



keep dry

waterproofing

Ready to use, UV and ponding-water resistant, colored, elastoplastic waterproofing membrane, quick drying at low temperatures

icobit.com



HIGH PERFORMANCE
COPOLYMER

TECHNICAL DATA SHEET



HIGH PERFORMANCE
COPOLYMER



UV Resistant



Hail Resistant



B_{ROOF} (t2)

KEEP DRY is an innovative, versatile, waterproofing solution derived from the proprietary HPC Technology (High Performance Copolymer).

The product is one component, solvent based, ready to use and available in different colors. It provides mechanically resistant waterproofing with outstanding cold flexibility and a high bonding strength to a variety of substrates. Thanks to its state-of-the-art elastoplastic copolymer and its viscosity, KEEP DRY is easily conformable to irregularly shaped substrates. The remarkable crack bridging properties make it suitable for undertile waterproofing.

The product can withstand extreme temperatures as cold as -40°C (-40°F).

The HPC copolymer is specifically engineered to withstand UV radiation and requires no additional protective coatings. In white color, KEEP DRY exhibits an SRI of 105% and is therefore appropriate for cool roofs.

The product is recommended for flat roofs thanks to its superior resistance to standing water.

KEEP DRY is also tested to withstand hail rated H7 (destructive) on the TORRO Hailstorm Intensity Scale.



**INNOVATIVE ELASTOPLASTIC
COPOLYMER BASED ON THE
HPC TECNOLOGY**

HPC technological innovation

The HPC Copolymer, which KEEP DRY is made of, features a specific rheology that makes it an actual waterproofing paste. The product viscosity differentiates its application from that of other liquid solutions: the roller is supposed to "go along" with the product and help spread it evenly. If needed, KEEP DRY can be diluted from 5% up to maximum 20% with the specific ICODIL SX solvent.

Unlike products based on moisture-triggered polymers, KEEP DRY is unaffected by ambient humidity and can be safely applied with reasonable drying time even when relative humidity exceeds 85%. Furthermore, once opened the packaging can be easily resealed and the product reused within the expiration date, provided that it is properly stored (see further for storage instructions).



Uses

KEEP DRY is recommended for waterproofing concrete substrates, roof slabs, flat and sloped roofs, fiber cement boards. It is also suitable for application to sheet metal and as external protective coating for metal tanks.

In addition, it can be used to repair and renovate old bitumen roofing membranes (both smooth-surfaced and self-protected) without removal.

It can be used for re-waterproofing tiled substrates without tile removal.

Also suitable for roof gardens, green roofs, planter boxes, fountains and pools.





KEEP DRY is CE marked in accordance with European Standard EN 1504-2 "Products and systems for the protection and repair of concrete structures" and complies with the following Principles: "PI" Protection against Ingress – "MC" Moisture Control – "IR" Increasing Resistivity.

KEEP DRY also meets European Standard EN 14891 "Liquid applied water impermeable products for use beneath ceramic tiling bonded with adhesives" and is approved for undertile waterproofing of floors and walls both indoors and outdoors.

KEEP DRY provides certified protection from carbonation, a major cause of reinforced concrete decay, thus extending the service life of buildings.

The product bonds to polycarbonate and single-ply synthetic membranes.

Features / Benefits

- Impervious to water.
- Anti-carbonation to protect reinforced concrete.
- One component, ready to use, easy to apply.
- Opened packaging can be resealed and stored for further use.
- Can be applied even below freezing, with temperatures as cold as -5°C (+23°F).
- Withstands the effects of hailstorms up to intensity H7 on the TORRO Scale.
- In the specific white color, it provides enhanced solar heat protection with an SRI of 105% that helps save on energy costs.
- Certified BROOF (t2) in accordance with EN 13501-5.
- Highly UV resistant: no topcoat required.
- Not subject to "alligator cracking" when applied to built-up roofing membranes.
- Recommended also for low-slope and flat roofs thanks to its superior resistance to ponding water.
- Cold applied: no open flames nor thermal welding required.
- Reduced dirt pick-up.
- Resistant to light rain and washout in one hour from application (at +8°C/+46°F and R.H. < 80%).
- Suitable for undertile waterproofing of terraces and balconies.

**SUPERIOR UV RESISTANCE:
NO TOPCOAT REQUIRED**



Surface preparation

Clean thoroughly and remove dust, loose material or non-adhering particles, grease, oil, formwork release agents and any contaminant that may affect proper adhesion.

Substrate must be cured, clean, dry, sound, solid and not exposed to rising damp, negative hydrostatic pressure or evaporative flows.

Joints and substrate cracks must be treated appropriately as per industry standards: seal control and isolation joints with ICOJOINT MS silane modified polymer or with the self-adhesive sealing ICOARM BUTYL TAPE.

- **Concrete:** prime with a coat of KEEP DRY diluted with 50% ICODIL SX at a rate of approximately 250-300 gr/m².

- **Metal:** remove oxidized spots and apply ICOPOX PM 102 rust inhibiting primer at a rate of 150 gr/m². Seal all overlaps, fixing points and waterproofing details with the self-adhesive ICOARM BUTYL TAPE placed over the seams.

- **Old built-up bitumen membranes:** no priming is required on smooth-surfaced membranes, as long as bitumen is properly aged (at least 6 months). In order to prevent possible oil seepage, the use of ICOBLOK primer is recommended at a rate of approx. 180 gr/m² (see relevant TDS on icobit.com). Check for proper bonding of upstands and seams. Built-up roofing membranes that tend to delaminate or creep need to be repaired beforehand. Mineral-surfaced membranes must be primed with a coat of KEEP DRY diluted with 50% ICODIL SX at a rate of approximately 250-300 gr/m². Given the tensions and expansions that may occur on bitumen substrates, it is recommended to reinforce the waterproofing layer with the ICOARM TNT ROLL nonwoven geotextile.

- **Timber:** remove dust, splinters and flaking paint. Substrate must be sound and dimensionally stable. Sand the surface if timber was previously treated. Prime with a coat of KEEP DRY diluted with 50% ICODIL SX at a rate of approximately 250-300 gr/m² (exact coverage according to substrate absorption rate). Always reinforce KEEP DRY with the ICOARM TNT ROLL nonwoven geotextile placed between the first and second coat.

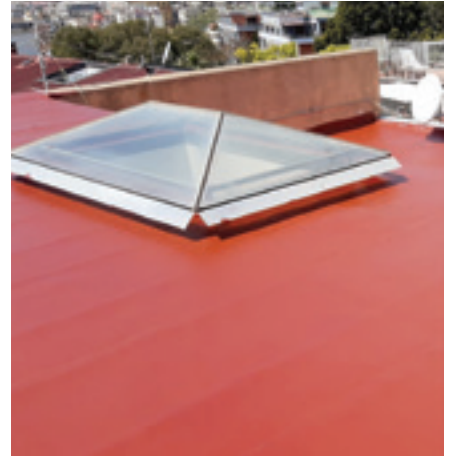
- **Polycarbonate boards:** remove dust and loose material. Sand lightly before applying KEEP DRY.

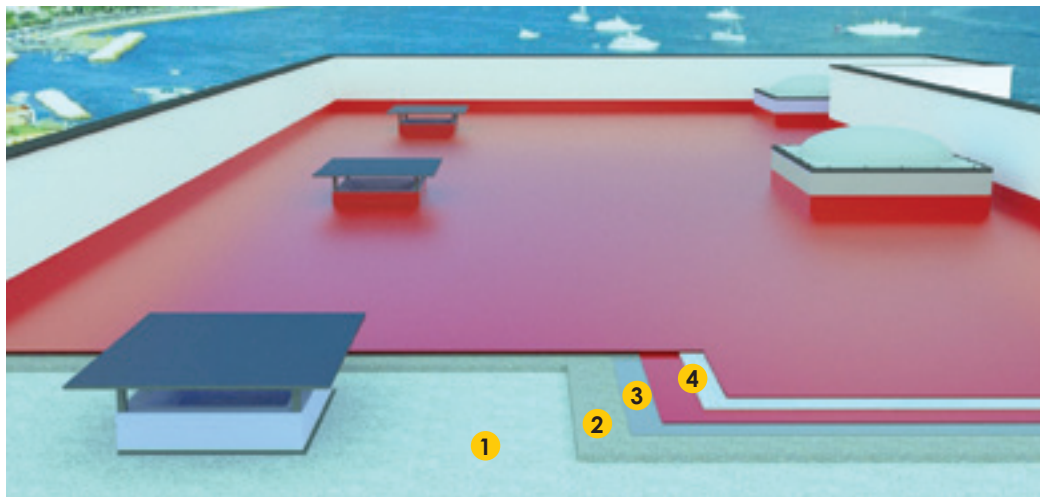
- **Single-ply membranes:** clean surface and check thoroughly the condition of welding, overlaps and upstands. No priming is required on TPO/EPDM membranes.

PVC must be primed with a coat of KEEP DRY diluted with 50% ICODIL SX at a rate of approximately 200 gr/m². It is advisable to always carry out preliminary adhesion tests on a small inconspicuous area to ensure full compatibility with the substrate, especially in the case of PVC membranes. Please contact our Technical Service for guidance.

- **Existing tiles:** check the condition of tile grout, remove and restore loose or missing tile portions. Prime with ICOFORCE primer at a rate of 300 gr/m².

- **Green Roofs:** concrete substrates intended for use as green roofs/roof gardens must be dusted and possibly leveled with a smoothing mortar (especially in the case of very rough finish, gravel nests and/or surface voids). Prime with a coat of KEEP DRY diluted with 50% ICODIL SX at a rate of approximately 250-300 gr/m².

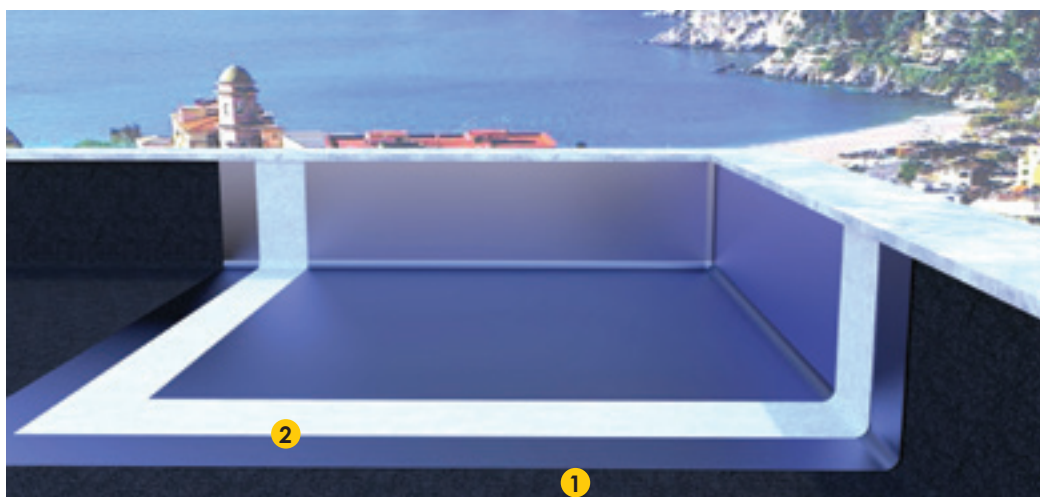




Walkable flat roof

BUILD UP

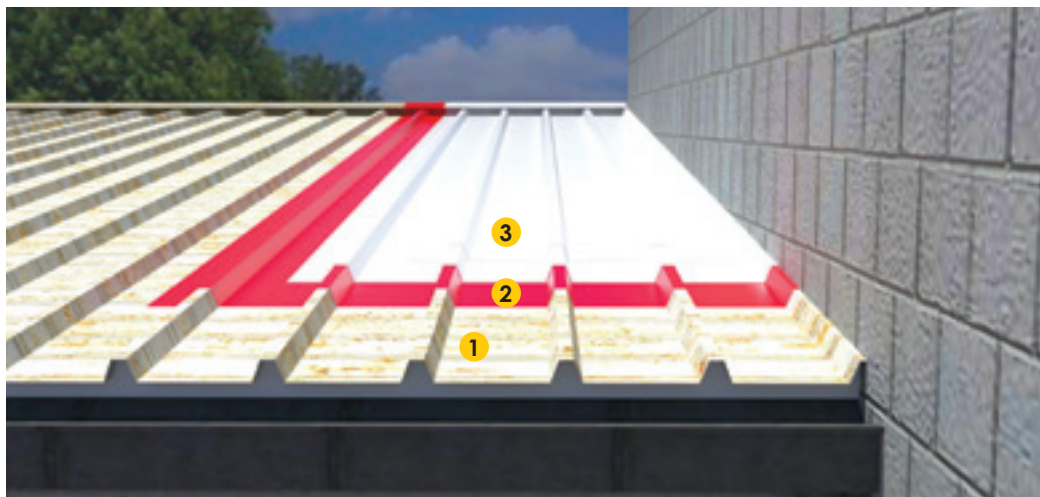
- 1) Load carrying element: reinforced concrete slab
- 2) Slope layer: concrete screed
- 3) Priming: KEEP DRY diluted with ICODIL SX (or synthetic solvents)
- 4) Waterproofing layer: KEEP DRY reinforced with ICOARM TNT



Renovation of an existing built-up roof

BUILD UP

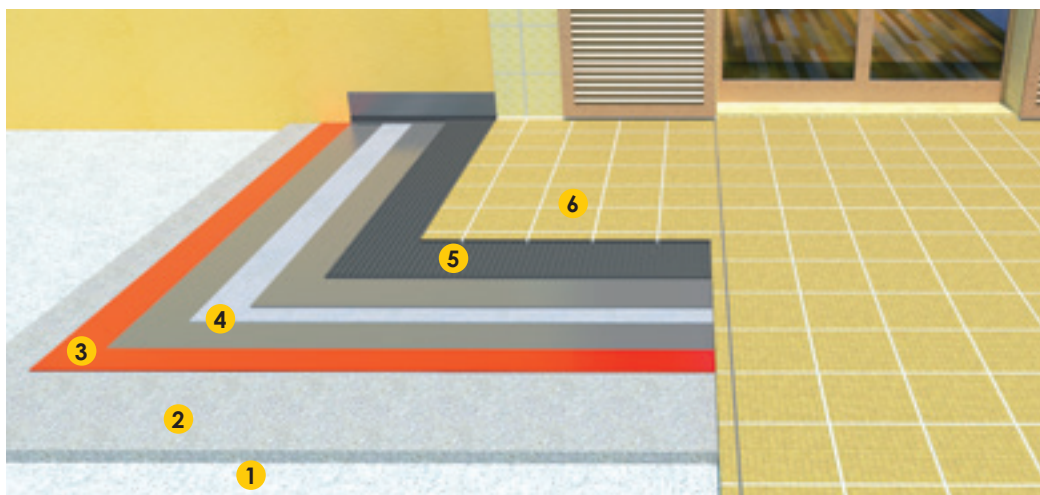
- 1) Old waterproofing layer: built-up roofing membrane
- 2) New fully adhered waterproofing layer: KEEP DRY reinforced with ICOARM TNT



Corrugated sheet metal

BUILD UP

- 1) Substrate: insulated metal panels
- 2) Rust inhibiting layer: ICOPOX PM 102
- 3) Waterproofing layer: KEEP DRY



Terrace waterproofing

BUILD UP

- 1) Load carrying element: reinforced concrete slab
- 2) Slope layer: concrete screed
- 3) Priming: KEEP DRY diluted with ICODIL SX (or synthetic solvents)
- 4) Waterproofing layer: KEEP DRY reinforced with ICOARM TNT
- 5) C2TES1 TOP-FLEX tile adhesive
- 6) Tiles

Application instructions

Once the substrate has been accurately prepared and the primer (if needed) has properly dried, KEEP DRY can be applied as is.

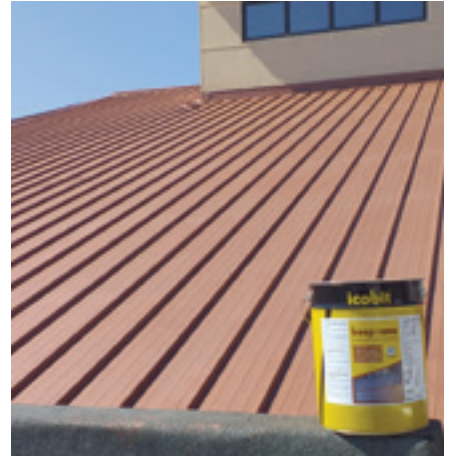
For new waterproofing apply two or more coats at an overall rate of not less than 2 kg/m².

If used as anti-carbonation protection of reinforced concrete structures, the minimum coverage is 200 gr/m².

The areas that are potentially subject to extra mechanical strain should be reinforced with ICOARM TNT ROLL 100-gr/m² non-woven fabric. Ensure that the fleece is saturated in order to minimize the risk of delamination.

To waterproof green roofs use the specific KEEP DRY AR root resistant version. Appropriate drainage and separation layers must be provided before placing loose soil.

Reinforce KEEP DRY with ICOARM TNT ROLL when re-waterproofing single-ply synthetic membranes. Lay the fabric on the first coat while wet, wait until cured, then apply the second coat. KEEP DRY can be applied by airless spray as well as by enamel paint roller or brush. The appearance of the finished product may vary according to the application method.



**APPLICATION TEMPERATURE
STARTING FROM -5°C,
SERVICE TEMPERATURE
FROM -40°C UP TO +90°C**

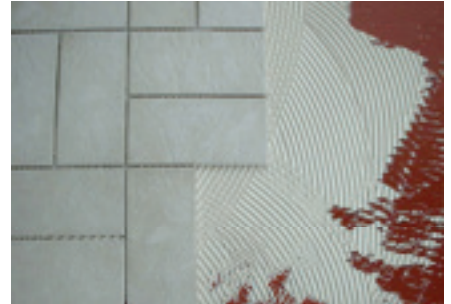
Precautions

- Allow newly placed concrete to cure fully. Avoid applying KEEP DRY to substrates that are moist or subject to rising damp and/or evaporative flows. If needed, install the specific EXIT AIR vent pipes and use the ICOBLOK primer for damp substrates.
- Before applying to built-up roofing membranes, ensure that bitumen is properly aged.
- Bitumen leftovers may result in color variation and risk of delamination of the KEEP DRY membrane.
- Stir before use and apply at temperatures between -5°C and +35°C (+23°F/+95°F). Avoid applying during the hotter part of the day and to substrates excessively exposed to sunlight, both before and during application.
- Do not apply if rain is expected.
- If KEEP DRY is intended to remain permanently immersed, inquire about the type and aggressiveness of the liquids with which it will be in contact. The use of ICOROOF PUR protective coating provides additional chemical resistance against possible aggressive agents.
- Tools can be cleaned with white spirit or with the specific ICODIL SX solvent.



Concrete cracking

Cracking inevitably occurs in concrete as a result of its poor tensile strength. Visible damages (macro cracks) and invisible ones (micro cracks) originate from static and dynamic external causes, moisture-related expansion and contraction, creep, shrinkage, settlement and differential thermal expansion. Those are critical factors in **building durability**. Therefore it becomes crucial to protect cracked surfaces from water ingress.



What's Crack Bridging?

The term indicates the ability of an elastic waterproofing system or membrane to withstand without damage the appearance of cracks in the substrate, thus continuing to be impervious to water. This property is of paramount importance in the case of **underfloor waterproofing** where, given the composite build-up, the membrane must prove both deformable and waterproof.

The **KEEP DRY** System meets Harmonized Standard **EN 14891**. The norm requires a minimum crack bridging of **0.75 mm** at standard temperature (+23°C/+73°F), at low temperature (-5°C/+23°F - Class 01) and at very low temperature (-20°C/-4°F - Class 02).

Moreover, the waterproofing systems may have the ability to remain in contact with chlorinated water (Class P), which is a prerequisite for construction in marine environment.

KEEP DRY, thanks to the use of the cutting-edge HPC Technology, largely exceeds the crack-bridging requirements set by Standard EN 14891 in Class 02-P, scoring an average value of **10.24 mm** at standard temperature and **3.5 mm** at -20°C/-4°F and in contact with chlorinated water.



HARMONIZED STANDARD EN 14891:2012

ESSENTIAL CHARACTERISTICS	REQUIREMENTS	PRODUCT PERFORMANCES
Initial tensile adhesion strength	≥ 0.5 MPa	1.6 MPa
Tensile adhesion strength after heat ageing	≥ 0.5 MPa	2.1 MPa
Tensile adhesion strength after water immersion	≥ 0.5 MPa	1 MPa
Tensile adhesion strength after contact with lime water	≥ 0.5 MPa	1.4 MPa
Tensile adhesion strength after contact with chlorinated water	≥ 0.5 MPa	1 MPa
Tensile adhesion strength after freeze-thaw cycles	≥ 0.5 MPa	1.7 MPa
Water impermeability	No penetration	
Crack bridging ability in standard conditions	≥ 0.75 mm	10,2 mm
Crack bridging ability at low temperature (-5°C)	≥ 0.75 mm	7.1 mm
Crack bridging ability at very low temperature (-20°C)	≥ 0.75 mm	3.5 mm
Release of dangerous substances	See SDS	

Carbonation-induced corrosion of reinforced concrete

The increasing atmospheric contamination entails a serious risk of reinforced concrete decay, since the presence of polluting substances leads to premature concrete degradation by carbonation.

Carbonation is the reaction of the carbon dioxide contained in the atmosphere (CO_2) with the calcium hydroxide contained in the cement paste: $\text{Ca}(\text{OH})_2 + \text{CO}_2 \rightarrow \text{CaCO}_3 + \text{H}_2\text{O}$.

Carbonation usually occurs already within the first decade of service life of reinforced concrete structures that have not been duly protected.

The ensuing production of calcium carbonate lowers the pH to below 9, thus inhibiting the previous rebar "passivation": the protective oxide layer that had been surrounding the reinforcing steel begins to break down entailing corrosion processes as a result of the combined effect of water and oxygen.

Harmonized Standard UNI EN 1504-2 calls for the use of a waterproofing layer to prevent CO_2 penetration, both during the structure's initial service life and after renovation.

The minimum CO_2 permeability required by the standard is $S_D > 50 \text{ m}$. Thanks to the advanced features of the HPC Copolymer, KEEP DRY combines exceptional waterproofing properties and very low carbon dioxide permeability: therefore, it can be used as a safeguard against both water and CO_2 ingress into reinforced concrete structures and bridge decks.

The requirement set by the standard ($S_D > 50 \text{ m}$) is achieved with a coverage of 200 gr/m^2 of KEEP DRY, resulting in a dry film thickness of approximately 90 microns that generates an effective CO_2 barrier.



**PREVENTING
CARBONATION-INDUCED
CORROSION OF
REINFORCED CONCRETE**

HARMONIZED STANDARD EN 1504-2:2004

TEST METHODS	ESSENTIAL CHARACTERISTICS	REQUIREMENTS
EN 1062-6	Permeability to CO_2	$S_D > 50 \text{ m}$
EN ISO 7783-1-2	Water vapor permeability	CLASS II ($5 < S_D < 50 \text{ m}$)
EN 1062-3	Capillary absorption and water permeability	$w < 0.1 \text{ Kg/m}^2 \cdot \text{h}^{0.5}$
EN 1542	Bond strength by pull off test	$\geq 0.8 \text{ MPa}$
EN 13687-1	Freeze-thaw cycling with de-icing salt immersion	$\geq 0.8 \text{ MPa}$
EN 13687-2	Thunder-shower cycling (thermal shock)	$\geq 0.8 \text{ MPa}$
EN 1062-11:2002	Exposure to artificial atmospheric agents	No visible defects
EN 1062-7	Crack bridging properties	class A5 (-20°C)
EN 13501-1	Reaction to fire	Euroclass E
	Dangerous substances	See SDS

Solar reflective waterproofing

What's a "COOL ROOF"?

The term refers to roofs that have the ability to improve energy efficiency by reflecting solar heat, thus minimizing air-conditioning energy consumption and the resulting polluting emissions (CO₂, SO₂, NO_x and heavy metals, among others). Cool roofs increase indoor thermal comfort and help save on energy costs. In fact, a dark, "non-cool" roof entails bigger heat absorption and heat transfer to the premises situated underneath, which result in worse living comfort and high cooling energy costs. Furthermore, the heat buildup in the various elements of a roofing system contributes to the so-called "urban heat island" effect, i.e. the temperature gap between urban and rural areas. The use of highly solar reflective waterproofing is conducive to limiting greenhouse gas emissions and to mitigating heat buildup and heat islands.

The three main features that qualify a "cool roof" are the following:

- **Solar Reflectance or "Albedo"**: the ability to reflect sunlight, or more specifically a measure of the reflected portion out of the total solar radiation in the spectrum of thermal energy (IR) and visible light (VIS). It is dimensionless and measured on a scale from 0 to 1 or in percentage.
- **Thermal Emittance (or Emissivity)**: the ability to release absorbed heat back into the atmosphere. It is also expressed either as a decimal between 0 and 1 or in percentage.
- **SRI (Solar Reflectance Index)**: it incorporates both Solar Reflectance and Thermal Emittance in a single value that indicates the roof's ability to reject solar heat in different conditions.

KEEP DRY in white color offers important benefits:

- **Improved living comfort;**
- **Energy cost saving** as a result of reduced cooling needs;
- **Protection** against water ingress
- **Protection of the entire build-up** from thermal-induced expansion and shrinkage;
- **Improved solar roof efficiency** thanks to a lower roof temperature.

Solar reflective index "SRI" = 105 %

Initial reflectivity " ρ_e ": 0,84

Solar absorptance " $\alpha_{e,average}$ ": 0,16

Emissivity " ϵ ": 0,86

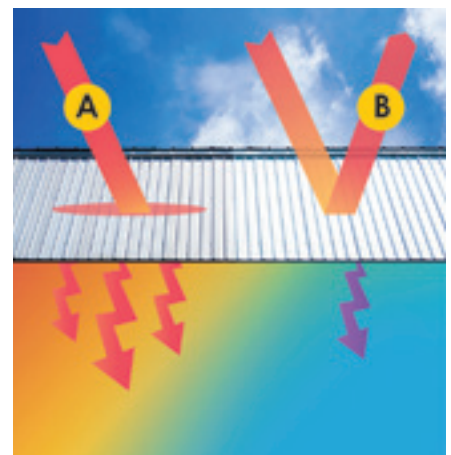


Without KEEP DRY



With KEEP DRY

ENERGY COST SAVING



FOCUS

EXTERNAL FIRE PERFORMANCE OF ROOFS

B-Roof rating and solar roofs

When it comes to fire safety, roofs and roof terraces are the most vulnerable areas of a building due to both rising flames and the fact that roofing materials may fuel the fire.

In addition to internal factors, a fire can also be caused by external factors, such as windblown cinder from neighboring building fires or electrical faults in solar systems and related wiring.

The BROOF certification carried out using the test methods (t1), (t2), (t3), (t4), in accordance with EN 13501-5, provides the specific fire performance rating for roofs and roof coverings exposed to external fire.

Roofs lacking an external fire performance assessment (F_{ROOF}) can achieve that thanks to the use of specific waterproofing systems that allow obtaining a BROOF classification recognized within the European Economic Area.

KEEP DRY is classified BROOF (t2), in accordance with European Standard EN 13501-5 "Fire classification of construction products and building elements – Part 5: Classification using data from external fire exposure to roofs tests".

Local regulations in several countries require such performance for all roofs, and especially when a photovoltaic (PV) system is installed.

In brief, when the roofing and/or cladding elements are not incombustible (Class 0 and Class 1) or when a fire resistant layer cannot be interposed between the solar panels and the supporting surface, a specific fire spread risk assessment is required for a PV system to be installed: roofs that are rated BROOF (t2), (t3), (t4) are considered appropriate for the installation of Class-2 solar panels or equivalent.



**KEEP DRY
ASSIGNS B-ROOF CLASS
TO ROOFS AND ROOF
COVERINGS**

The use of KEEP DRY, classified BROOF (t2), allows roofs to obtain the fire performance required for installing a photovoltaic system.



FOCUS

HAIL RESISTANCE

Hail is a form of precipitation composed of spherical lumps of ice, known as hailstones, which can damage property, crops, and even cause bodily harm.

Hail can cause significant damage to roofs and to the overlying waterproofing systems due to their poor resistance to dynamic puncture.

Like most weather events, also hail is measured and categorized. For such purpose the Torro Hailstorm Intensity Scale was developed in 1986 by Jonathan Webb, member of the UK's Tornado and Storm Research Organization (Torro), a research body specializing in severe convective weather.

The Torro Scale is a 0-10 scale that classifies hailstorms according to their impact; the latter is proportional to the hailstone size and expected fall speed. The scale begins at "no damage" and ends at "catastrophic damage"

Thanks to the use of the HPC Technology, KEEP DRY conveys to the roofing system a hail resistance up to H7 on the Torro Scale, in accordance with European Standard EN 13583:2012 "Flexible sheets for waterproofing. Bitumen, plastic and rubber sheets for roof waterproofing. Determination of hail resistance".



PRODUCT PERFORMANCES

HARMONIZED STANDARD EN 13583:2012

Substrate type	Impact Speed	Torro Scale intensity
Rigid	≥ 41 m/s	H4 – H7
Flexible	≥ 41 m/s	H4 – H7

TORRO SCALE

SIZE CODE	DIAMETER (mm)	IMPACT SPEED (m/s)	APPROXIMATE SIZE DESCRIPTION	INTENSITY
1	5 – 10 mm	13.31 – 18.82	Pea	H0 – H2
2	11 – 15 mm	19.74 – 23.05	Bean, Hazelnut, Mothball	H0 – H3
3	16 – 20 mm	23.81 – 26.62	Small grape, Cherry, Small marble	H1 – H4
4	21 – 30 mm	27.28 – 32.61	Large grape, Walnut, Large marble	H2 – H5
5	31 – 45 mm	33.14 – 39.93	Pigeon egg, Chestnut, Ping pong or golf ball	H3 – H6
6	46 – 60 mm	40.37 – 46.11	Chicken egg, Small peach or apple, billiard ball	H4 – H7
7	61 – 80 mm	46.49 – 53.25	Ostrich egg, Medium-sized orange, Large peach or apple, Tennis ball, Baseball	H5 – H8
8	81 – 100 mm	53.58 – 59.53	Large orange, Grapefruit, Softball	H6 – H9
9	101 – 125 mm	59.83 – 66.56	Melon	H7 – H10
10	> 125 mm	> 66.56	Coconut	H8 – H10

TECHNICAL DATA

PRODUCT FEATURE	MEASURE	UNIT
Type of product	one component, solvent based	
Appearance	viscous liquid	
Density	1.15 (± 0.05)	Kg/L
Solid content	57 (± 2)	%
Time to recoat (+23°C, 50% R.H., breezy)	2	hours
Curing time (+23°C, 50% R.H., breezy)	8	hours
Time before entering service (+23°C, 50% R.H., breezy)	48	hours
Time before tile laying (+23°C, 50% R.H., breezy)	4	days
Tensile elongation at break	400	%
Cold flexibility	-40	°C
Service temperature	-40 ; +90	°C
Spread rate per coat	1	Kg/m ²
Number of coats	minimum 2	
Dry film thickness (2 kg/m ²)	approx. 0.9	mm
Shelf life	18	months

Safety measures

See SDS

Storage

Store in a dry, well-ventilated place at temperatures above freezing.

Colors



Brown red/ Tomato red



Olive gray



Cream white



Metallic copper



Metallic bronze



Metallic aluminum

PACKAGING METAL CANS



APPLICATION METHODS



BRUSH



ROLLER



AIRLESS SPRAY



Please contact our technical support at:
assistenza@icobititalia.com

Ensure that the TDS is up to date: the latest version can be viewed and downloaded at icobit.com
The manufacturer reserves the right to amend product specifications without notice. The above performances were measured according to the standards in force at the time of issue and represent the average results of our tests. Although highly reliable, they do not constitute a binding commitment nor liability for Icobit Italia S.r.l. The purchaser and the end consumer acknowledge responsibility for the product suitability to the intended use.