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Autorizzato e notificato conformemente all'articolo 10 della Direttiva 89/106/CEE del Consiglio del 21 dicembre 1988, relativa all'avvicinamento delle disposizioni legislative, regolamentari ed amministrative degli Stati membri, relativa ai prodotti da costruzione.

Membro EOTA

European Technical Approval ETA 06/0109

(English language translation; the original version is in Italian)

Trade name Nome commerciale	**"Betonguaina.S"**
Holder of approval Beneficiario	**Nord Resine S.p.A.** **via Fornace Vecchia, 79** **31058 Susegana (TV) - Italy**
Generic type and use of construction product Tipologia del prodotto da costruzione ed utilizzo	**Liquid Applied Roof Waterproofing Kit, based on water dispersiable polymers** Kit di impermeabilizzazione per coperture applicato allo stato liquido
Validity from/to Validità da/a	**22.06.2013/16.06.2018**
Manufacturing plant Indirizzo stabilimento di produzione	**via Fornace Vecchia, 79** **I - 31058 Susegana (TV) - Italy**
This European Technical Approval contains: Questo Benestare Tecnico Europeo contiene:	**11 pages, including 1 annex** 11 pagine, incluso 1 allegato

I LEGAL BASIS AND GENERAL CONDITIONS

1. This European Technical Approval is issued by Istituto per le Tecnologie della Costruzione - Consiglio Nazionale delle Ricerche (called ITC-CNR in the following text) in accordance with:
   - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to Construction Products[1], modified by the Council Directive 93/68/EEC of 22 July 1993[2] and by Regulation EC n. 1882/2003 of the European Parliament and of the Council[3];
   - DPR 246 of 21/04/93[4] and DPR 499 of 10/12/97[5], concerning the implementation of Council Directive 89/106/EEC;
   - Common Procedural Rules for Requesting, Preparing and Granting of European Technical Approvals set out in the Annex of Commission Decision 94/23/EC[6];
   - Guideline for European Technical Approval of "Liquid Applied Roof Waterproofing Kits" ETAG 005, Edition August 2000 - Revision March 2004, Part 1: "General" and Part 8: "Specific stipulation for kits based on water dispersible polymers" (called ETAG 005 Edition 2000 in the following text).
2. ITC-CNR is authorised to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to this European Technical Approval and for their fitness for the intended use remains with the Holder of the European Technical Approval.
3 This European Technical Approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on cover page, or manufacturing plants other than those as laid down in the context of this European Technical Approval.
4. This European Technical Approval may be withdrawn by ITC-CNR, according to Article 5 (1) of Council Directive 89/106/EEC.
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6. The European Technical Approval is issued by the Approval Body in its official language. This version fully corresponds to the version used by EOTA for circulation. Translations into other languages have to be designated as such.

[1] Official Journal of the European Communities N° L 40, 1989.02.11, p.12
[2] Official Journal of the European Communities N° L 220, 1993.08.30, p.1
[3] Official Journal of the European Union N° 1 L 220, 2003.10.30, p.1
[4] Gazzetta Ufficiale della Repubblica Italiana n. 170 of 1993.07.22
[5] Gazzetta Ufficiale della Repubblica Italiana n. 21 of 1998.01.27
[6] Official Journal of the European Communities N° L 17, 1994.01.20, p.34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 DEFINITION OF PRODUCT AND INTENDED USE

The liquid applied roof waterproofing “Betonguina.S” is a kit which consists of three different components. The first (comp. A) is a water dispersion of acrylic copolymers, with fillers and additives such as anti-air entering, biocides, etc. The second (comp. B) is a cementitous powder. Mixing the two components, the cementitous powder reacts with the water of the comp. A and a continuous layer is obtained completely bounded to the substrate (concrete, ceramic etc...). The last component of the kit is a layer (spunbonded polyester fabric) as internal reinforcement. As internal reinforcement can be used two types of spunbonded polyester fabric creating two configurations “Betonguaina.S200” and “Betonguaina.S100”. For “Betonguaina.S200” the minimum layer thickness of the assembled system is 1.2 mm and the minimum quantity consumed is 2.2 kg/m^2 and for “Betonguaina.S100” the minimum layer thickness is 1.1 mm and the minimum quantity consumed is 2.1 kg/m^2.
The kit comprises the components described in the following paragraph which are factory-made by the ETA Holder or by his suppliers. The ETA Holder is ultimately responsible for the kit.

1.1 Components of the kit

The components of the kit are specified by the ETA Holder as follows:

Configuration	Trade name	Component	Suppliers	Characteristics	
				Minimum coverage [kg/m^2]	Minimum thickness [mm]
Betonguaina.S200	“Betonguaina.S comp. A”	Water dispersion acrylic copolymers with additives	Nord Resine S.p.A	2.2	1.2
	“Betonguaina.S comp. B“	Cementitous powder	(*)		
	“Nycon 200“	Spunbonded polyester fabric	(*)		
Betonguaina.S100	“Betonguaina.S comp. A”	Water dispersion acrylic copolymers with additives	Nord Resine S.p.A	2.1	1.1
	“Betonguaina.S comp. B“	Cementitous powder	(*)		
	“Nycon 100“	Spunbonded polyester fabric	(*)		

Table 1

The ancillary materials of the kit are specified by the ETA Holder as follows:

Ancillary components			
Trade name	Component	Suppliers	Function / type of use
“Nycon F”	Spunbonded polyester fabric	(*)	near the expansion joint of the substrate
“Mat 22”	Glass fibre reinforcement	(*)	near jutting pipe etc..
“Nordseal PU.MM”	Polyurethane sealant	(*)	to prepare the substrate (e.g.: to seal the cracks) or near special point (e.g.: at the connection between horizontal and vertical surface, near jutting pipe, etc...)
“Norphen PU”	Epoxy-polyurethane sealant	Nord Resine S.p.A.	
“Rete di vetro 160”	Glass fibre reinforcement with mesh 5x5 mm	(*)	to reinforce some special point (e.g.: at the expansion joint, etc..)

Table 2

Annex 1 shows layer thickness of the components and the system build-up of “Betonguaina.S” (both configurations).

(*) On asking of the ETA Holder, the supplier is declared only in the MTD which is deposited with ITC-CNR
(*) On asking of the ETA Holder, the supplier is declared only in the MTD which is deposited with ITC-CNR

1.2 Intended use

"Betonguaina.S" is intended for use as waterproofing of roof surfaces, against penetration of atmospheric water. This liquid applied roof waterproofing kit fulfils the Essential Requirements n° 2 (Safety in case of fire), n° 3 (Hygiene, health and environment) and n° 4 (Safety in use) of the Construction products directive 89/106/EEC.

The provision made in this ETA are based on the following declarations provided by the ETA Holder:

Configuration	Expected working life	the expected working life of the roof waterproofing is 10 years (W2)
Betonguaina.S200	Solar exposure	the assembled system is resistant to the solar exposure effects of "Moderate climate" (M) during its expected working life.
	Loads	the assembled system is accessible for maintenance of plant and equipment and to pedestrian traffic (P3).
	Slope	the assembled system can be used on roofs with slope < 5 % (S1).
	Temperature	the assembled system is resistant during all his working life to a maximum surface temperature of 80 °C (TH3) and to a minimum surface temperature of -30 °C (TL4).
	Substrate	ETA Holder suggests this kit to waterproofing the following types of substrate: concrete, lightweight concrete, ceramic tiles (both of non glazed fully laminated slab, and of glazed stoneware), quartz resin, waterproofing bitumen sheet.
Betonguaina.S100	Solar exposure	the assembled system is resistant to the solar exposure effects of "Moderate climate" (M) during its expected working life.
	Loads	the assembled system is accessible only for maintenance of the roofing (P2).
	Slope	the assembled system can be used on roofs with slope < 5 % (S1).
	Temperature	the assembled system is resistant during all his working life to a maximum surface temperature of 60 °C (TH2) and to a minimum surface temperature of -20 °C (TL3).
	Substrate	ETA Holder suggests this kit to waterproofing the following types of substrate: concrete, lightweight concrete, ceramic tiles (both of non glazed fully laminated slab, and of glazed stoneware), quartz resin, waterproofing bitumen sheet.

Table 3

The manufacturer's technical dossier (MTD) comprises all information necessary for the production and the processing of the product as well as for the repair of the roof waterproofing made from that. MTD was checked by ITC-CNR and it was found to be in accordance with the conditions stated in the approval and the characteristic values determined during the approval testing[7].

The verifications which are the basis of this ETA give the reason for the assumption of an intended working life of the roof waterproofing of 10 years, provided that the roof waterproofing kit is subject to appropriate installation, use and maintenance. These provisions are based upon the current state of the art and the available knowledge and experience. When this expected working life has elapsed, the product may, under normal use conditions, keep his functionality even for a long period without major degradation affecting the essential requirements.

The indication given on the working life cannot be interpreted as a guarantee given by the manufacturer, but only to be regarded as a mean for choosing the right products in relation to the expected economically reasonable working life of the woks.

[7] The part of the technical dossier to this European Technical Approval to be treated confidentially (inter alia the test plan for factory production control) is deposited with ITC-CNR and, as far as this is relevant to the tasks of the notified body involved in the procedure of attestation of conformity, shall be handed over to the notified body.

2 CHARACTERISTICS OF THE PRODUCT AND METHODS OF VERIFICATION

2.1 General

The assessment of the fitness for use of the kit "Betonguaina.S" for the intended use, was performed in compliance with ETAG 005 Edition 2000. ITC-CNR has carried out all the identification tests in full conformity with what envisaged by ETAG 005 Edition 2000.

The ETA is issued for the kit on the basis of the product composition deposited with ITC-CNR. Changes to the components of the kit or in the production process of the components, which could result in the production process and/or the properties of the product deposited being incorrect should be notified to ITC-CNR before the changes are introduced. ITC-CNR will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment/alterations to the ETA shall be necessary[8].

The characteristics of the components and of the system not mentioned in this ETA nor in the annexes shall correspond to the respective values laid down in the MTD of this ETA, checked by ITC-CNR.

2.2 Characteristics of the system

		Betonguaina.S200	Betonguaina.S100
Characteristic	Test methods	Results	
External fire performance	EN 1187	NPD	NPD
Reaction to fire	EN 13501-1	Euroclass E	Euroclass E
Resistance to water vapour	EN 1931	$\mu \approx 6632$	$\mu \approx 13060$
Watertightness	EOTA TR 003	Pass	Pass
Resistance to wind loads	EOTA TR 004	Pass (> 50 kPa)	Pass (> 50 kPa)
Resistance to dynamic indentation	EOTA TR 006	I_3	I_2
Resistance to static indentation	EOTA TR 007	L_3	L_2
Resistance to fatigue movement	EOTA TR 008	Pass	Pass
Resistance to low temperature effects: dynamic indentation at low temperature	EOTA TR 006	I_3 (-30 °C)	I_2 (-20 °C)
Resistance to extreme low temperature: crack bridging capability at –30 °C	EOTA TR 013	Pass	---
Resistance to high temperature effects: static indentation at high temperature	EOTA TR 007	L_3 (80 °C)	L_2 (60 °C)
Tensile strength (MPa)	EN ISO 527-3	1.26	
Tensile elongation (%)		100.1	

Table 4

Resistance to heat aging (EOTA TR 011)

The samples have been exposed to 70 °C during 200 days. After this treatment the following tests were made:

		Betonguaina.S200	Betonguaina.S100
Type of test	Test methods	Results	
Dynamic indentation	EOTA TR 006	I_3 (-30 °C)	I_2 (-20 °C)
Fatigue movement (50 cycles)	EOTA TR 008	Pass	Pass
Tensile strength (MPa)	EN ISO 527-3	0.98	
Tensile elongation (%)		64.9	

Table 5

[8] The ETA Holder could change, under his own responsibility, some of the suppliers of a component, but only provided that the characteristics and the performances of the new components and the final performances of the system do not change at all. These changes must be fully recorded within the Factory Production Control documents in order to grant full traceability.

Resistance to UV radiation in the presence of moisture (EOTA TR 010)
The samples have been exposed 2470 hours to UV radiation. After this treatment the following tests were made:

		Betonguaina.S200	Betonguaina.S100
Type of test	Test methods	Results	
Dynamic indentation (-10 °C)	EOTA TR 006	I_3	I_2
Tensile strength (MPa)	EN ISO 527-3	1.48	
Tensile elongation (%)		129.0	

Table 6

Resistance to water ageing (EOTA TR 012)
The samples have been keep in touch of water at 60 °C over 30 days. After the treatment the following test were made:

		Betonguaina.S200	Betonguaina.S100
Type of test	Test methods	Results	
Static indentation	EOTA TR 007	L_3 (80 °C)	L_2 (60 °C)
Delamination strength (kPa) (concrete)	EOTA TR 004	1317	
Delamination strength (kPa) (waterproofing bitumen sheet)		328	

Table 7

Slipperiness (SS 923515)
No performance determined (NPD).

Effect of weather conditions
The system was assembled and cured under two conditions: 1 °C for 15 days, 30 °C for 1 day. The resistance to wind loads was tested for both the conditions and substrate defined by the ETA Holder (concrete, lightweight concrete, ceramic tiles, quartz resin, waterproofing bitumen sheet). All of them fulfil the requirement (> 50 kPa).
Dynamic indentation at 23 °C on unreinforced specimens was tested for both the conditions. Pass.

Effect of daily joints
The kit was applied on concrete substrate and dried for 15 days at 1 °C. Then the kit was applied on the dried cover and the delamination strength was tested. The delamination strength does not show a decrease upper than 20 % of the value obtained with the system applied over concrete substrate (Pass).

Release of dangerous substances
The liquid applied roof waterproofing kits complies with the provision of Guidance Paper H ("A harmonized approach relating to Dangerous substance under the construction products directive", edition 2002) about dangerous substances. A written declaration of conformity in this respect was made by the manufacturer.
In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other requirements applicable to the products falling within this scope (e.g. transported European legislation and national law, regulations and administrative provisions). In order to met the provisions of the EU Costruction Products Directive, these requirements need also to be complied with, when and where they apply.

2.3 Identification of the components

The tests on components have been carried out in accordance with § 5.8 of ETAG 005 Edition 2000 Part 8: "Specific stipulation for kits based on water dispersiable polymers" in

order to verify the values declared by the ETA Holder in the Manufacture technical dossier (MTD).

The main characteristics of “Betonguaina.S comp. A” are:

Characteristic	Test methods	Results	ETA Holder’s declaration
Density (g/ml)	ISO 1675	1.216	1.22 ± 0.05
Dry extract (%)	prEN 1768	35.7	37 ± 3
Ash content (%)	prEN 1879	13.8	13.9 ± 0.5
Viscosity (Pa·s)	prEN 1781	53.0 (at 3 rpm)	---
		1.5 (at 128 rpm)	---

Table 8

The main characteristic of “Betonguaina.S comp. B” is:

Characteristic	Test methods	Mesh size (mm)	Particles withheld by the mesh (%)	ETA Holder’s declaration
Particle size	EN 933-1	1	0	---
		0.5	0,1	---
		0.25	0,2	---
		0.125	2,8	---
		0.063	26,8	---
		< 0.063	70,1	> 70

Table 9

The main characteristics of reinforcements are:

	Characteristic	Test methods	Results	ETA Holder’s declaration
Nycon 100	Mass per unit area (g/m^2)	ISO 9073-1	100.6	101 ± 2
	Tensile strength L/T (N)	ISO 9073-2	326.1 / 335.1	325 ± 30 / 315 ± 30
	Tensile elongation L/T (%)	ISO 9073-3	30.0 / 34.0	30 ± 4 / 34 ± 4
Nycon 200	Mass per unit area (g/m^2)	ISO 9073-1	213.8	215 ± 10
	Tensile strength L/T (N)	ISO 9073-2	785.2 / 681.8	820 ± 40 / 720 ± 40
	Tensile elongation L/T (%)	ISO 9073-3	38.0 / 37.0	39 ± 4 / 36 ± 4

Table 10

Additional identification tests were performed also on ancillary components and the results are detailed in the evaluation report of this ETA.

3 EVALUATION OF CONFORMITY OF THE PRODUCT AND CE MARKING

3.1 System of attestation of conformity

The European Commission according to her decision on the procedure of attestation of conformity 98/599/EC of October 1998 (Official Journal of the European Communities N° L 287, 1998.10.24) has laid down system 3 for the procedure of attestation of conformity (AoC) (Annex III, clause 2(ii) second possibility of Directive 89/106/EEC) for liquid applied roof waterproofing kits.

The AoC system 3 provides:

a) Tasks for the manufacturer: factory production control

b) Tasks for the notified body: initial type-testing of the product

3.2 Responsibilities

3.2.1 Tasks for the manufacturer

Factory production control

The manufacturer shall set up a production control at his factory and perform regular controls of the production process according to the appropriate part of the control plan[9].

This ensures that the product shows the properties stated in this ETA.

The manufacturer may only use initial materials according to the MTD. He shall inspect or control the initial materials on acceptance according to the prescribed test plan.

The factory production control follows the identifying properties of the components specified in the MTD.

The results of the factory production control shall be recorded and evaluated. The records shall include at least the following information:

- name of the product and of the raw materials,
- type of inspection or control,
- date of manufacture of the product, batch N° if needed, and date of inspection or control of the product or of the raw materials,
- result of inspections or controls and, as far as applicable, comparison with the requirements,
- signature of the person responsible for the factory production control.

The records shall be kept for at least five years. On request they shall be presented to ITC-CNR.

Details concerning extent, type and frequency of the tests or inspections to be performed within the scope of the factory production control shall correspond to the prescribed test plan[8] which is part of the MTD to this ETA[9].

3.2.2 Tasks for the notified body

Initial type-testing of the product

For the purpose of Initial Type Testing, the results of the test performed as part of the assessment for this European Technical Approval shall be used unless there are changes in the production line or plant. In such cases, the necessary new initial type testing has to be selected by ITC-CNR. These tests could be taken over by the ETA Holder for Declaration of Conformity.

3.3 CE Marking

The CE Marking shall be affixed on the packaging of the kit of the roof waterproofing "Betonguaina.S" or its accompanying documents. The symbol "CE" shall be followed by the following information:

- name or identifying mark of the ETA Holder
- legal address of the ETA Holder
- the last two digits of the year in which the CE-marking was affixed
- number of this European Technical Approval
- short definition of the levels of performance according to Annex 1
- statement on dangerous substances: none existing according to EU database match

The components shall be marked as belonging to the kit "Betonguaina.S".

[9] The control plan is deposited with ITC-CNR and contains the required information on the factory production control. As far as this is relevant to the tasks of the Notified Body involved in the procedure of attestation of conformity the test plan will be handed over to the Notified Body.

4 ASSUMPTIONS UNDER WHICH THE FITNESS OF THE PRODUCT FOR THE INTENDED USE WAS FAVOURABLY ASSESSED

4.1 Manufacture

The “Betonguaina.S” components shall correspond, as far as their composition and manufacturing process is concerned, to the products subject to the approval tests. Manufacturing process is laid down in the MTD deposited with ITC-CNR.

4.2 Design

The fitness for use of the system depends on the levels of the use categories stated in Annex 1 and the complies with the national requirements, if any.
In the MTD, the manufacturer gave information on the amounts consumed and the processing methods which shall lead to the required thickness of the roof waterproofing of at least 1.2 mm for Betonguaina.S200 configuration and 1.1 mm for Betonguaina.S100 configuration.

4.3 Processing

The fitness for use of the roof waterproofing can be assumed only if the installation in carried out according to the installation instruction stated in the MTD by the manufacturer. In particular it is necessary to take account of the following points:

- Installation by personnel who follows a training course organized by Nord Resine;
- Installation of only those components which are a marked as components of the kit;
- Installation with the required tools and adjuvants;
- Inspection of the roof surface for cleanliness and correct preparation of the substrate, applying a primer before applying the roof waterproofing if required;
- Compliance with the following weather and curing conditions:

Parameters	Minimum value	Maximum value
Air temperature (°C)	0.5	40
Substrate temperature (°C)	0.5	50
Relative air humidity (%)	10	90
Moisture content of the substrate (%)	0	12
Air speed (km/h)	0	45

Table 11

- Do not apply when there is risk of rain
- Ensuring a thickness of the waterproofing of at least 1.2 mm for Betonguaina.S200 configuration and 1.1 mm for Betonguaina.S100 configuration.

4.4 Manufacturer’s responsibilities

It is the manufacturer's responsibility to make sure that all those who use the kit will be appropriately informed about the specific conditions according to sections 1, 2, 4, and 5 including the annex to this ETA and the not confidential parts of the MTD to this ETA.

5 INFORMATION BY THE MANUFACTURER

5.1 Recommendations on packaging, transport and storage

The DDT of the components of the kit, must include the safety data sheets in compliance with Directive 2001/58/EEC which defines hazard codes and phrases for classification, packaging and labelling of dangerous substances.
The safety data sheets of the components of the kit are included in the MTD deposited with ITC-CNR.

In table 12 are reported the expiration periods (applicable considering the indicated production date of the components) of the components and the storage conditions so as

declared by the ETA Holder. The expirations are valid only if the packages are closed and the materials are properly stored.

Components	Storing condition	Minimum temperature (°C)	Maximum temperature (°C)	Expiration period (month)
“Betonguaina.S comp. A”	protected from freeze	5	40	24
“Betonguaina.S comp. B”	dry condition	5	40	6 (**)
“Nycon 200”	protected against sun radiation	---	---	no one
“Nycon 100”	protected against sun radiation	---	---	no one

Table 12

(**) the expiration period is referred to the additives added to the cementitous powder to reduce the quantities of Cr VI in conformity with 2003/53/EC and the related EC Decision issued on the OJC23/8 dated 2005.01.28

5.2 Recommendations on maintenance and repair of the works

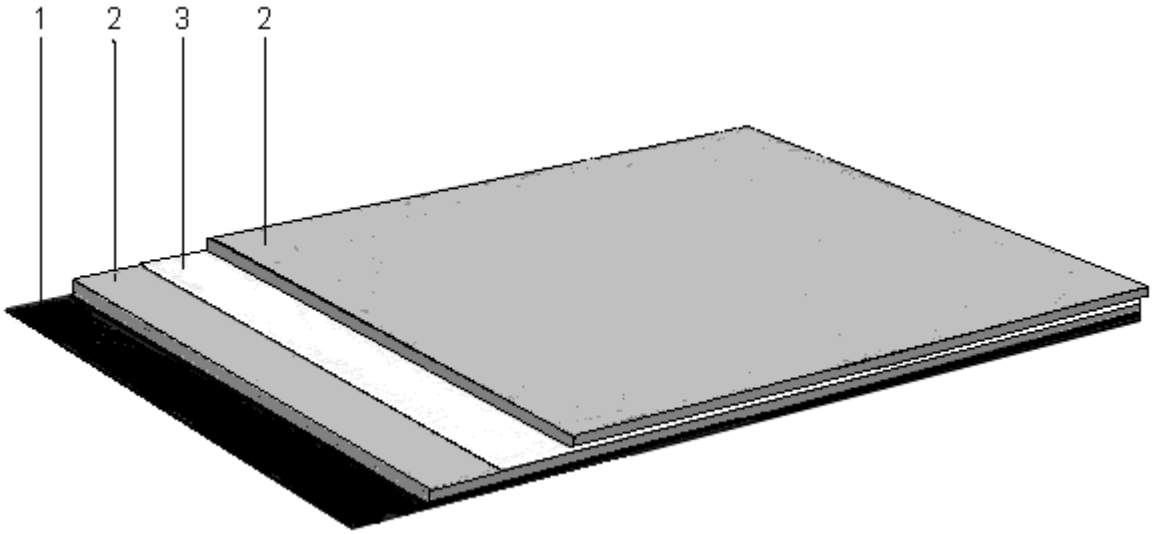
Roofs with deteriorated areas of the waterproofing layer, will be repaired removing all the damaged areas taking care to clean the substrate. Before the new installation of the kit it is necessary to apply a coat of “Betonguaina.S comp. A” to assure adhesion with the old layer. This operations, like the installation of the new layer, must be done on an area 3-5 cm around the damaged areas. Further installation details are laid down in the MTD deposited with ITC-CNR.

The original version is signed by:

arch. Roberto Vinci
(ITC-CNR Director)

Annex 1 of European Technical Approval 06/0109: System build-up of the roof waterproofing "Betonguaina.S"

Betonguaina.S200 configuration



1- Substrate
2- "Betonguaina.S comp. A" + "Betonguiana.S comp. B"
3- "Nycon 200"

Characteristics of the "Betonguaina.S200" configuration:

Minimum layer thickness	1.2 mm
External fire performance	NPD
Reaction to fire	Euroclass E
Resistance to water vapour	$\mu \approx 6632$
Resistance to wind loads	> 50 kPa
Resistance to slipperiness	NPD
Statement on dangerous substances	does not contain any

Table 13

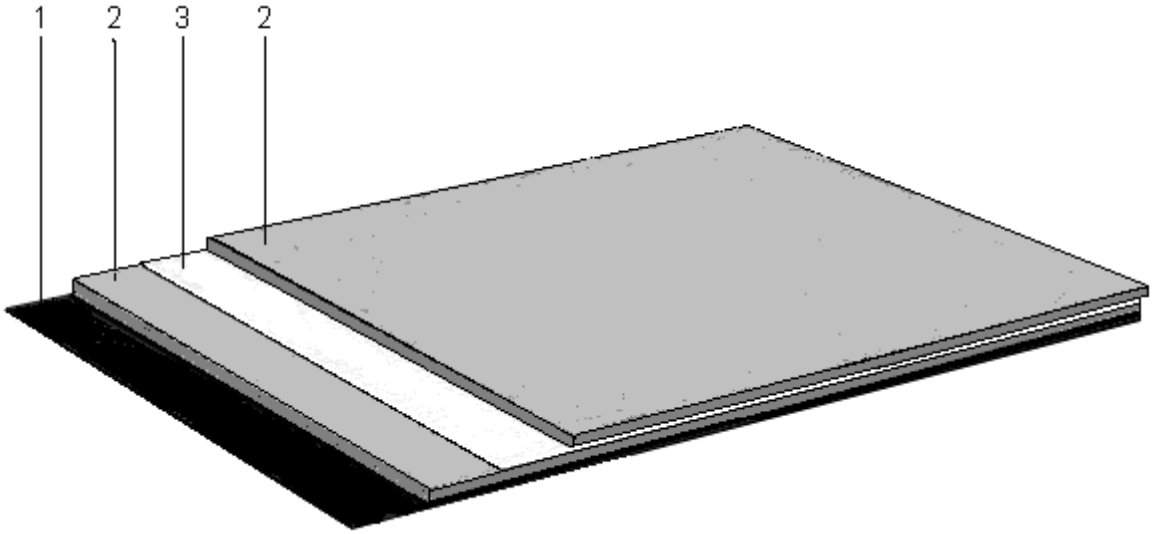
Performance levels according to ETAG 005:

Expected working life	W2
Solar exposure	"Moderate climate" M
Loads	P1 - P3
Slope	S1
Minimum surface temperature	TL4
Maximum surface temperature	TH3

Table 14

Betonguaina.S200 configuration Table 13: Characteristics of the system Table 14: Performance levels	**Annex 1 of European Technical Approval 06/0109: System build-up of the roof waterproofing "Betonguaina.S"**

Betonguaina.S100 configuration



1- Substrate
2- “Betonguaina.S comp. A” + “Betonguiana.S comp. B”
3- “Nycon 100”

Characteristics of the “Betonguaina.S100” configuration:

Minimum layer thickness	1.1 mm
External fire performance	NPD
Reaction to fire	Euroclass E
Resistance to water vapour	μ ≈ 13060
Resistance to wind loads	> 50 kPa
Resistance to slipperiness	NPD
Statement on dangerous substances	does not contain any

Table 15

Performance levels according to ETAG 005:

Expected working life	W2
Solar exposure	“Moderate climate” M
Loads	P1-P2
Slope	S1
Minimum surface temperature	TL3
Maximum surface temperature	TH2

Table 16

Betonguaina.S100 configuration Table 15: Characteristics of the system Table 16: Performance levels	**Annex 1 of European Technical Approval 06/0109: System build-up of the roof waterproofing “Betonguaina.S”**