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European Technical Assessment

ETA 10/0330
of 22.03.2017



General part

Technical Assessment Body issuing the ETA: ITeC	
ITeC has been designated according to Article 29 of Regulation (EU) No 305/2011 and is member of EOTA (European Organisation for Technical Assessment)	
Trade name of the construction product	NITA-WOOL®
Product family to which the construction product belongs	4 – Thermal insulation products
Manufacturer	RMT Insulation C. Joan Güell con C. Narcís Monturiol Polígono Industrial Can Magre ES08187 SANTA EULÀLIA DE RONÇANA (Barcelona) Spain
Manufacturing plant(s)	C. Joan Güell con C. Narcís Monturiol Polígono Industrial Can Magre ES08187 SANTA EULÀLIA DE RONÇANA (Barcelona) Spain
This European Technical Assessment contains	10 pages including 3 annexes which form an integral part of this assessment.
This European Technical Assessment is issued in accordance with Regulation (EU) 305/2011, on the basis of	European Assessment Document (EAD) 040456-00-1201 <i>In-situ formed loose fill thermal insulation material made of animal fibres.</i>
This ETA replaces	ETA 10/0330 issued on 19.12.2016.

General comments

Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and should be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may be made, with the written consent of issuing Technical Assessment Body. Any partial reproduction must be identified as such.

Specific parts of the European Technical Assessment

1 Technical description of the product

NITA-WOOL® is a thermal insulation product made of loose sheep wool.

This product consists of sheep wool fibres washed and whitened without any binding agent. During the manufacturing process the product is provided with protection against insects and fire retardants. The product is used to produce insulation layers by means of manual processing at the place of use. This manual processing is carried out in dry conditions.

NITA-WOOL® is provided with disodium octaborate tetrahydrate¹ as flame retardant and a solution of permethrin as an anti-insect protection.

The ETA has been issued for the product on the basis of agreed data/information, deposited with ITeC, which identifies the product that has been assessed. The ETA applies only to products corresponding to this agreed data/information.

NITA-WOOL® is also put on the market under the trade names specified in Annex 3.

2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

NITA-WOOL® is used to produce thermal insulation layers not exposed to compression loads, by means of manual installation at the place of use. The installation of the product is carried out in dry conditions.

The thermal insulation product can be used for the following intended uses:

- Insulation in closed cavities in horizontal or pitched ($\leq 10^\circ$) roofs.
- Exposed insulation on horizontal or pitched ($\leq 10^\circ$) areas which are accessible – for inspection, maintenance...- but not subjected to foot traffic (e.g. insulation of top storey ceilings).

The insulation product made of sheep wool shall not be used in structures where it will be exposed to compression loads, precipitation, wetting or weathering, nor shall be used directly in contact with water or soil nor in constructions with risk that the critical moisture content will be exceeded.

The provisions made in this ETA are based on an assumed working life of at least 50 years for NITA-WOOL®. These provisions are based upon the current state of the art and the available knowledge and experience.

The indications given on the working life cannot be interpreted as a guarantee given by the producer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the works.

¹ The insulation product has to be covered to avoid direct contact with the user of the building.

3 Performance of the product and reference to the methods used for its assessment

Performance of NITA-WOOL® related to the basic requirements for construction works (hereinafter BWR) were determined according to EAD 040456-00-1201. Essential characteristics of NITA-WOOL® are indicated in table 3.1.

Table 3.1: Performances of NITA-WOOL®.

Basic Works Requirement	ETA section	Essential characteristic	Performance
BWR 2 Safety in case of fire	3.1	Reaction to fire	B-s3,d0
BWR 3 Hygiene, health and the environment	3.2	Biological resistance: a) Resistance to growth of mould fungus. b) Resistance to the attack of vermin.	a) No growth on microscopic examination identified (level 0). b) Passed: no adult vermin develop from the eggs; no new generation of vermin shall hatch from the laboratory larvae.
	3.3	Water vapour diffusion resistance	$\mu = 1 - 4$
	3.4	Thermal conductivity	$\lambda_{D(23,50)} = 0,0493 \text{ W/(m}\cdot\text{K)}$ $f_{u,1(\text{dry-23/50})} = - 0,17 \text{ kg/kg}$ $f_{u,2(23/50-23/80)} = 0,50 \text{ kg/kg}$ $F_{m1} = 0,99$ $F_{m2} = 1,03$
	3.5	Water absorption	$\leq 2 \text{ kg/m}^2$
BWR 6 Energy economy and heat retention	3.6	Settlement / density: a) Settlement under impact excitation. b) Settlement under vibration. c) Settlement under impact excitation + hygrothermal conditions. d) Settlement under cyclical temperature and cyclic humidity. e) Provision for calculating the thermal resistance.	a) $s_v \leq 9,5\%$ at a density of 18 kg/m^3 and a thickness of 330 mm. b) Not relevant. c) Not required if s_{cyc} is declared. d) $s_{cyc} \leq 1,2\%$ at a density of 17 kg/m^3 and a thickness of 300 mm. e) Thickness for calculation: installation thickness minus 10%.
	3.7	Hygroscopic sorption properties	See the sorption and desorption curves in Annex 2.
	---	Corrosion developing capacity	Not assessed
	3.8	Critical moisture content	75%

3.1 Reaction to fire

The reaction to fire of NITA-WOOL® has been assessed according to EN ISO 11925-2, EN 13823 and the EOTA testing procedure defined in Annex D of EAD 040456-00-1201 (see section 2.2.1 of EAD).

The reaction to fire of NITA-WOOL® according to EN 13501-1 is class B-s3,d0.

3.2 Biological resistance

3.2.1 Resistance to mould fungus

The determination of resistance to the growth of mould fungus has been done according to method A of section 2.2.2.1 of EAD 040456-00-1201 (equivalent to method described in Annex C of above mentioned EAD).

The result is an intensity of growth level 0 which corresponds to the following evaluation: "No growth on microscopic examination identified" (see table 4 of EN ISO 846).

3.2.2 Resistance to attack by vermin

The determination of the resistance to attack by vermin has been done according to section 2.2.2.2 of EAD 040456-00-1201. It considers the short-term test (according to ISO 3998) and the long-term test (according to annex B of EAD 040456-00-1201).

The tests are passed:

- Short-term test: no detectable damage with regard to estimation of cropping and holes (definition of 1A of the ISO 3998)
- Long-term test: no new generation of vermin shall hatch from the laboratory larvae and no adult vermin (beetles or moths) develop from the eggs.

3.3 Water vapour diffusion resistance

Water vapour permeability (resistance to water vapour diffusion) has been assessed according to section 2.2.4 of EAD 040456-00-1201.

The water vapour resistance factor, μ , is a value between 1 to 4. The most unfavourable factor μ depending on construction should be used for calculation.

3.4 Thermal conductivity

The thermal conductivity of the product is determined according to EN 12667. The declared value of thermal conductivity is determined according to EN ISO 10456.

For the density of 18 kg/m³ the following thermal conductivity values have been obtained:

- The fractile value of thermal conductivity at 10 °C, at dry conditions representing at least 90% of the production with confidence limit of 90% is $\lambda_{(10, \text{dry}, 90/90)} = \mathbf{0,0499 \text{ W/(m}\cdot\text{K)}$.
- The declared value of thermal conductivity for a moisture content of the insulating material at 23°C and 50% relative humidity is $\lambda_{D(23,50)} = \mathbf{0,0493 \text{ W/(m}\cdot\text{K)}$ determined by conversion of the $\lambda_{(10, \text{dry}, 90/90)}$ value.
- The conversion coefficient for mass-related moisture content: $f_{u,1(\text{dry-23/50})} = \mathbf{- 0,17 \text{ kg/kg}}$.
- The conversion coefficient for mass-related moisture content: $f_{u,2(23/50-23/80)} = \mathbf{0,50 \text{ kg/kg}}$.
- The moisture conversion factor dry to 23 °C and 50% relative humidity: $F_{m1} = \mathbf{0,99}$.
- The moisture conversion factor 23 °C and 50% relative humidity to 23 °C and 80% relative humidity: $F_{m2} = \mathbf{1,03}$.

3.5 Water absorption

The determination of short term water absorption by partial immersion has been tested according to EN 1609 method A (see section 2.2.6 of EAD 040456-00-1201). The short term water absorption is $\leq 2 \text{ kg/m}^2$.

3.6 Settlement / density

The assessment of the settlement of the loose fill insulation for the intended use declared in section 2 has been carried out according to the methods described in the following table. The results of the test are shown in table 3.2.

Table 3.2: Settlement of NITA-WOOL®.

Settlement	Test method	Settlement (%)	Density (kg/m ³)	Thickness (mm)
Settlement of loose fill insulation applied in ceilings (settlement under impact excitation), s_v .	Section 2.2.7.1 a) of EAD 040456-00-1201. [Annex B3 of EN 15101-1 with deviations]	$\leq 9,5$	18	330
Settlement under cyclical temperature and cyclic humidity (settlement under hygrothermal cycles), s_{cyc} .	Section 2.2.7.4 of EAD 040456-00-1201. [Annex B1 of EN 15101-1]	$\leq 1,2$	17	300

Calculation of the thermal resistance

A reduction of a 10% (determined from the highest value of settlement) applicable to the installation thickness has to be taken into account when calculating the thermal resistance (see section 2.2.7.5 of EAD 040456-00-1201).

3.7 Hygroscopic sorption properties

The hygroscopic sorption properties have been assessed according to EN ISO 12571 (see section 2.2.8 of EAD 040456-00-1201). The sorption and desorption curves are shown in Annex 2.

3.8 Critical moisture content

Testing and assessing procedures are not currently available for insulation products covered by this EAD. The value of 75% is stated as the critical moisture content according to section 2.2.10 of the above mentioned EAD.

4 Assessment and verification of constancy of performance (hereinafter AVCP) system applied, with reference to its legal base

According to the decision 1999/91/EC of the European Commission² amended by Decision 2001/596/EC of the European Commission³, the system of AVCP (see EC delegated regulation (EU) No 568/2014 amending Annex V to Regulation (EU) 305/2011) given in the following table applies.

Table 4.1: Applicable AVPC system.

Product	Intended use(s)	Level or class	System
NITA-WOOL®	For thermal insulation uses not subject to fire regulations.	Any	3
	For thermal insulation uses subject to fire regulations.	B,s3-d0	1

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

All the necessary technical details for the implementation of the AVCP system are laid down in the *Control Plan* deposited with the ITeC⁴, with which the factory production control shall be in accordance.

Any change in the manufacturing procedure which may affect the properties of the product shall be notified and the necessary type-testing revised according to the *Control Plan*.

Issued in Barcelona on 22 March 2017

by the Catalonia Institute of Construction Technology.



Ferran Bermejo Nualart
Technical Director, ITeC

² Official Journal of the European Union (OJEU) L29/44 of 03/02/1999.

³ Official Journal of the European Union (OJEU) L209/33 of 02/08/2001.

⁴ The *Control Plan* is a confidential part of the ETA and is only handed over to the notified certification body involved in the assessment and verification of constancy of performance.

ANNEX 1: Installation and use

A1.1 Installation

Density at the built-in stage (installation thickness): **18 ± 2 kg/m³**. The density is determined by calculation as a quotient of the mass of the material brought in and the volume.

When calculating the thermal resistance of the construction elements, the nominal thickness of the thermal insulation layer will be the installation thickness minus 10% (see section 3.6 of the present ETA).

For horizontal installation the insulation layer will have a constant installation thickness that takes into consideration the projected thickness. For that purpose, suitable height marks will be arranged by the executing company before installation of the loose-fill insulation. The executing company must check both the installation thickness and the density.

In case of installation on pitched or arched areas slipping of the thermal insulation product is prevented by suitable measures.

The corrosion developing capacity of the insulation product has not been determined. Suitable measures might be necessary to avoid corrosion of metal parts of the works in contact with the product.

The construction will be designed and installed in such a way that no harmful condensation occurs within the works.

The thermal insulation material will only be installed far from heat sources, e.g. heating pipes or halogen lamps.

A1.2 Parameters for the installation in construction works or parts of construction works

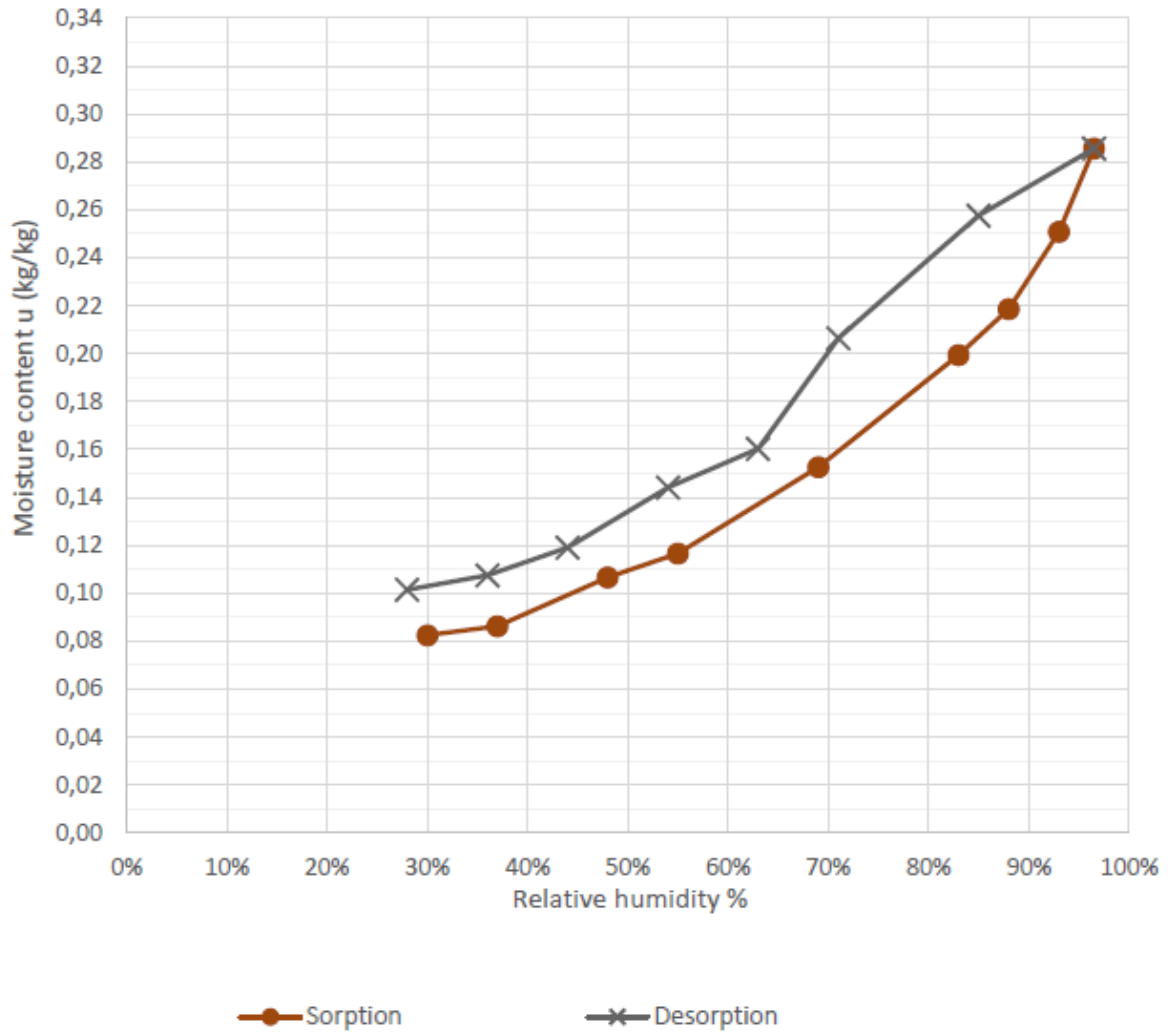
The installation instructions given by the manufacturer will be taken into account. Manual processing installation of the insulation material will be performed by appropriate personnel who will have adequate experience in installing the material under the supervision of the person responsible for technical matters on site.

The use of the protection mask and safety glasses is recommended for the installation.

ANNEX 2: Sorption and desorption curves

Graph A2.1: Hygroscopic sorption and desorption curves of the product NITA-WOOL®.

NITA-WOOL Moisture Curve



ANNEX 3: Trade names of the product

NITA-WOOL®

ISONATURLAINE

ISONATURWOOL

ISOMOUTON