



## European Technical Approval ETA-04/0081

English translation prepared by DIBt - Original version in German language

Handelsbezeichnung <i>Trade name</i>	ISODAN CI 040 boratfrei, DÄMMSTATTs CI 040 boratfrei, KLIMA-TEC-FLOCK boratfrei, ISOL'QUATE sb, POESIS-FLOC, DÄMMSTATTs CI Dämmschüttung boratfrei, isofloc bf, isofloc sb, biocell bf
Zulassungsinhaber <i>Holder of approval</i>	DÄMMSTATT W.E.R.F. GmbH Markgrafendamm 16 10245 Berlin
Zulassungsgegenstand und Verwendungszweck <i>Generic type and use of construction product</i>	Dämmstoff aus losen, ungebundenen Zellulosefasern  <i>Insulating material made of loose, free cellulose fibres</i>
Geltungsdauer: <i>Validity:</i>	vom <i>from</i> 30 March 2012 bis <i>to</i> 13 October 2014
Herstellwerk <i>Manufacturing plant</i>	DÄMMSTATT W.E.R.F. GmbH Markgrafendamm 16 10245 Berlin DEUTSCHLAND  SPOC Société de Production de Ouate de Cellulose 8 rue des cartelades 63650 La Monnerie - Le Montel FRANKREICH
Diese Zulassung umfasst <i>This Approval contains</i>	10 Seiten <i>10 pages</i>
Diese Zulassung ersetzt <i>This Approval replaces</i>	ETA-04/0081 mit Geltungsdauer vom 23.12.2010 bis 13.10.2014 <i>ETA-04/0081 with validity from 23.12.2010 to 13.10.2014</i>

## I LEGAL BASES AND GENERAL CONDITIONS

- 1 This European technical approval is issued by Deutsches Institut für Bautechnik 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<sup>1</sup>, modified by Council Directive 93/68/EEC<sup>2</sup> and Regulation (EC) N° 1882/2003 of the European Parliament and of the Council<sup>3</sup>;
  - *Gesetz über das In-Verkehr-Bringen von und den freien Warenverkehr mit Bauprodukten zur Umsetzung der Richtlinie 89/106/EWG des Rates vom 21. Dezember 1988 zur Angleichung der Rechts- und Verwaltungsvorschriften der Mitgliedstaaten über Bauprodukte und anderer Rechtsakte der Europäischen Gemeinschaften (Bauproduktengesetz - BauPG) vom 28. April 1998<sup>4</sup>, as amended by law of 31 October 2006<sup>5</sup>;*
  - Common Procedural Rules for Requesting, Preparing and the Granting of European technical approvals set out in the Annex to Commission Decision 94/23/EC<sup>6</sup>.
- 2 Deutsches Institut für Bautechnik is authorized 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 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 indicated on page 1 of this European technical approval.
- 4 This European technical approval may be withdrawn by Deutsches Institut für Bautechnik, in particular pursuant to information by the Commission according to Article 5(1) of Council Directive 89/106/EEC.
- 5 Reproduction of this European technical approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Deutsches Institut für Bautechnik. In this case partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European technical approval.
- 6 The European technical approval is issued by the approval body in its official language. This version corresponds fully to the version circulated within EOTA. Translations into other languages have to be designated as such.

<sup>1</sup> Official Journal of the European Communities L 40, 11 February 1989, p. 12  
<sup>2</sup> Official Journal of the European Communities L 220, 30 August 1993, p. 1  
<sup>3</sup> Official Journal of the European Union L 284, 31 October 2003, p. 25  
<sup>4</sup> *Bundesgesetzblatt Teil I 1998*, p. 812  
<sup>5</sup> *Bundesgesetzblatt Teil I 2006*, p. 2407, 2416  
<sup>6</sup> Official Journal of the European Communities L 17, 20 January 1994, p. 34

## II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

### 1 Definition of product and intended use

#### 1.1 Definition of the product

This European technical approval applies to the insulating materials made of loose, free cellulose fibres with the designations as stated in the following:

"ISODAN CI 040 boratfrei", "DÄMMSTATTs CI 040 boratfrei",

"KLIMA-TEC-FLOCK boratfrei", "ISOL'QUATE sb", "POESIS-FLOC",

"DÄMMSTATTs CI Dämmschüttung boratfrei", "isofloc bf", "isofloc sb" and "biocell bf".

The cellulose fibres are produced from waste paper by mechanical crushing. During the manufacturing process the product is provided with a fire protection equipment.

#### 1.2 Intended use

The insulating materials serve for the production of insulation layers, not exposed to compression loads, by means of machine processing at the place of use. The machine processing is carried out in dry conditions or under the addition of water. The insulating material "DÄMMSTATTs CI Dämmschüttung boratfrei" is processed manually at the place of use.

The insulating materials are used for thermal insulation. For the eventual use for airborne sound insulation see 2.7 and 4.2.1.4.

The reaction to fire of the insulating materials depends on the end use conditions. See clause 2.5.

The insulating materials can be used for the following intended uses:

Area of application for walls:

- Space-filling insulation in closed cavities of external and interior walls of timber frame constructions and similar structures

Area of application for roofs and ceilings/floors:

- Insulation in closed cavities between rafters and timber beams as well as in cavities of corresponding structures
- Exposed insulation on horizontal or moderately pitched areas ( $\leq 10^\circ$ ) (in case of manual processing on horizontal areas only), e. g. insulation of topmost storey ceilings which are not subjected to foot traffic, however, are accessible
- Cavity insulation between flooring joist battens and similar substructures

The insulating material shall only be installed in structures where it is protected from wetting, weathering and moisture.

As to the application of the insulation materials, the respective national regulations shall in addition be observed.

The provisions made in this European technical approval are based on an assumed working life of the insulating material of 50 years, provided that the conditions laid down in sections 4.2, 5.1 and 5.2 for the packaging, transport, storage, installation and use are met. 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.

**2 Characteristics of the product and methods of verification**

**2.1 Composition and production methods**

With regard to composition and production method the insulating materials shall correspond to those which were the basis for the approval tests. Composition and production methods are deposited with Deutsches Institut für Bautechnik. See also clause 4.1.

**2.2 Density**

The density of the insulating materials is determined according to ISO/CD 18393<sup>7</sup>. Depending on the area of application the minimum densities stated in Table 1 are to be observed.

Table 1: Minimum densities depending on the area of application

area of application	minimum density kg/m <sup>3</sup>
cavity insulation in walls, machine processing	44
cavity insulation in pitched roofs, machine processing	40
cavity insulation in walls and pitched roofs, manually processing	50
cavity insulation in floors, exposed insulation on horizontal, in case of machine processing also on moderately pitched areas ( $\leq 10^\circ$ )	25

In case of machine processing under the addition of water the density shall be at least 30 kg/m<sup>3</sup>. Independent of the area of application the density shall not exceed the value of 65 kg/m<sup>3</sup>.

**2.3 Settlement**

The settlement is determined according to ISO/CD 18393<sup>7</sup> following the test methods stated in Table 2. The maximum values of settlement stated in Table 2 are not exceeded.

Table 2: Settlement depending on the test method

Test method according to ISO/CD 18393	maximum settlement in %
Method A – Settling by impact excitation	8
Method C – Settling of wall cavity insulation by vibration	0
Method D – Settling by specified climatization	10

**2.4 Thermal conductivity**

The thermal conductivity of the insulating materials is determined at a reference temperature of 10 °C according to EN 12667:2001-01. The declared value of thermal conductivity, determined according to the standard EN ISO 10456:2007-12 for a moisture content of the insulating materials at 23 °C/50 % relative humidity, amounts to:

- Category 1:  $\lambda_D = 0.037 \text{ W/(m} \cdot \text{K)}$  in case of machine processed insulating materials  
 $\lambda_D = 0.043 \text{ W/(m} \cdot \text{K)}$  in case of the manually processed insulating material
- Category 2:  $\lambda_D = 0.038 \text{ W/(m} \cdot \text{K)}$  in case of machine processed insulating materials  
 $\lambda_D = 0.043 \text{ W/(m} \cdot \text{K)}$  in case of the manually processed insulating material

<sup>7</sup> ISO/CD 18393:2002-08 Thermal insulation – Accelerated ageing of thermal insulation materials – Assessment of settling of loose-fill thermal insulation used in attic and closed cavity applications

The declared value of category 1 is representative for at least 90 % of the production with a confidence level of 90 %. For the admissible deviation of an individual value of the thermal conductivity from the declared value the method described in EN 13172:2001+A1:2005, Annex F applies.

The declared value of category 2 is based on a limit value, which must not be exceeded during production. The limit value of the thermal conductivity under dry conditions is  $\lambda_{10,dry} = 0,0363 \text{ W/(m} \cdot \text{K)}$  in case of machine processed insulating materials and  $\lambda_{10,dry} = 0,041 \text{ W/(m} \cdot \text{K)}$  in case of the manually processed insulating material.

The declared values of thermal conductivity apply to the density range given in section 2.2. from  $25 \text{ kg/m}^3$  to  $65 \text{ kg/m}^3$ .

For conversion of humidity the following applies:

- the mass-related moisture content at 23 °C/50 % relative humidity:  $u = 0.07 \text{ kg/kg}$
- the mass-related moisture content at 23 °C/80 % relative humidity:  $u = 0.12 \text{ kg/kg}$
- the mass-related moisture conversion coefficient:  $f_{u1(dry - 23/50)} = 0.37$
- the mass-related moisture conversion coefficient:  $f_{u2(23/50 - 23/80)} = 0.15$
- moisture conversion factor:  $Fm_{(dry - 23/50)} = 1.026$
- moisture conversion factor:  $Fm_{(23/50 - 23/80)} = 1.01$

## 2.5 Reaction to fire

The reaction to fire of the insulating materials is tested by using the test methods relevant for the corresponding reaction to fire class and is classified according to EN 13501-1:2007+A1:2009-09. Table 3 shows the reaction to fire classes which apply to the insulating materials as a function of their end use.

Table 3: Reaction to fire classes as a function of the end use

End use conditions	Reaction to fire: Class
Installation density of the insulating material $25 \text{ kg/m}^3$ to $65 \text{ kg/m}^3$ , insulation layer thickness $\geq 100 \text{ mm}$ , to be used between or on wood-based boards or other boards depending on the field of use concerned with the following properties: <ul style="list-style-type: none"> <li>- density of the boards <math>\geq 680 \pm 50 \text{ kg/m}^3</math>, board thickness <math>\geq 12 \pm 2 \text{ mm}</math>, reaction to fire of the boards: at least class D - s2,d0, or</li> <li>- density of the boards <math>\geq 1800 \pm 200 \text{ kg/m}^3</math>, board thickness <math>\geq 6 \pm 1 \text{ mm}</math>, reaction to fire of the boards: classes A1 / A2 - s2,d0, or</li> <li>- density of the boards <math>\geq 870 \pm 50 \text{ kg/m}^3</math>, board thickness <math>\geq 11 \pm 2 \text{ mm}</math>, reaction to fire of the boards: classes A1 / A2 - s2,d0</li> </ul>	C - s2,d0
Installation density of the insulating material $25 \text{ kg/m}^3$ to $65 \text{ kg/m}^3$ , insulation layer thickness $\geq 40 \text{ mm}$	E

## 2.6 Resistance to the growth of mould

Verification of the resistance to the growth of mould was performed according to the EOTA testing procedure ("In situ formed loose fill thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres" Edition June 2003, Revision July 2009)<sup>8</sup>. The assessment of the growth of fungi according to the standard EN ISO 846:1997-06, Table 4, resulted in the evaluation level 0.

<sup>8</sup> Deposited with Deutsches Institut für Bautechnik.

## 2.7 Airflow resistance

Airflow resistance of the insulating materials is determined according to the standard EN 29053:1993-03, Method A. The mean value of the airflow resistance per unit length at a density of  $35 \text{ kg/m}^3$  is  $6.0 \text{ kPa} \cdot \text{s/m}^2$  or more.

## 2.8 Corrosion-developing capacity

No performance determined.

## 2.9 Retention of additives

The verification of the retention of additives according to the EOTA testing procedure ("In situ formed loose fill thermal insulation material and/or acoustic insulation material made of vegetable or animal fibres" Edition June 2003, Revision July 2009)<sup>8</sup> was passed.

## 2.10 Water absorption

No performance determined.

## 2.11 Emission of dangerous substances or radiation

Note: 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 Construction Products Directive, these requirements need also to be complied with, when and where they apply.

## 3 Attestation of conformity and CE marking

### 3.1 System of attestation of conformity

According to the decision 1999/91/EC of the European Commission<sup>9</sup> amended by decision 2001/596/EC<sup>10</sup> the system 3 of attestation of conformity applies.

In addition, according to the Decision 2001/596/EC of the European Commission, system 1 of the attestation of conformity applies with regard to reaction to fire.

These systems of attestation of conformity are defined as follows:

System 1: Certification of the conformity of the product by an approved certification body on the basis of:

(a) Tasks for the manufacturer:

- (1) factory production control;
- (2) further testing of samples taken at the factory by the manufacturer in accordance with a prescribed test plan;

(b) Tasks for the approved body:

- (3) initial type-testing of the product;
- (4) initial inspection of factory and of factory production control;
- (5) continuous surveillance, assessment and approval of factory production control.

System 3: Declaration of conformity of the product by the manufacturer on the basis of:

(a) Tasks for the manufacturer:

- (1) factory production control;

(b) Tasks for the approved body:

- (2) initial type-testing of the product.

<sup>9</sup>  
<sup>10</sup>

Official Journal of the European Communities L 29/44 of 03.02.1999  
Official Journal of the European Communities L 209/33 of 02.08.2001

Note: Approved bodies are also referred to as "notified bodies".

## 3.2 Responsibilities

### 3.2.1 Tasks of the manufacturer

#### 3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall insure that the product is in conformity with this European technical approval.

The manufacturer may only use initial materials stated in the technical documentation of this European technical approval.

The factory production control shall be in accordance with the control plan which is part of the technical documentation of this European technical approval. The control plan is laid down in the context of the factory production control system operated by the manufacturer and deposited at the Deutsches Institut für Bautechnik.<sup>11</sup>

The results of factory production control shall be recorded and evaluated in accordance with the provisions of the control plan.

#### 3.2.1.2 Other tasks of manufacturer

The manufacturer shall, on the basis of a contract, involve a body which is approved for the tasks referred to in section 3.1 for the construction product in order to undertake the actions laid down in section 3.2.2. For this purpose, the control plan referred to in sections 3.2.1.1 and 3.2.2 shall be handed over by the manufacturer to the approved body involved.

The manufacturer shall make a declaration of conformity, stating that the construction product is in conformity with the provisions of this European technical approval.

### 3.2.2 Tasks of approved bodies

The approved body shall perform the

- initial type-testing of the product,
- initial inspection of factory and of factory production control (for system 1),
- continuous surveillance, assessment and approval of factory production control (for system 1),

in accordance with the provisions laid down in the control plan.

The approved body shall retain the essential points of its actions referred to above and state the results obtained and conclusions drawn in a written report.

For initial type-testing the results of the tests carried out as part of the assessment for the European technical approval can be used, provided nothing changes in the production or at the factory. Otherwise the necessary initial type-testing shall be agreed on between Deutsches Institut für Bautechnik and the approved bodies involved.

The approved certification body involved by the manufacturer shall issue an EC certificate of conformity of the product stating the conformity with the provisions of this European technical approval (for system 1).

In cases where the provisions of the European technical approval and its control plan are no longer fulfilled the certification body shall withdraw the certificate of conformity and inform Deutsches Institut für Bautechnik without delay.

<sup>11</sup>

The control plan is a confidential part of the documentation of this European technical approval and only handed over to the approved bodies involved in the procedure of attestation of conformity. See section 3.2.2.



### 3.3 CE marking

The CE marking shall be affixed on the packaging or on the accompanying commercial document, e. g. the EC declaration of conformity. The letters "CE" shall be followed by the identification number of the approved certification body and be accompanied by the following additional information:

- the name and address of the producer (legal entity responsible for the manufacturer),
- the last two digits of the year in which the CE marking was affixed,
- the number of the EC certificate of conformity for the product (for system 1),
- number of the European technical approval,
- identification of the product (trade name),
- installation density depending on the area of application,
- filling weight,
- declared value of thermal conductivity,
- reaction to fire: class according to EN 13501-1, if necessary depending on end use conditions.

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

### 4.1 Manufacturing

The European technical approval is issued for the product on the basis of agreed data/information, deposited with Deutsches Institut für Bautechnik, which identifies the product that has been assessed and judged. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to Deutsches Institut für Bautechnik before the changes are introduced. Deutsches Institut für Bautechnik 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 insulating material shall only be installed in structures where it will be protected from wetting, weathering and moisture.

The installation instructions given by the manufacturer shall be taken into account. Machine installation of the insulating materials shall be performed by companies trained by the manufacturer. In case of processing under the addition of water it shall be ensured that the main share of water is evaporated before closing the cavity. The time period necessary for this depends on the climatic conditions of the surroundings. Only building materials allowing an evaporation of moisture may be used as facing.

The product shall be protected from moisture during installation. The insulating material shall not be exposed to compression loads. The conditions according to clause 1.2 shall be taken into account.

#### 4.2.1 Parameters for the design of construction works or parts of construction works

##### 4.2.1.1 Design value of thermal conductivity

The design value of thermal conductivity shall be laid down according to relevant national provisions.

##### 4.2.1.2 Nominal thickness

When calculating the thermal resistance, the nominal thickness of the insulation layer according to Table 4 shall be applied.



Table 4: Nominal thickness depending on processing

processing of the insulating material	nominal thickness
cavity insulation in walls	clear span of the filled cavity
cavity insulation in pitched roofs	clear span of the filled cavity
cavity insulation in floors, exposed insulation on horizontal, in case of machine processing also on moderately pitched areas ( $\leq 10^\circ$ )	installation thickness of the insulating material minus 13 %

The insulation layer shall have a constant installation thickness taking account of the nominal thickness. For that purpose suitable height marks shall be arranged in sufficient distances before the processing. The executing company shall check the installation thickness.

When blowing in 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.

#### 4.2.1.3 Water vapour diffusion resistance coefficient

For the determination of the diffusion-equivalent air layer thickness of the insulating material the water vapour diffusion resistance factor  $\mu = 1$  and/or 2 shall be used for calculating<sup>12</sup>.

#### 4.2.1.4 Use as insulating material for airborne sound insulation

When the insulating material is used for airborne sound insulation (cavity damping), the airborne sound insulation shall be determined in accordance with the relevant technical rules in force for the construction work at the place of use concerned.

#### 4.2.1.5 Installation density

Depending on the area of application the densities at built-in stage stated in Table 5 are to be observed.

Table 5: Densities depending on the area of application

Area of application	Installation density kg/m <sup>3</sup>
cavity insulation in walls, machine processing	44 - 65
cavity insulation in pitched roofs, machine processing	40 - 65
cavity insulation in walls and pitched roofs, manually processing	50 - 65
cavity insulation in floors, exposed insulation on horizontal, in case of machine processing also on moderately pitched areas ( $\leq 10^\circ$ )	25 – 65*
* In case of machine processing under the addition of water the density shall be at least 30 kg/m <sup>3</sup> .	

The density is determined by calculation as a quotient from the mass of the material brought in and the full volume. The executing company shall check the density.

#### 4.2.2 Executing companies

The insulating materials may only be machine processed by companies stated in a list of the manufacturer which have adequate experience in installing the material. Concerning this matter the manufacturer has to train these companies.

<sup>12</sup>

The most unfavourable value for the construction work shall be applied each.

The executing company shall issue a certificate which contains the following information with reference to this European technical approval for each application place:

- identification of the product (trade name),
- number of the European technical approval,
- executing company,
- building project and building component,
- date of installation,
- method of processing,
- installation thickness,
- wood-based board or board which is used with data concerning reaction to fire, thickness and density.

## **5 Indications to the manufacturer**

### **5.1 Packaging, transport and storage**

Packaging of the product shall be performed such that the insulating material is protected from moisture during transport and storage, unless other measures are foreseen by the manufacturer for this purpose.

### **5.2 Use, maintenance, repair**

In the information accompanying the CE marking the manufacturer shall specify that the product shall be installed following the installation instructions given by the manufacturer (in case of machine processing by trained companies according to 4.2.2 only) and that it is to be protected from moisture during transport, storage and installation (apart from installation under addition of water).

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*beglaubigt:*  
Iffländer