SINTEF

SINTEF Certification

No. 20470

Technical Approval

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Provided listed on www.sintefcertification.no

SINTEF Building and Infrastructure confirms that

JUBIZOL Rendering System

has been found to be fit for use in Norway and to meet the provisions regarding product documentation given in the regulation relating to the marketing of products for construction works (DOK) and regulations on technical requirements for building works (TEK), with the properties, fields of application and conditions for use as stated in this document

1. Holder of the approval

JUB kemična industrija d.o.o.
Dol pri Ljubljani 28
1262 Dol pri Ljubljani
Slovenia

2. Product description

JUBIZOL Rendering System an external thermal insulation composite system (ETICS) for use on load-bearing walls, see figure 1. The system consists of slabs of mineral wool or EPS boards which are bonded to the substrate and also fixed with fastening plugs. The render consists of, in addition to a primer, two material layers, one ground layer and one finishing coat/final layer. The ground layer is reinforced with an embedded fiberglass mesh. The weight of the system is respectively 16-44 kg/m² (depends on thickness of insulation) for JUBIZOL Mineral Wool, and 12-15 kg/m² for JUBIZOL EPS (depends on thickness of insulation).

Detailed performance of the system is described in *Standard konstruksjonsdetaljer for JUBIZOL Fasadeisoleringssystem tilhørende SINTEF Teknisk Godkjenning 20470* (structural details collection). The version of the structural details collection is archived at SINTEF, and is a formal part of the Approval.

The system is installed on site.

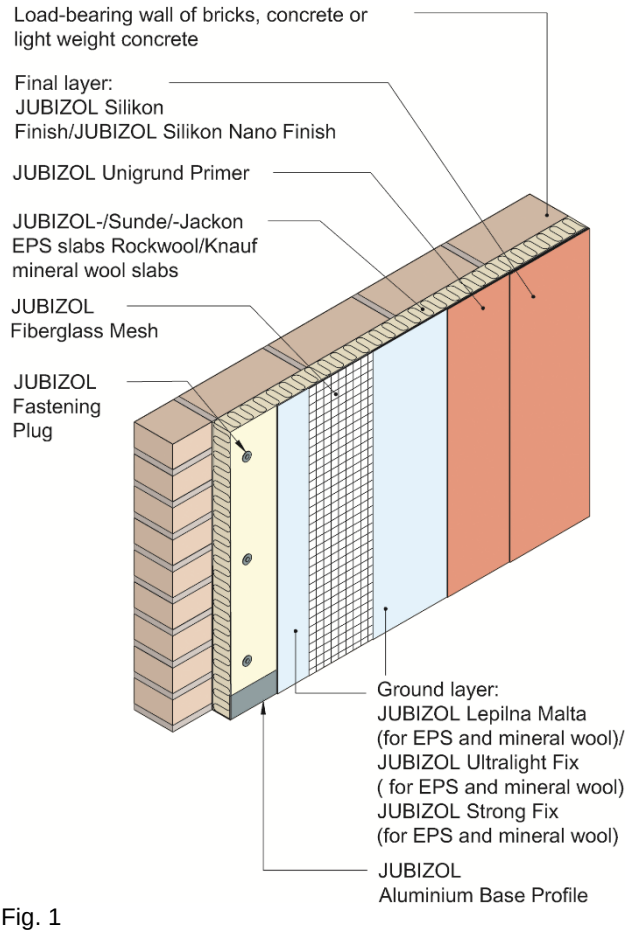

Fig. 1
JUBIZOL Rendering system

This approval comprises the following products:

Mineral wool insulation
- Knauf Mineral Slabs
- Rockwool Hardrock Mineral Slabs

EPS insulation
- JUBIZOL EPS F-G
- JUBIZOL EPS F-W
- JUBIZOL EPS F035
- Jackon Super EPS ® Fasadeplate
- Jackopor 100 ® Fasadeplate
- Sundolitt ® Climate C 80

Mortars/adhesives
- JUBIZOL Lepilna Malta ground layer/adhesive
- JUBIZOL Ultralight Fix ground layer/adhesive
- JUBIZOL Strong Fix (ground layer/adhesive
- JUBIZOL Silicone Finish (final layer)
- JUBIZOL Silicone Nano Finish (final layer)

Primer/adhesive:
- Unigrund Primer (primer)
- JUBIZOL Purquickfix (adhesive insulation slabs)

Mesh:
- JUBIZOL Fiberglass Mesh

Fastener:
- JUBIZOL Fasteners for masonry and concrete

Accessories
- JUBIZOL Corner Profile
- JUBIZOL Base Profile
- JUBIZOL Window Profile Standard
- JUBIZOL Snap-on Profile
- JUBIZOL Practic Profile
- JUBIZOL Shutter Profile
- JUBIZOLRoof-edge Joint
- JUBIZOL Window Profile 2D
- JUBIZOLWindow Profile 3D
- JUBIZOL Diletation E Profile
- JUBIZOL Diletation V Profile
- JUBIZOL Flex Corner Profile
- JUBIZOL Drip-Profile Light
- JUBIZOL Drip-Profile
- JUBIZOL Stop-Profile

All profiles are made of either aluminium or PVC.

Thermal insulation
Knauf Mineralull Slabs or Rockwool Hardrock Slabs are used as thermal insulation of mineral wool. Both boards shall fulfil the requirements in NS-EN 13162 with declared thermal conductivity λ_D=0,034-0,040 W/mK and compressive strength minimum class CS(10)20.

JUBIZOL EPS F-G, JUBIZOL EPS F-W, JUBIZOL EPS F035, Jackon Super EPS ® Fasadeplate, Jackopor 100 ® Fasadeplate or Sundolitt ® Climate C 80. are used as thermal insulation of EPS. The boards shall fulfil the requirements in NS-EN 13163 with declared thermal conductivity λ_D=0,031-0,039 W/mK and compressive strength minimum class CS(10)70.

The insulation boards are adhered to the surface by using JUBIZOL Lepilna Malta, JUBIZOL Ultralight Fix, JUBIZOL Strong Fix or Tekapur PU. The boards shall also be mechanically fixed to the surface by using JUBIZOL Fasteners for masonry and concrete.

Ground layers
JUBIZOL Lepilna Malta, JUBIZOL Ultralight Fix or JUBIZOL Strong Fix are used for the ground layer. These mortars are based on lime/cement modified with organic binders.

JUBIZOL Lepilna Malta, JUBIZOL Ultralight Fix and JUBIZOL Strong Fix are delivered as powder in bags of 20 kg. The powder are mixed with water in 20-23 % ratio. Consumption of materials is 5-8 kg/m² which gives an average render thickness of 4-6 mm.

The ground layer is applied in two layers.

Mesh reinforcement
JUBIZOL Fiberglass Mesh is used to reinforce the base coat render. The net is white and made of alkali fiberglass with a maximal mesh width of 5 mm and a minimum weight of 145 g/m². The fibre mesh is delivered on rolls of 1 m width (50 m²).

The mesh has to be embedded in the outer part of the first layer of the ground layer and has to be installed continuous over all corners.

Final layers
JUBIZOL Silicone Finish or JUBIZOL Silicone Nano Finish are used as final layers.

All final layers can be delivered in required colours with granular size from 1,5-2,5 mm.

Primer is applied on the ground layer before the final layer.

Minimum total thickness of the render shall be 5,5 mm.

3. Fields of application

JUBIZOL Mineral Wool can be used as external thermal facade insulation with reinforced render on buildings in hazard class 1-6 and fire class 1-3.

JUBIZOL EPS can be used as external thermal facade insulation with reinforced render on buildings in hazard class 1-5 and fire class 1.

4. Properties

Thermal insulation

Thermal transmittance coefficient, U-value, for structures with JUBIZOL Rendering System has to be calculated for each project. Declared thermal conductivity for the insulation slabs depends on type of insulation, see chapter 2. U-values for some constructions are given in Byggforskserien 471. 451 *U-verdier. Vegger over terreng - betong*, 471.471 *U-verdier. Vegger over terreng av murte poreblokker*, 471.411 *U-verdier. Vegger over terreng med bindingsverk av tre med kontinuerlig utvendig isolasjon.*

The rendering system has satisfactory strength and rigidity in relation to all relevant wind loads when the capacity is controlled and the boards are installed as specified in section 6.

Mean measured pull through resistances for JUBIZOL Fastening plugs are given in table 1 and table 2.

Table 1
Pull through resistances for JUBIZOL Fastening plugs with boards of mineral wool

Fastening plug	MW slab thickness (mm)	R_{panel} (kN)	R_{joint} (kN)
EJOT Ejotherm STR-U 2G	> 60	0,402	0,294
EJOT H3	> 60	0,264	0,190

Table 2
Pull through resistances for JUBIZOL Fastening plugs with EPS slab

Fastening plug	EPS slab Thickness (mm)	R_{panel} (kN)	R_{joint} (kN)
EJOT Ejotherm STR-U 2G	> 60	0,678	0,621
EJOT Ejotherm STR-U 2G	> 120	1,100	0,833
EJOT H1 eco	> 60	0,636	0,597
EJOT H1 eco	> 120	0,759	0,612
EJOT H3	> 60	0,574	0,536

Reaction to fire

JUBIZOL Mineral Wool has class A2-s1,d0 in accordance to EN 13501-1 on substrates of plaster, bricks, concrete and light weight concrete

JUBIZOL EPS has class B-s1,d0 according to EN 13501-1, used on incombustible substrates in fire class minimum A1 or A2-s1,d0.

Durability

JUBIZOL Mineral wool and JUBIZOL EPS, together with reinforcement mesh, fastening plugs and accessories, has been exposed for accelerated artificial ageing according to NT Build 495. The system is evaluated after exposure in 28 days (large scale test specimen) and 18/48 weeks (small scale specimens), and is considered to have satisfactory durability against climate stress.

5. Environmental aspects

Substances hazardous to health and environment

The product contains no hazardous substances with priority in quantities that pose any increased risk for human health and environment. Chemicals with priority include CMR, PBT or vPvB substances.

Application of Jubizol Purquickfix may cause the isocyantes to be released Products containing isocyanates must be treated with special care when used.

Effect on soil, surface water and ground water

The leaching properties to soil and water have not been tested.

Waste treatment/recycling

The product shall be sorted as metal and residual waste. The product shall be delivered to an authorized waste treatment plant for material recovery, energy recovery or diposal.

Non dry or non hardened components are defined as hazardous waste (according to the Norwegian Waste Regulation (Avfallsforskriften)). The components must be sorted as hazardous waste on the building site, and be delivered to an authorized treatment plant for hazardous waste. The dried or hardened components are not hazardous waste.

Environmental declaration

No environmental declaration (EPD) has been worked out for the product.

6. Special conditions for use and installation

Design considerations

Design considerations has to be performed for each building project according to TEK (Norwegian building regulation), SINTEF Technical Approval No. 20470 and the manufacturer's installation guides.

Surface

There must be no cavities behind the insulation boards which can reduce the effect of the thermal insulation. Requirements for straightness must be specified for each project. The wall structure behind the insulation system must be clean and dry when assembly of the system starts.

The insulation boards has to be assembled in a way that the surface is smooth and without irregularities so the minimum thickness for the render can be achieved.

Anchoring

Mechanical fixing of the insulation slabs shall be dimensioned in each building project on the basis of actual wind load, the capacity of the fasteners in the substrate, and the pull through capacity for the fasteners through the insulation slabs (dimensional pull through capacity).

Construction details

Construction details shall be carried out in accordance with the principles shown in Byggforskserien 542.303 *Fasadesystemer med puss på isolasjon*, and according to *Standard konstruksjonsdetaljer for JUBIZOL Fasadeioleringssystem tilhørende SINTEF Teknisk Godkjenning 20470.*

Sliding joints in the facade system are only used if there are sliding joints in the underlying wall structure or other defined by the system manufacturer.

7. Factory production control

The product is produced by JUB kemična industrija d.o.o. Dol pri Ljubljani 28, 1262 Dol pri Ljubljani, Slovenia.

The holder of the approval is responible for the factory production control in order to ensure that the product is produced in accordance with the preconditions applying to this approval.

The manufacturing of the product is subject to continuous surveillance of the factory production control in accordance with the contract regarding SINTEF Technical Approval.

The manufacturer has a quality system which is certifired according to ISO 9001 by SIQ (certificate No. Q-159) and an environmental control system which is certified by SIQ (certificate No. E-034) according to ISO 14001.

8. Basis for the approval

The approval is based on the following documentation:

- SINTEF report 102013505-4, dated 30.05.2017, Artificial climate aging of JUB Rendering system – Mid-term evaluation (artificial ageing)
- Klassifiseringsrapport P 0351/12-530-6 ETICS JUBIZOL MW, ZAG, datert 13.09.2011 (brannklassifisering)
- Klassifiseringsrapport P 0983/11-530-3 ETICS JUBIZOL EPS, ZAG, datert 13.09.2011 (brannklassifisering)
- SINTEF report 102013505-4, dated 18.03.2018, Artificial climate aging of JUB Rendering system – Final evaluation (artificial ageing)

9. Marking

Pallets and mortar bags are marked with the name of manufacturer, product name and manufacturing date.

The facade system is CE marked in accordance with ETA-10/0334 (mineral wool) and ETA 09/0393 (EPS).

The approval mark for SINTEF Technical Approval No. 20470 may also be used.

Approval mark

10. Liability

The holder/manufacturer has sole product responsibility according to existing law. Claims resulting from the use of the product cannot be brought against SINTEF beyond the provisions of Norwegian Standard NS 8402

for SINTEF Byggforsk

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Approval Manager