JUBIZOL S JUBIZOL MP JUBIZOL ML
JUBIZOL S-2 JUBIZOL MP-2 JUBIZOL ML-2
JUBIZOL EPS

CE

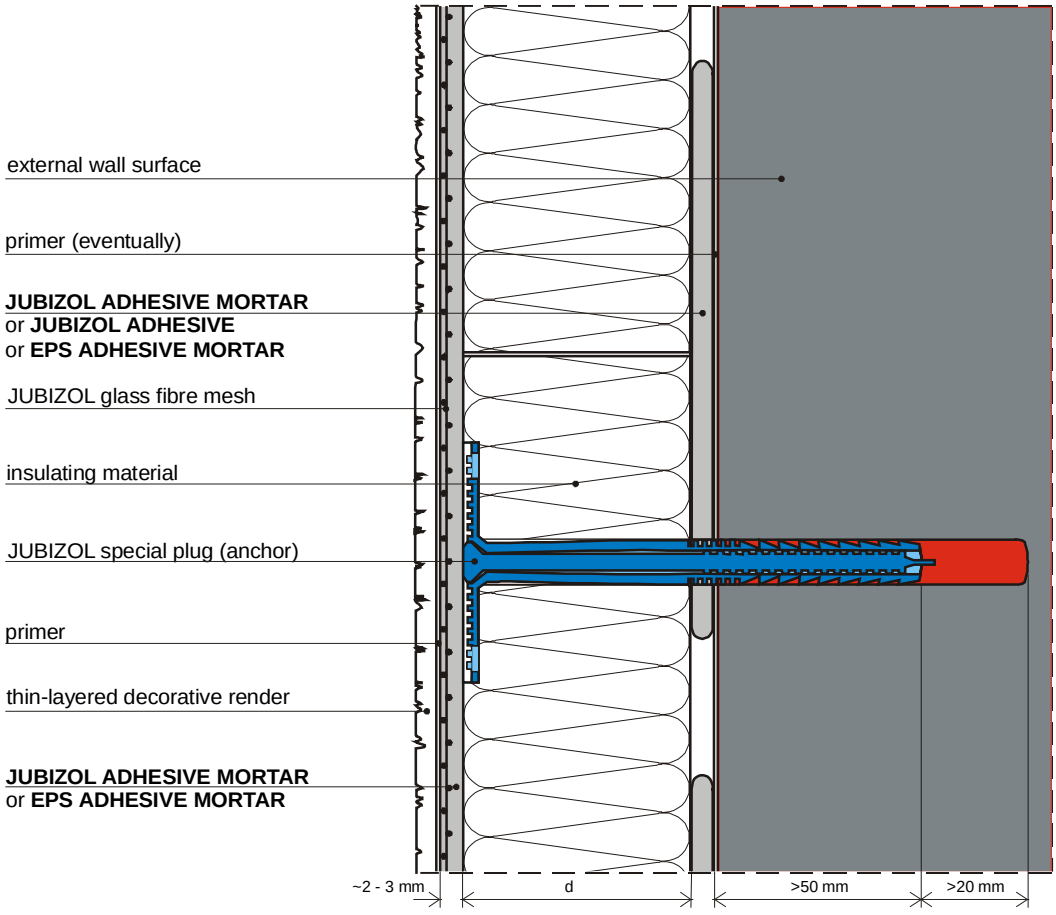
General Description and Fields of Application

JUBIZOL façade is an external thermal insulation composite system (**ETICS**). It can be applied to new and old buildings of any purpose.

JUBIZOL S/S-2/EPS: insulation product in façade thermal insulation system are expanded polystyrene boards (EPS boards).

JUBIZOL MP/MP-2 : insulation product in façade thermal insulation system are are mineral wool boards.
JUBIZOL ML/ML-2: insulation product in façade thermal insulation system are mineral wool lamellas.

Thermal insulation boards are bonded with one type of **JUBIZOL adhesive mortar** and if necessary additionally fixed with special anchors to the outer wall surface and reinforced with one type of **JUBIZOL base coat** in which **JUBIZOL glass fiber mesh** is embedded. As a final coat various mineral, silicate, acrylic and silicone based **JUB decorative renders** are used. Diverse structure of renders and large selection of colour shades will satisfy even the most demanding customer.



JUBIZOL FAÇADE

The choice of thermal insulation system: EPS-based or mineral wool-based depends on purpose and height of the building and also on national and regional regulations.
EPS prevails all over Europe (over 85%) in individual building constructions and in buildings, which are up to 20 m high. In higher buildings mineral wool is more commonly used.

The thickness of the insulation lining must be determined for each particular case separately, using a suitable physical calculation (project documentation). The usual thickness of the insulation lining is from 6 - 10 cm.

Energy saving is not the only reason for optimal insulation of outer walls. Thermal insulation contributes beneficially to pleasant and healthy residential conditions, durability of building construction and indirectly also to the protection of atmosphere.

The optimal thermal insulation doesn't depend only on a good and properly insulated façade, it also depends on the insulation of roof and cellar, number and size of windows, and shape and position of the building.

JUBIZOL ETICS	**JUBIZOL S**	**JUBIZOL MP**	**JUBIZOL ML**
Insulating boards	EPS ("styropor") board according to EN 13163 and ETAG 004	mineral wool façade boards according to EN 13162 and ETAG 004	mineral wool façade lamellas according to EN 13162 and ETAG 004
Adhesive and base coat	JUBIZOL ADHESIVE MORTAR (JUBIZOL LEPILNA MALTA)	JUBIZOL ADHESIVE MORTAR (JUBIZOL LEPILNA MALTA)	JUBIZOL ADHESIVE MORTAR (JUBIZOL LEPILNA MALTA)
JUBIZOL ETICS	**JUBIZOL S-2**	**JUBIZOL MP-2**	**JUBIZOL ML-2**
Adhesive	JUBIZOL ADHESIVE (JUBIZOL LEPILO)	JUBIZOL ADHESIVE (JUBIZOL LEPILO)	JUBIZOL ADHESIVE (JUBIZOL LEPILO)
Base coat	JUBIZOL ADHESIVE MORTAR (JUBIZOL LEPILNA MALTA)	JUBIZOL ADHESIVE MORTAR (JUBIZOL LEPILNA MALTA)	JUBIZOL ADHESIVE MORTAR (JUBIZOL LEPILNA MALTA)
JUBIZOL ETICS	**JUBIZOL EPS**		
Adhesive and base coat	EPS ADHESIVE MORTAR (EPS LEPILNA MALTA)	NOT SUITABLE	NOT SUITABLE
Additional Jubizol components	JUBIZOL Glass fibre mesh (according to ETAG 004), fixing plastic anchors (according to ETAG 014)		
Additional mechanical fixing	depends on type of the substrate and height of the buiding	required	depends on type of the substrate and height of the buiding
Finish decorative renders	acrylic silicon silicate mineral	silicon, acrylic* silicate mineral	silicon, acrylic* silicate mineral
		* The use of acrylic renders with the JUBIZOL MP/MP -2 and JUBIZOL ML/ML-2 systems is both in construction and physical sense possible, however such system (although based on non-inflammable boards made of mineral wool) is not classified in the A 2 Class.	
Fire safety of the system (EN 13501-1)	B – s1, d0 hardly-flammable	A2–s1, d0 non-flammable	A2–s1, d0 non-flammable
Initial type testing, continuous surveillance	All the systems have ETA (European Technical Approval) issued by OIB-Vienna and ZAG-Ljubljana.		

Application of JUBIZOL FAÇADE

The construction works that must be completed on the building, prior to insulation works on the façade.

Application of the façade thermal-insulating system, should not take place prior to finishing

the following works on the building:
All roof works, including: roofing and all roof-plumbing works (gutters, siding and downpipes, etc.), installation of door and window frames on the façade of the building, installation and fitting of window shelves made of natural or artificial stone (except in the cases, when door and window frames are installed on the outer edge of the façade walls), plasters on interior wall and ceiling surfaces, concrete floors and cement overlays, application and fitting of all instillations located on the façade, branch and junction boxes (electricity, telephone, door phone, cable-TV), elements for fastening of wall lights, boards, façade signs, flag holders, etc.

Substrate

Insulation boards can be fixed to any leveled, solid, dry and clean substrate. Newly applied renders must be dried for 3-4 weeks (for each cm, at least 7 – 10 days), for concrete the drying time is at least one month
(T = +20 ºC, R.H. = 65 %).
Surface levelness: ± 0,5 cm/ 3m. Larger uneven areas on the surface must be leveled by rendering and never by application of thicker layer of the adhesive. Thick application of the fine-grain adhesive causes cracking of the dried adhesive, shifting of insulation boards and typical appearance of vertical and horizontal cracks on the surface of the system. Do not apply any primers to the clean brick wall surfaces, prior to fixing of insulation boards; other surfaces should be coated with a thinned AKRIL EMULSION (water : AKRIL EMULSION = 1 : 1; Coverage 100 -150 g/m^2), **Suitable surfaces:** brick, concrete, aerated concrete, fiber-cement boards, mineral renders. Fixing to the old tighly adhered façade coatings is possible, with additional mechanical fixings. All loose and weakly adhered decorative coats must be removed. Surfaces infected with wall mould or algae must be disinfected and cleaned, prior to coating. Washing with a jet of hot water or steam is especially recommended for all concrete surfaces.
Unsuitable surfaces: wood, metal and plastic surfaces.

Preparation of the mortar compound for fixing of insulation boards and making the base coat.

JUBIZOL ADHESIVE MORTAR is a dry mix microfibre reinforced polymer-cement-based **adhesive mortar and base coat** for the ETCS JUBIZOL S/MP/ML. It is suitable for fixing of EPS and XPS boards and also mineral wool boards and lamellas.
Composition:
Cement, organic additives and mineral aggregates, special water-repellent additives and micro-reinforced fibers.
Colour Shade: gray

JUBIZOL ADHESIVE is a dry mix polymer-cement-based **adhesive mortar** for the ETICS JUBIZOL S-2/MP-2/ML-2.
Composition:
Cement, organic additives and mineral aggregates, special water-repellent additives.
Colour Shade: yellow-gray.
Base coat in the above mentioned systems is JUBIZOL ADHESIVE MORTAR

EPS ADHESIVE MORTAR is a dry mix microfibre reinforced polymer-cement-based **adhesive mortar and base coat** for the ETCS JUBIZOL EPS (EPS boards only).
Composition:
Cement, organic additives and mineral aggregates, special water-repellent additives and micro-reinforced fibers.
Colour Shade: gray

The adhesive mortar and base coat mortar is prepared in the concrete mixer or in appropriately large plastic container, if mixed manually. Add approximately 20 % water to the dry compound (pour the compound in water Leave the compound for 5 to 10 minutes to swell up, then mix it again and add some water, if necessary. Mortar must be free of lumps before using.
Pot life: 2 - 3 hours, depending on the weather conditions.

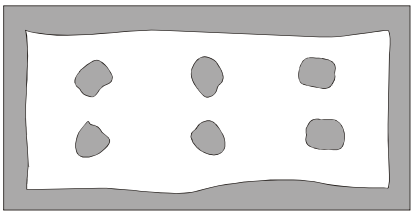
Fixing (adhesive mortar)

Lower or first row of insulation boards.
The support for the first layer of insulation boards is usually the edge of the foundation on the

lower concrete slab of the building.
If the plinth is not thermal-insulated and the thermal insulation ends elsewhere on the wall surface, then the bottom layer of boards can be supported by a metal starter strip, which is fixed to the wall at the correct height. The width of the Jubizol metal starter strip corresponds to thickness of the insulation board. The base lath protects the lower edge of the insulating system against the damage and allows fixing of the lower row of boards or lamellas as horizontal as possible and forms an adequate draining edge.

Attention
XPS or mineral wool boards are not suitable for the thermal insulation of walls below ground level. In this case XPS boards should be used.
They are also recommended for protection of the plinth. The thermal insulation on the plinth area must reach at least 40cm below the ceiling slab in the cellar, to prevent the thermal bridge effect.

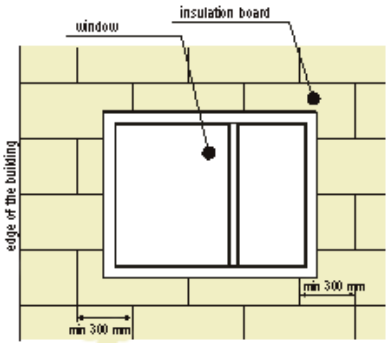
The adhesive mortar should be applied in strips along the edges of the insulation boards, as well as in the middle part of the boards in the form of strips and larger blobs, so that approximately 40-50 % of the area of the boards is covered by mortar. The mortar must not be applied only in the form of spots.



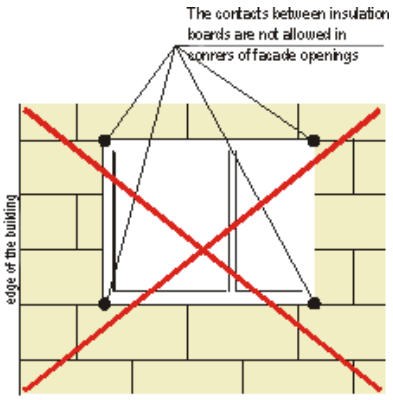
APPLICATION OF THE ADHESIVE

The application of adhesive to the whole surface of boards using a stainless steel notched trowel (the width and depth of the teeth should be 8 – 12 mm) is possible only on very smooth surfaces and necessary when fixting the smaller insulation boards and mineral wool lamellas.

Insulation boards should be fixed to the wall using the usual methods of masonry connection. They should be placed tightly against one another, and adjoining surfaces must be clean and free of any adhesive mortar. If there any cracks these should be filled in with thin pieces of insulation product. At corners the insulating boards have to be cut off straight. The boards should extend at least couple of cm over the outer surface of the next wall, so-called cross bond should be preformed on edges. Cut the excessive part of boards on edges straight, however not before 2 – 3 days after the fixing. The evenness of the whole insulating layer has to be continually checked using a long lath.
By normal weather conditions (air and wall surface temperature from +5 ºC to +35 ºC, R.H. 65%), the drying time is 2 –3 days. Afterwards, the eventual additional mechanical fixing of boards and application of base coat can be done.



CORRECT



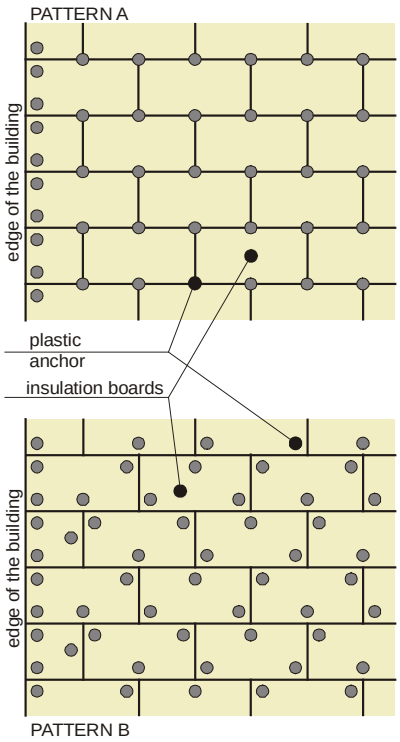
INCORRECT

Additional mechanical fixing of insulation boards

The necessity for additional mechanical fixing of ETICS depends on the quality of the substrate, weight of the whole system and height of the building. It is mostly used for protection of the contact façade against the wind load.
JUBIZOL S/S-2/EPS: additional mechanical fixing is necessary on buildings, higher that 8 m.
JUBIZOL MP/MP-2: the additional mechanical fixing is

necessary, regardless of the building height.
JUBIZOL ML/ML-2: additional mechanical fixing is necessary in buildings, higher than 20 m.

Additional mechanical fixing is also necessary, on surfaces with low carrying capacity and on those covered with tightly adhered façade coatings, regardless of the building height.



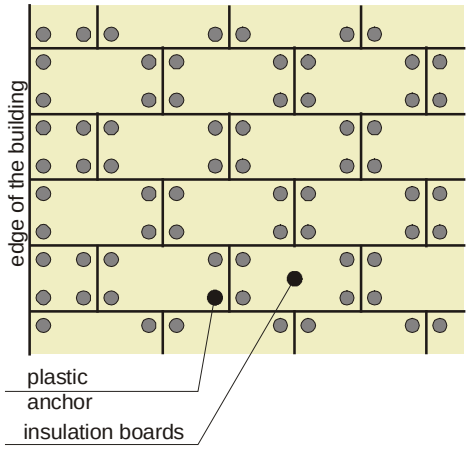
mechanical fixing of EPS boards– patterns A and B

National (regional) regulations should be also considered, when using the additional mechanical fixing.
Insulation boards are additionally mechanically fixed with 6 – 8 special plastic anchors (nail-in or screw-in) per m^2. Use more anchors when fixing boards in corners (8-14 anchors/m^2).
The anchors can be arranged in many different ways.
The depth should be at least 50mm for the classic wall surfaces – the drilled holes should be at least 20 mm deeper.
The additional mechanical fixing of EPS boards should be preformed prior to application of base coat.

Mechanical fixing of mineral wool boards and lamellas
The boards made of mineral wool must be mechanically fixed already during the bonding phase. On buildings higher than 20 m – depending on the position of the building – the boards can be additionally mechanically fixed over glass fibre reinforcement mesh in a raster of 100 cm x 100 cm (4 anchors/ m^2).

The lamellas made of mineral wool are usually not mechanically fixed up to 20m of height. If the height of the insulation lining is higher than one floor, additionally fixed each lamella in the height of the floor using 2 anchors. For the buildings higher than 20 m perform the additional mechanical fixing over glass fibre reinforcement mesh in a raster of 100 cm x 100 cm (4 anchors/ m^2). Use more anchors when fixing boards in corners on higher buildings (6 anchors/m^2).

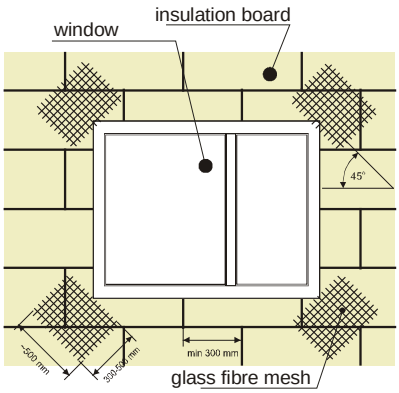
mechanical fixing of mineral wool boards



Reinforcing of edges and reveal borders, installation of dilatation profiles, additional diagonal reinforcing of edges of façade openings.
In areas where the insulation lining is interrupted due to dilatation joints, special dilatation profiles (in contact with existing buildings) must be installed.

The base coat and finish render is most effectively separated from window or door frames with a special dilatation profile made of hard plastic, which must be installed 3 days after the fixing of insulation boards or prior to application of the base coat. In case the special dilatation profiles were not used, to separate base coat from window and door frames, form approximately 2 – 3 mm joints, and fill them with the appropriate elastic joint sealer, after the application of the finish decorative plaster. Make the joints with a plastic trowel – in the V shape, when the plaster is still wet. The same method should be used for connecting the base coat with window sill and other façade elements made of natural or artificial stone, wood, plastic and other materials. Protect all edges and reveal borders using the JUBIZOL reinforcing corner

angles. In order to protect against the formation of cracks, edges of all façade openings (windows, doors) and also those for fitting of various installation and other boxes, must be additionally diagonally reinforced. The additional reinforcement is made using a JUBIZOL glass fibre mesh of sizes 30 - 50 cm x 50 cm, which are embedded in previously applied app. 2mm thick layer of adhesive mortar. These works should be also preformed 2 to 3 days after the bonding of insulation lining or prior to application of the base coat.



diagonal reinforcing of façade opening

Application of Base Coat

Using a rough sand paper Sand the EPS lining 2 - 3 days after the fixing, to level the eventual minor bulges and uneven spots. Use the **JUBIZOL ADHESIVE MORTAR** (**EPS ADHESIVE MORTAR**) as a base coat. Mortar compound is applied manually using a notched trowel (the width and depth of teeth should be 8 – 12 mm) or using a spraying machine (e.g. WAGNER PC 30, PC 25 etc.) in two coats.
The thickness of the lower coating is 2 – 3 mm, when reinforcing the EPS boards and app. 4 - 5 mm when reinforcing boards made of mineral wool or lamellas. Embed the JUBIZOL glass fiber mash in still-wet lower coating; apply the mesh in the direction from upper façade edge towards the floor. At joints, individual meshes should overlap each other by 10 to 20 cm. The mesh must be cut straight, on the edges of building and on the reveal borders. If the edges were not reinforced with the JUBIZOL reinforcing corner angles the mesh need to be bent over one another in order to fit.
In such case the folded mesh should be at least 20 cm wide on each side. Immediately after the application of the mesh (technique “wet on wet”), the next, thinner coat of base coat should be applied, so the reinforcing mesh lies in the outer third of the total thickness of the base coat. (The glass fiber mash must not lie directly on the insulation board!).
Make the surface of the base coat as level as possible.
The total thickness of base coat is app. 3 – 4 mm, when EPS boards are used and 4 – 6 when using mineral wool boards or lamellas. By normal weather conditions (air and surface temperature from +5 ºC to +35 ºC, R.H. 65%), the drying time of the base coat is 3 –7 days (1 day for 1 mm of the thickness).

Application of Finish Decorative Renders

Decorative renders give an aesthetic look to the surface, and additional protection against the weather effects. The composition and physical properties of the JUB decorative renders are adapted to properties of the base coat, the decorative renders have the right hardness and adhesion and good water-vapor permeability and water repellence ($w < 0.5$ kg/m^{2}h$^{0.5}$). The choice of colour shade is very important. The temperature difference of the façade between winter and summer is over 50^{o}C, and even more if darker colour shades are used. The suitable colour shades are those with lightness value of $y > 25$. The lightness value information of the decorative plasters is printed on the back of the colour chart PAINTS AND PLASTERS.

Apply and treat the final renders according to the instructions of the manufacturer (see appropriate Technical sheet).
In case the special dilatation profiles were not used, separate the final render from window and doorframes, with appropriately shaped joints, and fill them with the elastic sealer, after the plaster dries.

Application Temperature

Air and surface temperature for application should not be lower than +5 ºC and not higher than +35 ºC, R.H. < 80%.
Protect the façade surfaces against the sun, wind and rainfall with curtains; however do not apply the paint in rain, fog or

strong wind (≥30 km/h), even with such protection.

When applying the silicate renders, the air and surface temperature should be at least +8 ºC.

Material Consumption

	Product	JUBIZOL S/S-2/EPS	JUBIZOL MP/MP-2	JUBIZOL ML/ML-2
Starter strip	JUBIZOL metal starter strip	app. 1m/m		
Insulation boards	EPS boards, mineral wool boards and lamellas	app. 1,05 m^2/m^2		
Adhesive	proper JUBIZOL adhesive mortar	app. 3,5 kg/m^2	app. 5 kg/m^2	app. 5 kg/m^2
		Depends on coarsenes of the substrate.		
Base Coat	proper JUBIZOL adhesive base coat	app. 4,5 kg/m^2/3 mm	app. 7 kg/m^2/5 mm	app. 7 kg/m^2/5 mm
Reinforced mesh	JUBIZOL glass fibremesh	app. 1,1 m^2/m^2, app. 1 m^2/ façade opening		
Reinforcing corner angle	JUBIZOL reinforcing corner angle	app. 1m/m		

Decorative renders	Consumption (kg/m^2)	Decorative renders	Consumption (kg/m^2)
Mineral troweled render 2,0	app.2,6	**Acrylic troweled render 2,0**	app.2,5
Mineral troweled render 2,5	app.3,1	**Acrylic troweled render 2,5**	app.3,2
Mineral smooth render 1,5	app.2,6	**Acrylic smooth render 1,5**	app.2,9
Mineral smooth render 2,5	app.3,6	**Acrylic smooth render 2,0**	app.3,1
Nivelin D + Revitalcolor AG	app.6,0	**Acrylic smooth render 2,5**	app.5,0
		Jubolit 1,5	app.2,5
Silicate troweled render 2,0	app.2,5	**Jubolit 2,5**	app.3,5
Silicate troweled render 2,5	app.3,2		
Silicate smooth render 1,5	app.3,3	**Silicon troweled render 2,0**	app.2,8
Silicate smooth render 2,0	app.3,5	**Silicon troweled render 2,5**	app.3,5
Silicate smooth render 2,5	app.5,5	**Silicon smooth render 1,5**	app.2,9
		Silicon smooth render 2,0	app.3,1
		Silicon smooth render 2,5	app.4,7

The Construction Physics of Systems

JUBIZOL façade - an external thermal insulation composite system (ETICS) is designed in such way, that it allows proper flow of water vapor through the construction. In some of these contact systems (depending on

the substrate and final decorative plaster) a condensed water can appear on the contact surface between the surface and the thermal-insulator in the winter period, which completely dries in very short time, during the summer period.
All three systems correspond to the demands of the new European Technical Directives for the contact thermal-insulation systems ETAG 004 (August 2001), which are:
water-vapor permeability of the system:
with EPS: s_d < 2 m
with mineral wool: s_d < 1 m
capillary water absorption of the system: w < 0,5 kg/m^2/24h.

All information regarding the construction physics of the JUBIZOL Façade (flow of heat and water-vapor through the external construction, fuel saving calculations), detail sketches, structure and colour can be found on the **JUBIZOL *façade* CD**.

Life Time

The contact thermal-insulation systems have being installed around the world for more than 40 years and JUBIZOL for more than 35 years in Slovenia. The proper installation of JUBIZOL FASADE insures a long-term façade protection for a period of at least 30 years. The final decorative renderr must be refreshed app. every 10 – 15 years with the appropriate façade paint REVITALCOLOR AG.
If all technical instructions for installation of the JUBIZOL FAÇADE are followed, all materials are covered by a 10-year warranty.

Technical Data

JUBIZOL adhesives (JUBIZOL ADHESIVE MORTAR, EPS ADHESIVE MORTAR, JUBIZOL ADHESIVE)	
mortar density(kg/l)	app. 1,60
pot life	2 -3 hours
Bond strength betwwen adhesive and concrete substrate (Mpa) • **in dry condition (min. requirement: 0,25)** • **after 2 hours effect of water (min. requirement: 0,08)** • **after 7 days effect of water (min. requirement: 0,25)**	 >0,60 >0,30 >1,60
JUBIZOL base coats (JUBIZOL ADHESIVE MORTAR, EPS ADHESIVE MORTAR)	
mortar density(kg/l)	app. 1,60
pot life	2 -3 hours
application thickness (mm)	up to 8 mm
drying time (T: 20 ºC, R.H.: 65 %) • **dry to recoat** • **protect against rainfall**	 up to 24 hrs. for 1mm thick. app. 24 hours
water vapour transmission EN ISO 7783-2 • **μ (-)Sd (m), d = 3 mm**	 <70
liquid water permeability EN 1062-3 (kg/m^{2}h^{0,5})	<0,20 <0,10

JUBIZOL GLASS FIBRE MESH
Alkaline resistant glass fibre mesh; it conforms to the requirements of ETAG 004. Surface weight: min. 145 g/m^2, Opening size app. 4-5 mm x 4-5 mm.

DECORATIVE RENDERS	
water vapour transmission EN ISO 7783-2 μ (-)	
• **acrylic renders**	app. 150
• **silicate renders**	app. 40
• **silicon renders**	app. 240
• **mineral renders**	app. 15
liquid water permeability EN 1062-3 (kg/m^{2}h^{0,5})	
• **acrylic renders**	app. 0,04
• **silicate renders**	app. 0,04
• **silicon renders**	app. 0,06
• **mineral renders**	app. 0,10
Bond strength betwwen decorative renders and Jubizol base coat after 30 freeze-thaw cycles, ,ETAG 004 (Mpa)	
• **acrylic renders**	>0,30
• **silicate renders**	>0,25
• **silicon renders**	>0,40
• **mineral renders**	>0,08

Storage, Packaging

Packaging	Durability when stored in originally sealed and undamaged packaging
paper bags 20 kg	at least 6 months

Tool Cleaning

Thoroughly clean all the tools with water immediately after use.

Safety at Work

Besides general instructions and regulations for construction and painting works consider that Jubizol adhesives and base coats contain cement. They are classified as hazardous labeled with **Xi,** IRRITATING
R 36/38 Irritating to eyes and skin.
R 41 Risk of serious damage to eyes.
S 2 Keep out of reach of children.
S 24/25 Avoid contactwith skin and eyes.
S 26 In case of contact with eyes, rinse immediately with plenty of water
and seek medical advice.
S 28 After contact with skin, wash immediately with plenty of water.
S 37/39 Wear suitable gloves and eye/face protection.
These cement based products are chromate reduced in accordance wite EU directives 76/769/EEC and 2003/53/EC.

See also MSDS.

Waste Handling

Treat hardened mortar compound as a construction waste: **EWC**: **17 09 04**

Health Integrity

The dried coats of JUBIZOL adhesives and base coats are not hazardous to health.

Quality Control

ISO 9001 and ISO 14001.
Factory production control and occasional testing at various independent professional institutions, home and abroad.
The JUBIZOL system conforms to the existing European Technical Directive ETAG 004.
All the systems have ETA (European Technical Approval) issued by OIB-Vienna and ZAG-Ljubljana.
Jubizol S has also German technical approval (DIBt – Berlin).

Link to Other JUB Products:

See also Technical sheets:
01 Primers,
15 Revitalcolor AG,
20 Mineral decorative renders,
24 Acrylic decorative renders,
26 Silicate decorative renders,
27 Silicone decorative renders.

Labelling

CE

EC Declaration of conformity

Technical instructions in this brochure are based on our experiences and are given as a guideline for achieving optimal results. Because of the changes in colour shades of natural aggregates, minor differences in colour shades are possible among the products from different production batches, which cannot be the subject to any claim.
We cannot take any responsibility for the damage, caused by incorrect choice of the product, incorrect use or unprofessional work. We reserve the right to change the technical data of our products without notice as a result of our own development work or as a result of other technical progress. This technical sheet supplements and replaces all preceding editions.
November 2006

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SIQ ISO 9001 Q-159 ISO 14001 E-034
CERTIFIED IQNet MANAGEMENT SYSTEM