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Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment).

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European Technical Assessment ETA-16/0105 of 31/01/2017

English version prepared by ZAG

GENERAL PART

Organ za tehnično ocenjevanje, ki je izdal ETA *Technical Assessment Body issuing the ETA*	**ZAG Ljubljana**
Komercialno ime gradbenega proizvoda *Trade name of the construction product*	**LIQUIDPORE – Mineralischer Dämmstoff mit Verbundmaterialien zur Innen- und Außendämmung**
Družina proizvoda *Product family to which the construction product belongs*	**04: Zunanji toplotnoizolacijski sestavljeni sistem z ometom (ETICS) na osnovi mineralne celične izolacije Liquidpore®, namenjeni za izolacijo zunanjih zidov zgradb** *04: External Thermal Insulation Composite Systems with rendering (ETICS) on mineral cellular insulation Liquidpore® for the use as external insulation to walls of buildings*
Proizvajalec *Manufacturer*	**TT – Dämm Hameln GmbH** **Langes Feld 19** **31860 Emmerthal** **Germany**
Proizvodni obrat *Manufacturing plant*	**TT – Dämm Hameln GmbH** **Langes Feld 19** **31860 Emmerthal** **Germany**
Ta Evropska tehnična ocena vsebuje *This European Technical Assessment contains*	14 strani vključno z 1 prilogo, ki je sestavni del te tehnične ocene *14 pages including 1 annex which form an integral part of this technical assessment*
Ta Evropska tehnična ocena je izdana na podlagi Uredbe (EU) št. 305/2001 na podlagi *This European Technical Assessment is issued in according to Regulation (EU) No 305/2011, on the basis of*	Smernice za evropska tehnična soglasja ETAG 004, izdaja februar 2013, ki se uporablja kot EAD *Guideline for European Technical Approval ETAG 004, edition February 2013, used as EAD*

SPECIFIC PART

1 Technical description of the product

1.1 General

This product is an ETICS (External Thermal Insulation Composite System) with rendering - a kit comprising components which are factory-produced by the manufacturer or component suppliers. The ETICS manufacturer is ultimately responsible for all components of the ETICS specified in this ETA.

The ETICS kit comprises a prefabricated insulation product of mineral cellular lightweight concrete "Liquidpore®" to be bonded and mechanically fixed onto a wall. The methods of fixing and the relevant components are specified in the table below. The insulation product is faced with a rendering system consisting of one or more layers (site applied), one of which contains reinforcement. The rendering is applied directly to the insulating panels, without any air gap or disconnecting layer.

The ETICS may include special fittings (e.g. base profiles, corner profiles, ...) to treat details of ETICS (connections, apertures, corners, parapets, sills, ...). Assessment and performance of these components is not addressed in this ETA, however the ETICS manufacturer is responsible for adequate compatibility and performance within the ETICS when the components are delivered as a part of the kit.

1.2 Composition of the kit

1.2.1 Composition of the ETICS

The ETICS comprises the following: adhesive and mechanical fixings (anchors), insulation core, base coat reinforced with glass fibre mesh, key coat applied on the base coat, finishing coat and ancillary materials. The definition of the product and description of the components is following:

	Components (see § 2.2 for further description, characteristics and performances of the components)	**Coverage (kg/m²)**	**Thickness (mm)**
Insulation materials with associated methods of fixing	**Mechanically fixed ETICS using anchors with supplementary adhesive** • *Insulation product* **Liquidpore® boards**, impregnated with potassium-water glass mixture in aerosol form: (T. T. Dämm Hameln) Properties of LIQUIDPORE used are declared according Allgemeine bauaufsichtliche Zulassung Z-23.11-1795 (DIBt) - dimensiones: ± 2 mm - density: 226 - 260 kg/m³ - water vapour diffusion resistance coefficient μ: 2,4 - thermal conductivity λ: 0,0537 W/(mK) - dimensional stability 23°C/50% RH: 0,0 %; 23°C/90% RH: 0,0 % - compresive strength CS: 652 kPa / on thickness 100 mm (239 kPa / 30 mm) - tensile strength TR: 163 kPa / on thickness 100 mm (107 kPa / 30 mm) - reaction to fire: A1 • *Adhesive* **gräfix leicht 76 MS** – dry mix cement-lime based adhesive requiring addition of water (32.5 % - 6.5 l per 20 kg), applied on the whole surface of insulation • *Anchors* **gräfix 777 Ejot Schraubdübel** (EJOT Ejotherm STRU U)	/ 3.0 – 4.0 (powder)	40 to 100 /

	Components (see § 2.2 for further description, characteristics and performances of the components)	**Coverage (kg/m²)**	**Thickness (mm)**
Base coat	**gräfix leicht 76 MS** – dry mix cement-lime based adhesive requiring addition of water(32.5 % - 6.5 l per 20 kg), applied in three layers.	8.0 – 9.0 (powder)	6-8
Glass fibre mesh	**Glasfasergewebe Liquidpore** (WB 5000 – WIRBAU GmbH) Standard mesh (glass fibres mesh 165 g/m²; size 4.0 × 4.4 mm; openings 3.5 × 3.5 mm)	1.1 m²/m²	/
Key coat	**Rabolin 160,** key coat on calcit base**,** to be diluted with addition of 33 % of water	~ 0.18	/
Finishing coat	**gräfix Scheibenputz 608** – dry mix cement-lime based mortar requiring addition of water (22 - 24 % - 5.5 - 6.0 l per 25 kg), ribbed structure (2.0 mm / 3.0 mm / 5.0 mm)	3.5 – 5.8 (powder)	Regulated by particles size
Paint	**Rabolin 614 Silikat-Fassadenfarbe,** paint on silicate base**,** aplied in one layer, non-diluted	~ 0.35	/
Ancillary materials	Descriptions of the ancillary materials is to be in accordance with § 3.2.2.5 of the ETAG 004. The description and use of the appropriate materials remains under the ETA-holder's responsibility.		

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

2.1 Intended use

This ETICS is intended for use as external insulation of buildings' walls. The walls are made of masonry (bricks, blocks, stones, …) or concrete (cast on site or as prefabricated panels). The characteristics of walls shall be verified prior to use of the ETICS, especially regarding conditions for reaction to fire classification and for fixing of the ETICS either by bonding or mechanically. The ETICS is designed to give the wall to which it is applied satisfactory thermal insulation.

The ETICS is made of non load-bearing construction elements. It does not contribute directly to the stability of the wall on which it is installed, but it can contribute to durability by providing enhanced protection from the effect of weathering.

The ETICS can be used on new or existing (retrofit) vertical walls. It can also be used on horizontal or inclined surfaces which are not exposed to precipitation.

The ETICS is not intended to ensure the air-tightness of the building structure.

The choice of the method of fixing depends on the characteristics of the substrate, which could need preparation (see § 7.2.1 of the ETAG no. 004, used as EAD) and shall be done in accordance with the national instructions.

The provisions made in this European Technical Assessment (ETA) are based on an assumed intended working life of at least 25 years, provided that the conditions laid down in the following sections 2.2 – 2.5 for the packaging, transport, storage, installation are met and that the installed ETICS is subjected to an appropriate use, maintenance and repair as well. 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 product in relation to the expected economically reasonable working life of the works.

2.2 Manufacturing

The European Technical Assessment is issued for the ETICS on the basis of agreed data/information, deposited with the Zavod za gradbeništvo Slovenije (ZAG), which identifies the ETICS that has been assessed and judged. Changes to the ETICS or production process, which could result in the deposited data/information being incorrect should be notified to the ZAG before the changes are introduced. The ZAG 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.

2.3 Design and installation

The installation instructions including special installation techniques and provisions for the qualification of the personnel are given in the manufacturer's technical documentation. Design, installation and execution of ETICS are to be in conformity with national documents. Such documents and the level of their implementation in Member States' legislation are different.

Therefore, the assessment and declaration if performance are done taking into account general assumptions introduced in the chapter 7 of ETAG 004 used as EAD, which summarizes how information introduced in the ETA and related documents is intended to be used in the construction process and gives advice to all parties interested when normative documents are missing.

2.4 Packaging, transport and storage

The information on packaging, transport and storage is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made know to the concerned people.

2.5 Use, maintenance and repair

The finishing coat shall normally be maintained in order to fully preserve the ETICS performance. Maintenance includes at least:

- visual inspection of the ETICS
- the repairing of localised damaged areas due to accidents,
- the aspect maintenance with products adapted and compatible with the ETICS (possibly after washing or ad hoc preparation).

Necessary repairs should be performed as soon as the need has been identified.

It is important to be able to carry out maintenance as far as possible using readily available products and equipment, without spoiling appearance. Only products which are compatible with the ETICS shall be used.

The information on use, maintenance and repair is given in the manufacturer's technical documentation. It is the responsibility of the manufacturer(s) to ensure that this information is made know to the concerned people.

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

The identification tests and the assessment for the intended use of this ETICS according to the Essential Requirements were carried out in compliance with the ETA Guidance n. 004: External Thermal Insulation Composite Systems with Rendering- edition June 2013, used as EAD (called "ETAG 004, used as EAD", in this ETA).

3.1 Mechanical resistance and stability (BWR 1)

Not relevant.

3.2 Safety in case of fire (BWR 2)

3.2.1 Reaction to fire

Configuration	Maximum declared organic content of the rendering system (dry)	Declared flame retardant content of the rendering system	Thickness of the ETICS (mm)	Reaction to fire class acc. to SIST EN 13501-1
ETICS **» LIQUIDPORE – Mineralischer Dämmstoff mit Verbundmaterialien zur Innen- und Außendämmung«** (including the finishing coats as described in Clause A.)	base coat **< 1.6 %** finishing coat **< 1.8 %**	**0 %**	**60 mm – 80 mm**	**A2 – s1, d0**
Any other combination				**F**

Mounting and fixing

The assessment of reaction to fire is based on two tests (SIST EN 13823 and SIST EN ISO 1716:2010). The SBI test (SIST EN 13823) was done on a sample with insulation layer thickness 80 mm, (overall ETICS thickness 90 mm) and with insulation material type Liquidpore with apparent density 226 kg/m^3. *Determination of the gross heat of combustion (calorific value)* (SIST EN ISO 1716:2010) were done for all components.

For the SBI test this ETICS is mounted directly to a calcium silicate substrate (A2-s1, d0) with a minimum density of 820 kg/m^3.

The installation of the ETICS was carried out by the manufacturer, following the manufacturer's specifications (instruction sheet) using a single layer of the glass fibre mesh all over the test specimen (no overlapping glass fibres mesh).

The test specimens were prefabricated and did not include any joints. The panel edges were rendered. Anchors were not included in the tested ETICS as they have no influence on the test result.

Please note that in some member states the classification on the basis of SBI test is not accepted. Additional tests might be required e.g. large scale tests to demonstrate compliance with a member state's fire regulation.

Note: A European reference fire scenario has not been laid down for façades. In some Member States, the classification of ETICS according to EN 13501-1 might not be sufficient for the use in façades. An additional assessment of ETICS according to national provisions (e.g. on

the basis of a large scale test) might be necessary to comply with Member State regulations, until the existing European classification system has been completed.

3.3 Hygiene, health and environment (BWR 3)

3.3.1 Water absorption (capillarity test)

- Base coat **gräfix leicht 76 MS** - applied in 3 layers:
  - Water absorption after 1 hour < 1 kg/m²
  - Water absorption after 24 hours < 0.5 kg/m²

- Rendering system:
  Description of the ETICS: base coat **gräfix leicht 76 MS** – applied in 3 layers
  key coat indicated in the first, finishing coat in the second and paint in the third column of the table below

key coat	finishing coat	paint	**Water absorption after 1 hour**		**Water absorption after 24 hours**	
			< 1 kg/m²	≥ 1 kg/m²	< 0.5 kg/m²	≥ 0.5 kg/m²
Rabolin 160	Gräfix Scheibenputz 608	Rabolin 614 Slikat-Fassadenfarbe	**X**		**X**	

3.3.2 Watertightness

3.3.2.1 Hygrothermal behaviour

Hygrothermal cycles have been performed on a rigs in hygrothermal chamber. None of the following defects occur during the testing:

- blistering or peeling of any finishing,
- failure or cracking associated with joints between insulation product boards or profiles fitted with system,
- detachment of render,
- cracking allowing water penetration to the insulation layer.

The ETICS **is so assessed resistant to hygrothermal cycles**.

3.3.2.2 Freeze / thaw behaviour

For rendering systems with the finishing coat mentioned in this ETA the water absorption of both base coat and the rendering systems is less than 0.5 kg/m² after 24 hours and so the corresponding configuration of the ETICS is assessed as freeze/thaw resistant without further testing.

3.3.3 Impact resistance

The resistance to hard body impacts (3 and 10 Joules) lead to the following use categories:

Rendering systems:	Key coat	Finishing coat	**Double standard mesh** **Glassfasergewebe Liquidpore** (WB 5000 - WIRBAU)
Liquid Pore – Mineralischer Dämmstoff mit Verbund-materialien zur Innen- und Außendämmung ➢ insulation: **Liquidpore® boards** ➢ base coat in 3 layers: **gräfix 76 leicht MS** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**Rabolin 160**	**gräfix Scheibenputz 608,** covered with one layer of paint **Rabolin 614 Silikat-Fassadenfarbe**	Category III
	without any key coat and any finishing coat and/or paint		Category III

3.3.4 Water vapour permeability

Rendering systems:	Key coat	Finishing coat	**Equivalent air thickness s_d (m)**
Liquid Pore – Mineralischer Dämmstoff mit Verbund-materialien zur Innen- und Außendämmung ➢ insulation: **Liquidpore® boards** ➢ base coat in 3 layers: **gräfix 76 leicht MS** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**Rabolin 160**	**gräfix Scheibenputz 608,** covered with one layer of paint **Rabolin 614 Silikat-Fassadenfarbe**	**≤ 2.0** (Test result obtained with finishing coat "gräfix 608" ribbed structure, particle size 2.0 mm: **0.13**)

3.3.5 Dangerous substances

In addition to the specific clauses relating to dangerous substances contained in this European Technical Assessment, there may be other requirements applicable to the ETICS 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 Product Directive, these requirements need also to be complied with, when and where they apply.

3.4 Safety in use (BWR 4)

3.4.1 Bond strength

- Adhesive **gräfix 76 leicht MS** onto **substrate** and onto impregnated **Liquidpore® boards** (safety in use of the bonded ETICS)

	Conditionings		
	Initial state	**48 h immersion in water + 2 h 23°C/50% RH**	**48 h immersion in water + 7 days 23°C/50% RH**
Concrete	≥ 0.25 MPa	≥ 0.08 MPa	≥ 0.25 MPa
Liquidpore boards	**< 0.08 MPa***	≥ 0.03 MPa	**< 0.08 MPa**

*… failure occurs in the insulation product

- Base coat **gräfix 76 leicht MS** onto impregnated **Liquidpore® boards**:

Conditioning / Base coat	Initial state	Samples taken from the rig after the hygrothermal cycles	Samples after the freeze/thaw test
gräfix 76 leicht MS	**<0.08 MPa***	≥ 0.08 MPa	Test not required because freeze/thaw cycles not necessary

*… failure occurs in the insulation product

The ETICS can be installed only as **mechanically fixed ETICS using anchors with supplementary adhesive.**

3.4.2 Bond strength after ageing

Bond strength after ageing				
Rendering system	**Key coat**	**Finishing coat**	**Acceptance criteria** or failure occurs in the insulation product instead	**mean value**
Liquid Pore – Mineralischer Dämmstoff mit Verbund-materialien zur Innen- und Außendämmung ➢ insulation: **Liquidpore® boards** ➢ base coat in 3 layers **gräfix 76 leicht MS** ➢ key coat indicated in the second column ➢ finishing coat indicated in the third column	**Without** any key coat and any finishing coat and/or paint		≥ 0.08 N/mm² or failure in the insulation product	0.100 N/mm² *
	Rabolin 160	**gräfix Scheibenputz 608,** covered with one layer of paint **Rabolin 614 Silikat-Fassadenfarbe**		0.074 N/mm² *

*… failure occurs in the insulation product

The ETICS fulfils the acceptance criteria given in ETAG 004, used as EAD.

3.4.3 Fixing strength (displacement test)

Test not required because the ETICS fulfils the following criteria: E×d < 50000 N/mm.

(E: modulus of elasticity of both base coats - d: mean dried thickness of the base coats).

3.4.4 Wind load resistance

Safety in use of mechanically fixed ETICS **using anchors**.

The following values only apply for the combination (anchor's trade name) / (impregnated Liquidpore board's characteristics) mentioned in the first and second lines of each table.

- EJOT **Ejotherm STRU U** (ETA 04/0023)

Anchors for which the following failure loads apply			Plate diameter (mm)	60 or more*
Characteristics of the Liquidpore® boards for which the following failure loads apply			Thickness (mm)	≥ 60
			Tensile strength perpendicular to the face (kPa)	≥ 80
Failure loads (kN)	Anchors not placed at the panel joints *(pull through test)*		R_{panel}	Minimal: 0.57 Average: 0.60
	Anchors placed at the panel joints *(pull through test)*		R_{joint}	Minimal: 0.38 Average: 0.43

**Note: according to results of various research activities head plate diameter is the most influential parameter (assuming similar plate stiffness). Failure loads for larger plates are therefore expected to be higher, thus the given values are on the "safe side".*

For calculation the following formula shall be used:

$$R_d = \frac{R_{panel} \times n_{panel} + R_{joint} \times n_{joint}}{\gamma}$$

n_{panel}: number (per m²) of anchors not placed at the panel joints
n_{joint}: number (per m²) of anchors placed at the panel joint
γ: safety factor

3.4.5 Render strip tensile test

The mean value of the width of multiple cracks of base coat **gräfix 76 leicht MS** with the glass fibres mesh, measured at a render strain value of 0.8 % **in warp and weft direction** was between **0.05 and 0.10 mm.**

3.5 Protection against noise (BWR 5)

3.5.1 Airborne sound insulation

No performance assessed.

3.6 Energy economy and heat retention (BWR 6)

3.6.1 Thermal resistance

The thermal transmittance of the substrate wall covered by the ETICS is calculated in accordance with SIST EN ISO 6946:

$U = U_c + \chi_p.n$, where:

$\chi_p.n$ has only to be taken into account if it is greater than 0.04 W/(m².K)

U: global thermal transmittance of the covered wall (W/ (m².K))

n: number of anchors (through insulation product) per m²

χ_p: local influence of thermal bridge caused by an anchor. The values listed below can be taken into account if not specified in the anchor's ETA:

= 0.002 W/K for anchors with a stainless steel screw covered by plastic anchors and for anchors with an air gap at the head of the screw ($\chi_p.n$ negligible for n < 20)

= 0.004 W/K for anchors with a galvanized steel screw with the head covered by a plastic material ($\chi_p.n$ negligible for n < 10)

= negligible for anchors with plastic nails (reinforced or not with glass fibres)

U_C: thermal transmittance of the current part of the covered wall (excluding thermal bridges) (W/ (m².K)) determined as follows:

$$U_c = \frac{1}{R_i + R_{render} + R_{substrate} + R_{se} + R_{si}}$$

Where:

R_i: thermal resistance of the insulation product - thermal resistance of Liquidpore® boards used are declared in Allgemeine bauaufsichtliche Zulassung Z-23.11-1795 (DIBt) ((m².K)/W)

R_{render}: thermal resistance of the render (about 0.02 (m².K)/W)

$R_{substrate}$: thermal resistance of the substrate of the building (concrete, brick …) ((m².K)/W)

R_{se}: external superficial thermal resistance ((m².K)/W)

R_{si}: internal superficial thermal resistance ((m².K)/W)

The value of thermal resistance of each insulation product shall be given in the Declaration of performance along with the possible range of thicknesses. In addition, the point thermal conductivity of anchors shall be given when anchors are used in the ETICS.

3.7 Sustainable use of natural resources (BWR 7)

No performance assessed.

3.8 Characteristics of the components

3.8.1 Insulation product

For mechanically fixed ETICS, uncoated boards, made of cellular mortar (Liquidpore) according to Allgemeine bauaufsichtliche Zulassung Z-23.11-1795 (DIBt) are used and having the description and characteristics defined in the table below.

Description and characteristics		Liquidpore® boards
Reaction to fire / SIST EN 13501-1		**A1**
Thermal resistance ((m².K)/W)		Defined in Allgemeine bauaufsichtliche Zulassung Z-23.11-1795 (DIBt)
Thickness (mm) / SIST EN 823		± 2 mm
Length (mm) / SIST EN 822		± 2 mm
Width (mm) / SIST EN 822		± 2 mm
Squareness (mm) / SIST EN 824		± 2 mm
Flatness (mm) / SIST EN 825		± 2 mm
Surface condition		Cut surface on one side, molded surface on the other side
Dimen-sional stability under:	specified temperature and humidity / SIST EN 1604	23°C / 90% RH: 0,0 %
	laboratory condition / SIST EN 1603	23°C / 50% RH: 0,0 %
Water absorption (partial immersion) / SIST EN 1609		$0.95\ kg/m^2 < 1\ kg/m^2$
Water vapour diffusion resistance factor (μ) / SIST EN 12086 – SIST EN 13163		**2.4**
Tensile strength perpendicular to the faces in dry conditions / SIST EN 1607		**≥ 80 kPa**
Shear strength (N/mm²) / SIST EN 12090		**≥ 0.02**
Shear modulus (N/mm²) / SIST EN 12090		**≥ 1.0**

3.8.2 Anchors

Plastic anchors (used as a fixing device in mechanically fixed system):

Trade name	Plate diameter (mm)	Characteristic pull-out strength of anchor
EJOT Ejotherm STRU U	> 60	See ETA – 04/0023

3.8.3 Glass fibres mesh

Standard glass fibres mesh.

			Alkalis resistance			
			Residual strength after ageing - mean value (N/mm)		Relative residual resistance after ageing of the strength in the as delivered state (%)	
	Weight (g/m^2)	Openings (mm)	Warp	Weft	Warp	Weft
Glassfasergewebe Liquidpore (WB 5000 - WIRBAU)	165	3.5 × 3.5	**≥ 20**	**≥ 20**	**≥ 50**	**≥ 50**

4 Assessment and verification of constancy of performance (AVCP)

According to the decision 97/556/EC of the European Commission1 amended by the the European Commission decision 2001/596/EC, the AVCP systems (further described in Annex V to Regulation (EU) No 305/2011) 1 and 2+ apply.

Product(s)	Intended use(s)	Level(s) or class(es) (Reaction to fire)	System(s)
External thermal insulation composite systems/kits (ETICS) with rendering	in external wall subject to fire regulations	A1 (1), A2 (1), B (1), C (1)	1
		A1 (2), A2 (2), B (2), C (2), D, E, (A1 to E) (3), F	2+
	in external wall not subject to fire regulations	any	2+

(1) 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)

(2) Products/materials not covered by footnote (1)

(3) Products/materials that do not require to be tested for reaction to fire (e.g. Products/materials of Classes A1 according to Commission Decision 96/603/EC)

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

Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited at ZAG Ljubljana.

Issued in Ljubljana on 31. 1. 2017

Signed by:

Franc Capuder, M.Sc.

Head of Service of TAB

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1 Official Journal of the European Communities L 254 of 8.10.1996

2 The Control plan is a confidential part of the technical documentation of this European Technical Assessment, but not published together with the ETA, and handed over only to the approved body or bodies involved in the procedure of attestation of conformity.

Use ETICS
Adhesive gräfix leicht 76 MS
Insulation Liquidpore® boards
Base coat gräfix leicht 76 MS
Glass fibre mesh Glassfasergewebe Liquidpore (WB 5000 – WIRBAU)
Keycoat Rabolin 160
Finishing coats gräfix Scheibenputz 608
Paint Rabolin 614 Silikat-Fassadenfarbe
Anchors gräfix 777 Ejot Schraubdübel = EJOTHERM STRU U

Liquid Pore – Mineralischer Dämmstoff mit Verbundmaterialien zur Innen- und Außendämmung	**Annex A1**
Trade names of the components	