 12 hours after the first layer has been applied. This time may be longer as a result of various weather conditions.
- The second layer is laid by machine or by hand.
- It is recommended to measure the required amount in relation to the surface. It is easier to divide the surface into smaller fragments, which allows you to control the consumption.

If the layer remains sticky and entering it may cause damage to the surface:

- Do not apply the second layer until the first layer is completely dry.
- Too long a gap between the application of the first and second coat may make it necessary to clean the entire roof again before applying the next coat and in some cases priming it again is required.
- We do not recommend gaps between the layers longer than 2 days, unless weather conditions do not allow application.
- If this period is exceeded, it may be necessary to clean the surface before the next application and priming may be required.
- The complete hardening of the entire system is at least 72 hours. It may change as a result of various weather conditions and the thickness of the coat

### 9.2.1 Checkpoints after the first layer of COOL-R BASE COAT 71

#### **COOL-R BASE COAT 710 with fabric**

- dedusted and clean surface
- check that the fabric adheres to the surface everywhere
- check for blisters
- check that there are no resin overhangs under and above the fabric
- check (before applying the second coat) that the surface is dry and can be walked on
- check (before applying the second coat) that no moisture or dew has accumulated on the surface
- check that the fabric has been embedded evenly



### COOL-R BASE COAT 710 without fabric

- dedusted and clean surface
- check for blisters
- check (before applying the second coat of **COOL-R BASE COAT 710**) that the surface is dry and walkable
- check (before applying the second layer of **COOL-R BASE COAT 710**) that no moisture or dew has accumulated on the surface

## 9.3 Applying the COOL-R TOP COAT 107 closing coat (SRI 107)

- The closing coat should be applied at least 12 hours after the last coat has been applied. This time may be longer due to different weather conditions.
- The closing coat is applied mechanically or manually.
- It is recommended to measure the required amount in relation to the surface. It is made easier by dividing the surface into smaller areas. This allows you to control consumption.
- If the layer remains sticky and entering it may cause damage, do not apply the closing coat until the first coat is completely dry.
- Too long a gap between the application of the last coat and the closing coat may cause the necessity to clean the entire roof again before applying the next coat.
- We do not recommend gaps between layers greater than 2 days, unless weather conditions do not allow the application.
- If this period is exceeded, it may be necessary to clean and recoat the surface before the next application.
- Full hardening of the entire system is at least 72 hours. It may change as a result of various weather conditions and the thickness of the layer.
- A correctly positioned closing layer is applied evenly, without overflow and forms a homogeneous coating.

## 9.4 Notes

- Clean the spraying machine after application so that the resin does not dry out in the pipes.
- The machine must be operated and serviced in accordance with the manufacturer's instructions.
- Keep an eye on the safety ropes and hose when working on slanting roofs.
- The product should be evenly distributed over the entire roof surface.
- When spraying COOL-R BASE COAT 710, add approx. 5% xylene.

## 10. Technological breaks

**Technological break** (so called antispasmodic dilatation) is designed to eliminate the impact of weather conditions on building materials. Building materials may shrink or expand under the influence of a change in the temperature of the environment. Technological break usually occurs on all kinds of spouts and may be peripheral or surface crossing. The absence of a technological break can lead to stains and cracking of materials, which can lead to serious leaks.

For felt and PVC substrates, the process gap is not transferred to the last waterproofing layer. These are so low stresses that the waterproofing is able to absorb and cushion them.

In the case of concrete substrates, the processing of the technological break must be carried out in accordance with the following detail.

### Caution!

ONLY APPLICABLE FOR RENOVATION AND APPLICATION OF RESIN ON EXISTING WATERPROOFING.

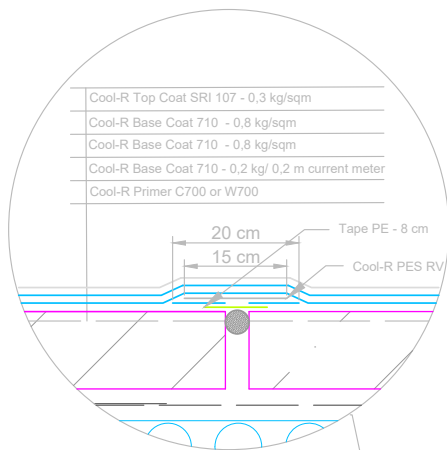


Example implementation of antispasmodic dilatation

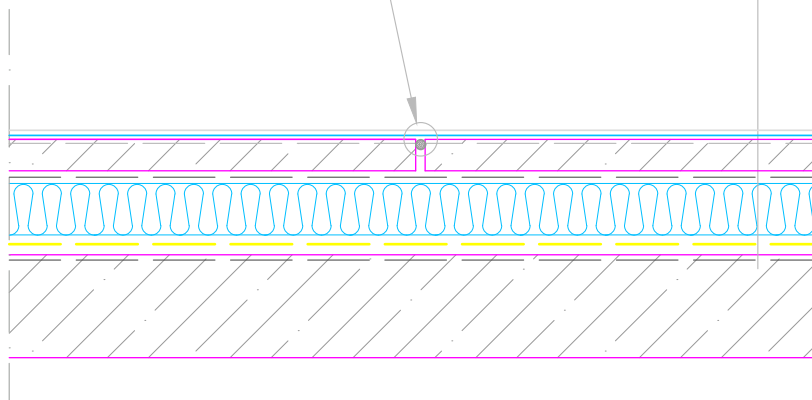


Example consequence of lack of antisplastic dilatation

### Technological break detail



Cool-R Top Coat SRI 107	
Cool-R Base Coat 710	
Cool-R Primer C700 or W700	
Cement cast	
Separation Foil PE	
Thermal insulation EPS	
Bitumen membrane TACK-R ALU S30	
Bitumen Primer BASE-R DR	
Concrete	



## 11. Maintenance paths

- In some maintenance paths it is possible to mix COOL-R BASE COAT 710 with sand (0.8 - 1.2 mm), to create an anti-slip layer. We assume an average quartz sand consumption of 0.6 kg per 1 kg of COOL-R BASE COAT 710 resin.
- Maintenance paths are made as the last layer within 48 hours from the application of the last coat



Example maintenance path

## 12. Conclusions and advice

- On cooler days, set limits for the start and end of work to avoid dew condensation.
- Additional hazards are periods of storms and dust if they are in the vicinity of the roof.
- Strong winds can cause **COOL-R BASE COAT 710** to evaporate during application and fine particles of the coating to settle on other surfaces. This can significantly reduce adhesion as the particles dry out and fall off as semi-dry without adhesion to the substrate during flight.
- All coating work must be coordinated with the weather forecast - potential rainfall or strong wind.
- Metal sheet roofs are exposed with different slope angles, therefore the application must be accurate and precise - because streaks and discolourations may be visible.
- Use your walkie-talkie during application. Communication on a 4-storey block (machine downstairs) is very difficult and dangerous.
- All work, including work at heights, must be carried out safely and responsibly and in accordance with the applicable health and safety regulations.
- Beware of plastic seals and brittle parts on buckets, as they can damage the machine and the piston if they fall into a bucket of resin.
- Be careful not to get any contamination into the resin. This will cause the machine to become clogged and it is impossible to clean the machine.
- Do not allow dust, rubbish or leaves to enter the product packaging.
- When spraying, protect components such as gutters, flashings, and other components and equipment on the roof.
- In the case of facilities such as shopping malls and public buildings, pay attention to the risk of contamination of cars, advertisements, etc.
- Secure the area with the spraying machine well in order not to soil the ground (cubes, concrete, etc.).

- The machine moves during the execution of the roof and this must be taken into account when organizing the front of the works.
- Use suitable spraying machines and the amount of resin ordered must match the surface.

## 13. Final remarks

It is advisable to review the condition of the coating at the annual roof inspection and, if local damage is identified, to carry out the necessary maintenance to restore the continuity of the coating. Any damage and defects can be repaired with COOL-R Top Coat SRI 107. Clean the surface before carrying out any repairs and primer again with **COOL-R PRIMER C700**. The manufacturer recommends M700 for resin activation.

## 14. Use and maintenance of COOL-R BASE COAT 700 roof

If repairs are necessary, the additional work area must be cleaned and dried.

- Cut out any parts of the coating that do not adhere to the surface.
- After the surface has been prepared for repair, it must be primed again.
- In the place of repair (if necessary) embed the fabric and perform the work as in point 8.1.1.
- Repairs can only be carried out with the same product.
- The use and maintenance of roof coverings made with COOL-R system must be in accordance with the requirements of the roofing in which it has been designed and constructed.
- Pedestrian traffic on the completed roof covering should not be allowed except for checking visits related to the operation of equipment and installations on the roof as well as the day-to-day operation of the roof (e.g. for snow clearance).
- Remember to periodically clean the roof covering from mud stagnation and dirt such as leaves, branches, etc. The use of a pressure washer is recommended for this purpose:
  - water pressure 10 MPa max 13 MPa,
  - if necessary, a biodegradable detergent may be used for cleaning the coating.
  - soiling may cause SRI to be reduced
- Do not allow mechanical damage to the surface layers by removing glacial ice and snow. For this purpose, it is recommended to use a plastic spade on wheels.
- Do not use salt to de-icing the roof. It is allowed to lay pipes and heating materials on the roof.
- Any places which raise doubts about the tightness of the roof should be marked and repaired. Breaking the continuity of the COOL-R system should be supplemented with the same material.

## 15. Dew point during application

RELATIVE HUMIDITY [%]

	30.0	32.0	34.0	36.0	38.0	40.0	42.0	44.0	46.0	48.0	50.0	52.0	54.0	56.0	58.0	60.0	62.0	64.0	66.0	68.0	70.0	72.0	74.0	76.0	78.0	80.0	82.0	84.0	86.0	88.0	90.0	92.0	94.0	96.0	98.0
35.0	14.85	15.86	16.81	17.71	18.57	19.39	20.17	20.93	21.65	22.35	23.02	23.67	24.30	24.91	25.50	26.07	26.62	27.16	27.69	28.20	28.70	29.19	29.66	30.13	30.58	31.02	31.46	31.88	32.30	32.71	33.11	33.50	33.89	34.26	34.63
34.0	14.00	14.99	15.94	16.83	17.69	18.50	19.28	20.03	20.75	21.44	22.11	22.75	23.38	23.98	24.56	25.13	25.68	26.22	26.74	27.25	27.75	28.23	28.70	29.16	29.61	30.05	30.48	30.91	31.32	31.72	32.12	32.51	32.89	33.27	33.64
33.0	13.14	14.13	15.07	15.96	16.80	17.61	18.39	19.13	19.84	20.53	21.19	21.83	22.45	23.05	23.63	24.20	24.75	25.28	25.80	26.30	26.79	27.27	27.74	28.20	28.64	29.08	29.51	29.93	30.34	30.74	31.14	31.52	31.90	32.27	32.64
32.0	12.28	13.26	14.19	15.08	15.92	16.72	17.49	18.23	18.94	19.62	20.28	20.92	21.53	22.13	22.70	23.26	23.81	24.33	24.85	25.35	25.84	26.31	26.78	27.23	27.68	28.11	28.54	28.95	29.36	29.76	30.15	30.53	30.91	31.28	31.64
31.0	11.42	12.40	13.32	14.20	15.04	15.83	16.60	17.33	18.03	18.71	19.37	20.00	20.61	21.20	21.77	22.33	22.87	23.39	23.90	24.40	24.88	25.36	25.82	26.27	26.71	27.14	27.56	27.97	28.38	28.77	29.16	29.54	29.92	30.29	30.65
30.0	10.56	11.53	12.45	13.32	14.15	14.94	15.70	16.43	17.13	17.80	18.45	19.08	19.68	20.27	20.84	21.39	21.93	22.45	22.95	23.45	23.93	24.40	24.86	25.30	25.74	26.17	26.59	27.00	27.40	27.79	28.18	28.56	28.93	29.29	29.65
29.0	9.71	10.67	11.58	12.44	13.27	14.06	14.81	15.53	16.22	16.89	17.54	18.16	18.76	19.34	19.91	20.45	20.99	21.50	22.01	22.50	22.97	23.44	23.89	24.34	24.77	25.20	25.61	26.02	26.42	26.81	27.19	27.57	27.93	28.30	28.65
28.0	8.85	9.80	10.71	11.57	12.38	13.16	13.91	14.63	15.32	15.98	16.62	17.24	17.84	18.41	18.97	19.52	20.05	20.56	21.06	21.55	22.02	22.48	22.93	23.37	23.80	24.23	24.64	25.04	25.44	25.82	26.20	26.58	26.94	27.30	27.65
27.0	7.99	8.94	9.83	10.69	11.50	12.27	13.02	13.73	14.41	15.07	15.71	16.32	16.91	17.49	18.04	18.58	19.11	19.61	20.11	20.59	21.06	21.52	21.97	22.41	22.84	23.25	23.66	24.06	24.46	24.84	25.22	25.59	25.95	26.31	26.66
26.0	7.13	8.07	8.96	9.81	10.61	11.38	12.12	12.83	13.51	14.16	14.79	15.40	15.99	16.56	17.11	17.64	18.16	18.67	19.16	19.64	20.11	20.56	21.01	21.44	21.87	22.28	22.69	23.09	23.48	23.86	24.23	24.60	24.96	25.31	25.66
25.0	6.27	7.20	8.09	8.93	9.73	10.49	11.22	11.93	12.60	13.25	13.87	14.48	15.06	15.63	16.18	16.71	17.22	17.73	18.21	18.69	19.15	19.61	20.05	20.48	20.90	21.31	21.71	22.11	22.50	22.87	23.25	23.61	23.97	24.32	24.66
24.0	5.40	6.33	7.21	8.05	8.84	9.60	10.33	11.02	11.69	12.34	12.96	13.56	14.14	14.70	15.24	15.77	16.28	16.78	17.27	17.74	18.20	18.65	19.08	19.51	19.93	20.34	20.74	21.13	21.51	21.89	22.26	22.62	22.97	23.32	23.66
23.0	4.54	5.46	6.34	7.17	7.95	8.71	9.43	10.12	10.78	11.42	12.04	12.64	13.21	13.77	14.31	14.83	15.34	15.84	16.32	16.79	17.24	17.69	18.12	18.55	18.96	19.37	19.76	20.15	20.53	20.91	21.27	21.63	21.98	22.33	22.67
22.0	3.68	4.60	5.46	6.28	7.07	7.82	8.53	9.22	9.88	10.51	11.12	11.71	12.29	12.84	13.37	13.89	14.40	14.89	15.37	15.83	16.29	16.73	17.16	17.58	17.99	18.40	18.79	19.17	19.55	19.92	20.29	20.64	20.99	21.33	21.67
21.0	2.82	3.73	4.59	5.40	6.18	6.92	7.63	8.31	8.97	9.60	10.21	10.79	11.36	11.91	12.44	12.96	13.46	13.94	14.42	14.88	15.33	15.77	16.20	16.61	17.02	17.42	17.81	18.20	18.57	18.94	19.30	19.65	20.00	20.34	20.67
20.0	1.95	2.86	3.71	4.52	5.29	6.03	6.73	7.41	8.06	8.69	9.29	9.87	10.43	10.98	11.51	12.02	12.52	13.00	13.47	13.93	14.37	14.81	15.23	15.65	16.05	16.45	16.84	17.22	17.59	17.95	18.31	18.66	19.01	19.34	19.67
19.0	1.09	1.99	2.83	3.64	4.40	5.14	5.84	6.51	7.15	7.77	8.37	8.95	9.51	10.05	10.57	11.08	11.57	12.05	12.52	12.97	13.42	13.85	14.27	14.68	15.08	15.48	15.86	16.24	16.61	16.97	17.32	17.67	18.01	18.35	18.68
18.0	1.12	1.96	2.76	3.52	4.24	4.94	5.60	6.24	6.86	7.45	8.03	8.58	9.12	9.64	10.14	10.63	11.11	11.57	12.02	12.46	12.89	13.31	13.72	14.12	14.51	14.89	15.26	15.63	15.99	16.34	16.68	17.02	17.35	17.68	
17.0	0.18	1.08	1.87	2.63	3.35	4.04	4.70	5.33	5.95	6.53	7.10	7.65	8.19	8.70	9.20	9.69	10.16	10.62	11.07	11.50	11.93	12.34	12.75	13.15	13.53	13.91	14.28	14.65	15.00	15.35	15.69	16.03	16.36	16.68	
16.0	0.10	0.99	1.74	2.45	3.14	3.79	4.42	5.03	5.62	6.18	6.73	7.25	7.77	8.26	8.75	9.21	9.67	10.11	10.55	10.97	11.38	11.78	12.18	12.56	12.94	13.30	13.66	14.02	14.36	14.70	15.04	15.36	15.68		
15.0	0.05	0.85	1.56	2.24	2.89	3.51	4.12	4.70	5.26	5.80	6.32	6.83	7.32	7.80	8.27	8.72	9.16	9.59	10.01	10.42	10.82	11.21	11.59	11.96	12.33	12.68	13.03	13.38	13.71	14.04	14.37	14.69			
14.0	0.01	0.66	1.34	1.98	2.60	3.20	3.78	4.33	4.87	5.39	5.89	6.38	6.86	7.32	7.77	8.21	8.63	9.05	9.45	9.85	10.24	10.61	10.98	11.35	11.70	12.05	12.39	12.72	13.05	13.37	13.69				
13.0	0.00	0.44	1.08	1.69	2.29	2.86	3.41	3.94	4.46	4.96	5.44	5.92	6.37	6.82	7.25	7.68	8.09	8.49	8.88	9.27	9.64	10.01	10.37	10.72	11.06	11.40	11.73	12.06	12.38	12.69					
12.0	0.00	0.17	0.78	1.37	1.94	2.48	3.01	3.53	4.02	4.50	4.97	5.43	5.87	6.30	6.72	7.13	7.53	7.92	8.30	8.67	9.03	9.39	9.74	10.08	10.42	10.74	11.07	11.38	11.69						
10.0	0.00	0.10	0.64	1.16	1.66	2.15	2.62	3.08	3.53	3.97	4.39	4.80	5.20	5.60	5.98	6.36	6.72	7.08	7.43	7.77	8.11	8.44	8.76	9.08	9.39										

TEMPERATURE [°C]

## 16. List of available solutions in COOL-R system

### System 5.01

– Existing bitumen coating,  
on a concrete or sheet metal structure.



### System 5.02

– Renovation of sheet metal structures



### System 5.03

– Old or new concrete structure



## 17. Technical characteristics of products

	COOL-R BASE COAT 710	COOL-R TOP COAT SRI 710
Consistency	Liquid	Liquid
Density (g/cm <sup>3</sup> )	1,3	1,35
Viscosity (mPas) in 20	6000 - 10000	600
Particulate matter content (%)	85	70
Drying time (h)	8 - 9	3
Ignition temperature ( C )	45	36
VOC (g/L)	184	380
<b>PRODUCT QUALITIES AFTER DRYING</b>		
Firmness (Shore A)	65-70	60
Water vapour diffusion rate	$\mu > 1000$ (EN 1931) 20 g/m <sup>2</sup> day	2.7 g/m <sup>2</sup> /day,
Absorption	14,3 mg (Taber, 1000 cycles)	14,3 mg
Maximum elongation (%)	558	70
Rupture force (MPa)	4,3	15



## 18. Risks and security measures

### Hand protection:

#### **Protective gloves**

The glove material must be impermeable and resistant to the product / substance.

Selection of the glove material on the basis of puncture times, permeation rate and degradation.

#### **Glove material**

The choice of suitable gloves does not only depend on the material but also on other quality characteristics and varies from manufacturer to manufacturer. Since the product is a preparation consisting of several substances, the resistance of the glove materials cannot be calculated in advance and must therefore be checked before use.

#### **Penetration time for the glove material**

The exact breakthrough time must be obtained from the glove manufacturer and observed..

### Eye protection:

Protective goggles

### Body protection:

Protective work clothing







**COOL·R**  
cooling & waterproofing

