

European Technical Approval**ETA 13/0526****Trade Name**DOLCEA
i3**Holder of the approval**PCIM S.A.
Rue du Péquet 54
5590 Achene (Ciney)
Belgium**Website**www.isoproc.eu**Generic type and use of construction product**

Insulation material made of loose, free cellulose fibres

Validity from:

2013-06-30

to

2018-06-29

Manufacturing plant:PCIM S.A.
Rue du Péquet 54
5590 Achene (Ciney)
Belgium**This European Technical Approval contains:**

8 pages, with 1 annex which forms an integral part of this ETA

European Organisation for Technical Approvals
Organisation Européenne pour l'Agrément Technique
Europäische Organisation für Technische Zulassungen

I Legal bases and general conditions

1. This European Technical Approval is issued by UBAtc 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 products¹, modified by Council Directive 93/68/EEC² and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council³;
 - Belgian law of 25 March 1996 concerning the adaptation of legislative and administrative provisions of Member States to the Construction Products Directive (89/106/EEC) for construction products⁴ and Belgian Royal Decree of 18 August 1998 concerning construction products⁵
 - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC⁶;
2. The UBAtc is authorized to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant(s). Nevertheless, the responsibility for the conformity of the products to the 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 page 1, or manufacturing plants other than those laid down in the context of this European Technical Approval.
4. This European Technical Approval may be withdrawn by UBAtc, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.
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7. The ETA holder confirms to guarantee that the product(-s) to which this approval relates, is/are produced and marketed in accordance with and comply with all applicable legal and regulatory provisions, including, without limitation, national and European legislation on the safety of products and services. The ETA-holder shall notify the UBAtc immediately in writing of any circumstance affecting the aforementioned guarantee. This approval is issued under the condition that the aforementioned guarantee by the ETA holder is continuously observed.

¹ Official Journal of the European Communities N° L 40, 11.2.1989, p. 12

² Official Journal of the European Communities N° L 220, 30.8.1993, p. 1

³ Official Journal of the European Union N° L 284, 31.10.2003, p. 1

⁴ Belgian Law Gazette, 21.05.1996

⁵ Belgian Law Gazette, 11.09.1998

⁶ Official Journal of the European Communities N° L 17, 20.1.1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

1.1 Definition of product

This European technical approval applies to the following insulation product made of loose, free cellulose fibres:

DOLCEA
i3

This product consists of cellulose fibres made from waste paper by mechanical crushing.

During this manufacturing process fire retardants such as sulfate salt, boric acid are added to the fibres.

The fibres are intended to form insulation layers by means of blowing them either into cavities or freely into open space.

Blowing in of the cellulose fibres shall be carried out in dry conditions. The resulting insulation layer depends on the application and blowing in with different densities in accordance with table 1.

Table 1

Type of insulation	Type 1	Type 2
Use of area	Blown horizontal freely into open space: Ceilings of non-habitable attics and floors	Blown into closed cavities: Vertical partitions (timber frame), pitched and flat roofs
Density	30 kg/m ³ (after natural settlement)	Minimum 45 kg/m ³

1.2 Intended use

The products are intended to be used as thermal insulation in walls, partitions, intermediate floors, ceilings and pitched or flat roofs according to the application of the product type (types 1 and 2).

The insulation may be used in constructions where the fibres are not exposed to wetting, weathering, heavy moisture transport, condensation or compression loads. The blowing is carried out in dry conditions.

The insulation product made of cellulose fibres is used as non-load bearing insulating material mainly for intended uses where vertical or horizontal cavities are completely filled or horizontal exposed areas are covered with a finishing layer.

Type 1 - Blown freely into open space

- The density of 30kg/m³.
- Machine processed exposed insulation material not subject to foot traffic for ceilings under non habitable attics (thermal insulation layer between or above the load-bearing structure)

Type 2 – Blown into closed cavities

- Minimum density of 45kg/m³
- Machine processed cavity insulation material for partitions, pitched and flat roofs.
- 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 construction in contact with cellulose fibres.

1.3 Working Life

The provisions made in this ETA are based on an assumed working life of the thermal insulation of 50 years provided that the conditions laid down in this section and sections for the packaging, transport, storage, installation, use maintenance and repair are met.

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

2 Characteristics of the product and methods of verification

2.1 Composition and manufacturing process

The insulation product shall as far as its composition and manufacturing process is concerned correspond to the product subject to the approval tests. Details of composition and manufacturing process are deposited at the UBAtc.

2.2 Density

The density of the insulating materials is determined according to standard ISO/CD 18393. Depending on the application the densities stated in Table 2 are to be observed and controlled by the installer.

Table 2

Type of insulation	Type 1	Type 2
Use of area	Blown horizontal freely into open space: Ceilings of non-habitable attics and floors	Blown into closed space: Vertical partitions (timber frame), pitched and flat roofs
Density	30 kg/m ³ (after natural settlement)	Minimum 45 kg/m ³

2.3 Water absorption

The water absorption of the products has been determined according to European standard EN 1609, method A. The mean water absorption at a density of 30 and 45 kg/m³ and a sample thickness of 50 mm is as follows:

- For density 30 kg/m³ - 7,66 kg/m²
- For density 45 kg/m³ - 14,94 kg/m²

2.4 Settlement

The settlement has been determined according to ISO/CD 18393 following the test methods stated in Table 3. The maximum values of settlement stated in Table 3 are not exceeded.

Table 3 : Settlement depending on the test method

Test method according to ISO/CD 18393	Settlement %	Bulk density kg/m ³	Settled density kg/m ³
Method A Settling by impact excitation	18 %	25,4 kg/m ³	30 kg/m ³
Method C Settling of wall cavity insulation by vibration	0 %	45 kg/m ³	45 kg/m ³

2.5 Water vapour diffusion resistance factor

No performance determined

2.6 Airflow resistance

No performance determined

2.7 Thermal conductivity

The thermal conductivity of the products has been determined according to EN 12667. The declared value of thermal conductivity has been determined according to EN ISO 10456.

Thermal conductivity density type 1 - 30kg/m³:

The fractile value of thermal conductivity for the density range of 30 kg/m³ is $\lambda_{(10,dry,90/90)} = 0,0386 \text{ W/(m.K)}$ representing at least 90 % of the production with a confidence limit of 90%

The declared value of thermal conductivity for the density range of 30 kg/m³ is $\lambda_{D(23,50)} = 0,041 \text{ W/(m.K)}$ – category 1 determined by conversion of the $\lambda_{(10,dry,90/90)}$ value.

- the moisture content mass by mass at 23 °C/50 % relative humidity: $u_{23,50} = 0,0773 \text{ kg/kg}$
- the moisture content conversion coefficient mass by mass:

$$f_{u1(dry-23/50)} = 0,50 \text{ kg/kg}$$

Thermal conductivity density type 2 - 45kg/m³:

The fractile value of thermal conductivity for the density range of 45 kg/m³ is $\lambda_{(10,dry,90/90)} = 0,0371 \text{ W/(m.K)}$ representing at least 90 % of the production with a confidence limit of 90%

The declared value of thermal conductivity for the density range of 45 kg/m³ is $\lambda_{D(23,50)} = 0,038 \text{ W/(m.K)}$ – category 1 determined by conversion of the $\lambda_{(10,dry,90/90)}$ value.

- the moisture content mass by mass at 23 °C/50 % relative humidity: $u_{23,50} = 0,0785 \text{ kg/kg}$
- the moisture content conversion coefficient mass by mass:

$$f_{u1(dry-23/50)} = 0,16 \text{ kg/kg}$$

2.8 Reaction to fire

The reaction to fire of the insulation products has been tested by using the test methods relevant for the corresponding reaction to fire class and is classified according to EN 13501-1.

Tables 4, 5 and 6 specify the reaction to fire classes which apply to the insulation products as a function of their end use application.

Table 4

End use application	Reaction to fire: Class
- installation density of the insulating material 30 kg/m ³	B _{fl-s1}

Table 5

End use application	Reaction to fire: Class
- installation density of the insulating material 45 kg/m ³	C-s2,d0

Table 6

End use application	Reaction to fire: Class
- Installation density of the insulating material 45 kg/m ³	B-s1,d0
- End use application without air gap	
- End use application substrates defined in EN 13823 : 'Calcium silicate board': density of the board 652,5 kg/m ³ , board thickness 12,5 mm, reaction to fire of the board class A2-s1,d0.	
- 'Fermacell board', board thickness 12,5 mm, density 1150kg/m ³ as the fire exposed side	

2.9 Resistance to biological actions

No performance determined

2.10 Retention of additives

No performance determined

2.11 Dangerous substances

The product consists of cellulose fibres made from waste paper by mechanical crushing under addition of flame retardants and complies with the provisions of guidance paper H⁷.

It does not contain substances which have to be classified as dangerous according to Directive 67/548/EEC and/or listed in the "Indicative list on dangerous substances" of the EGDS and can be classified as product **type 2** according to the EOTA testing procedure.

A declaration 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 its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

2.12 Critical moisture content

No performance determined

2.13 Corrosion developing capacity on metal construction products

No performance determined

3 Attestation of conformity and CE marking

3.1 Attestation of conformity

The system of attestation of conformity for thermal insulation products, laid down in the Commission Decision 1999/91/EC of 25 January 1999 (and Corrigendum) as amended by Commission Decision 2001/596/EC of 8 January 2001 and given in Table 7 shall also be applied to the in-situ formed loose fill thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres.

Table 7 : System of attestation of conformity applicable to the in-situ formed loose fill thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres

Product(s)	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
Thermal insulating products	Any	-	3
System 3: See Directive 89/106/EEC (CPD), Annex III(2)(ii), Second possibility			

In addition, according to the Decision 1999/91/EC by the European Commission amended by the Decision 2001/596/EC the system(s) of attestation of conformity given in Table 8 applies to the in-situ formed loose fill thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres with regard to reaction to fire.

Table 8 : System of attestation of conformity applicable to the in-situ formed loose fill thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres with respect to reaction to fire

Product(s)	Intended use(s)	Level(s) or class(es)	Attestation of conformity system(s)
Thermal insulating products	For uses subject to regulations on reaction to fire	A1*, A2*, B*, C*	1
		A1**, A2**, B**, C**, D, E	3
		(A1 to E)***, F	4
System 1: See Directive 89/106/EEC (CPD), Annex III.2.(i), without audit-testing of samples System 3: See Directive 89/106/EEC (CPD), Annex III.2.(ii), Second possibility System 4: See Directive 89/106/EEC (CPD), Annex III.2.(ii), Third possibility * Products/ materials for which a clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants or a limiting of organic material) ** Products/ materials not covered by footnote (*). *** Products/ materials that do not require to be tested for reaction to fire (eg. Products/materials of classes A1 according to Commission Decision 96/603/EC, as amended).			

Concerning table 8, footnotes * and ** apply as follows:

- For products of classes C or higher, the attestation of conformity system 1 shall be applied with regard to reaction to fire due to the addition of flame retardant.
- For products of classes E and D the attestation of conformity system 3 shall be applied.

Concerning table 7, footnote ***, this is not applicable for the thermal insulating product made of vegetable or animal fibres because all the products are based on organic material and therefore not covered by the Commission Decision 96/603/EC and its amendment.

Due to their properties with regard to the uses subject to regulations on reaction to fire, different AoC systems as stated before shall be applied to the products. That means for the

⁷ Guidance paper H: A harmonised approach relating to Dangerous substances under the construction products directive, 18 February 2000

performance of AoC for the product that only the product properties related to these uses shall be evaluated according to the relevant AoC system.

Taking into account that

- reaction to fire class B and C applies; and
- that a clearly stage in the production process has been identified which results in an improvement of the reaction to fire classification (addition of fire retardant).

System 1 applies for this product with regards to reaction to fire. This system is detailed as follows:

Certification of the conformity of the product by a notified certification Body on the basis of:

a) Tasks of the manufacturers:

- factory production control
- further testing of samples taken at the factory by the manufacturer in accordance with a control plan

b) Tasks of the Notified Body:

- initial type-testing of the product,
- initial inspection of factory and of factory production control,
- continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1.1 Tasks for the manufacturer; factory production control

The manufacturer has a factory production control system in his plant and exercises permanent internal control of production.

All the elements, requirements and provisions adopted by the manufacturer are documented in a systematic manner in the form of written policies and procedures. The factory production control system ensured that the products are always in conformity with the European technical approval.

In the framework of factory production control the manufacturer shall carry out tests and controls in accordance with the control plan which is fixed with this European technical approval.

Details of the extent, nature and frequency of testing and controls to be performed within the factory production control shall correspond to this control plan⁸ which is part of the technical documentation of this European technical approval.

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

- designation of the products and of the basic materials,
- type of control or testing,
- date of manufacture of the products and date of testing of the products or basic materials or components,
- result of control and testing and, if appropriate, comparison with requirements,
- signature of the person responsible for factory production control.
- On request the records shall be presented to the UBAtc.

3.2.1.2 Tasks for the approved bodies

3.2.1.3 Initial type-testing of the products

For initial type-testing the results of the tests performed as part of the assessment for the European Technical Approval shall be used unless there are changes in the production line or plant. In such cases the necessary initial type-testing has to be agreed between the UBAtc and the approved bodies involved.

3.2.1.4 Continuous surveillance

The approved body shall visit the factory at least twice a year for surveillance. It has to be verified that the system of factory production control and the specified manufacturing process are maintained taking account of the control plan.

Continuous surveillance and assessment of factory production control have to be performed according to the control plan.

The results of product certification and continuous surveillance shall be made available on demand by the certification body or inspection body, respectively, to the UBAtc. In cases where the provisions of the European technical approval and the control plan are no longer fulfilled the certificate of conformity shall be withdrawn and the UBAtc informed immediately.

3.3 CE marking

The CE marking shall be affixed on the products, the packaging or the attached label.

The symbol "CE" shall be accompanied by the following information:

- identification number of the certification body
- name or identifying mark of producer and manufacturing plant,
- the last two digits of the year in which the CE marking was affixed,
- number of the European technical approval,
- identification of products (commercial name),
- density range depending on the area of application
- settlement
- water absorption
- declared value of thermal conductivity
- class of reaction to fire⁹.

⁸ The control plan has been deposited at the UBAtc and is handed over only to the approved bodies involved in the attestation and conformity procedure.

⁹ European classification of reaction to fire of building materials according to the Decision 2000/147EG of 8 February 2000 implementing Article 20 of Directive 89/106/EEC on construction products

4 Assumptions under which the fitness of the products for the intended use was favourably assessed

4.1 Manufacturing

The thermal insulation products shall correspond as far as their composition and manufacturing process is concerned to the products subject to the approval tests.

Composition and manufacturing process are deposited at the UBAtc

Changes to the product or production process, which could result in this deposited data/ information being incorrect, should be notified to the UBAtc before the changes are introduced. The UBAtc 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 or alterations to the ETA shall be necessary.

4.2 Installation

The thermal insulation material shall only be installed in structures where it will be protected from wetting and weathering and direct contact to soil.

The installation instruction given by manufacturer shall be taken into account. In case of exposed insulation in pitched roofs ($\leq 10^\circ$) slipping of the insulation material shall be avoided by the appropriate measures.

The product shall be protected from moisture during installation. The insulation material shall not to be exposed to compression loads.

Parameters for the design of construction works or parts of construction works are presented below.

4.2.1.1 Design value of thermal conductivity

The design value of thermal conductivity shall be defined in accordance with the relevant national provisions.

4.2.1.2 Nominal thickness for the thermal resistance calculation

When calculating the thermal resistance, the nominal thickness of the insulation layer according to Table 8 shall be applied.

Table 8: Nominal thickness depending on the area of application

Type of insulation	Type 1	Type 2
	30 kg/m ³	Minimum 45 kg/m ³
Use of area	Blown horizontal freely into open space: Ceilings of non-habitable attics and floors	Blown into closed space: Partitions, pitched and flat roofs
Nominal thickness	Minimum of 30 cm because of settlement, 20% installation thickness shall be added to the nominal thickness	Clear span of the filled cavity

For horizontal machine processed installation of exposed insulation not subject to foot traffic the insulation layer shall have a constant installation thickness taking into account the nominal thickness. For that purpose suitable height marks shall be arranged in sufficient distances before the processing.

When blowing into closed cavities it shall be made sure by appropriate measures (e. g. control drillings) that the cavity is completely filled with the insulating material.

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

4.2.1.3 Parameters for the installation in the construction works or parts of construction works

- The fitness of the cellulose fibres for the intended use is given under the following condition:
- Installation carried out by appropriate personnel which have adequate experience in installing the material under the supervision of the person responsible for technical matters on site.
- Installation in accordance with the manufacturer's specifications. Concerning this matter the manufacturer has to train the installers.
- Precise compression of the cellulose fibres.
- Installation of constructive measurements to avoid settlement by large cavity thickness.

5 Recommendations for the manufacturer

5.1 Recommendations on packaging, transport and storage

Packaging of the products has to be such that they are protected against moisture during transport and storage unless other measures are foreseen by the manufacturer for this purpose.

5.2 Recommendations on installation

The product has to be protected against moisture during installation.

The processing guidelines of the manufacturer have to be followed.

5.3 Accompanying information

In the information accompanying CE marking the manufacturer shall indicate that the products shall be protected against humidity during transport, storage and installation.

Furthermore it is the responsibility of the manufacturer to ensure that the information on the installation procedure is shown clearly on the package and/or on an enclosed instruction sheet.

Annex I

Reference documents

- ISO/CD 18393:2002 Thermal insulation – Accelerated ageing of thermal insulation materials – Assessment of settling of loose-fill thermal insulation used in attic and closed cavity applications.
- EN 1609:1996 Thermal insulation products for building applications – Determination of short term water absorption by partial immersion.
- EN 12667:2001 Thermal performance of building materials and products – Determination of thermal resistance by means of guarded hot plate and heat flow meter methods – Products of high and medium thermal resistance.
- EN ISO 10456:2000 Thermal insulation – Building materials and products – Determination of declared and design values.
- EN 13501-1:2002 Fire classification of construction products and building elements – Part 1: Classification using data from reaction to fire test.