

# **Installing Jura Limestone and Solnhofen Natural Stone**

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**Thin bed installation** (using bonding processes)

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## **1. Material:**

1.1 ***Jura limestone panels*** and ***Jura limestone tiles*** equally thick; visible surface are sawn; honed, polished, embossed, sand-blasted, bush-hammered, rippled, striated, brushed

***Solnhofen Natural Stone*** and ***Solnhofen Natural Stone Tiles*** equally thick; visible surface rough edged; slightly honed; brushed; finely honed; matt polished; back side either sawn or milled.

The thickness of the slabs or tiles is determined by the use and format.  
Dimensional tolerance must comply with VOB

1.2 Hydraulically hardening thin set grout in accordance with DIN 18156, part 2 and epoxy based adhesives.( applicability to be certified by manufacturer)

1.3 Grout (applicability to be certified by manufacturer); finely sieved; Portland cement CEM II/B-P according to DIN 1164, part 1

1.4 Joint sealants and primers for expansion joints (applicability to be certified by manufacturer)

## **2. Weight bearing Structure, Positioning and installation surface (bedding):**

2.1 The subsurface must be stable, load bearing, sufficiently dry, free of cracks, impurities and loose debris. The levelness must be in accordance with DIN 18202. Higher specifications require appropriate conditions for levelness.

2.2 Rooms that are subject to humidity or in areas that have a high risk of moisture collection require waterproof sealants or non-accumulating seepage water respectively.

2.3 Heat and noise protection measures require the installation of thermal and footfall absorption material.

2.4 All flooring constructions on insulating layers must comply with DIN 18560. Load distribution layers/floor screeds must have a perpendicular load capacity of up to  $2\text{kN/m}^2$  with a minimum thickness of 45 mm and can be reinforced. Floors with a load capacity of  $>2\text{kN/M}^2$  require appropriately dimensioned stable load distribution layers.

The outer diameters of heated screeds Type "A" need to be raised accordingly. All screeds with lower thickness must be tested for stability and warpage. According to test No. 6.2. of DIN 18560-2, the testing property may not break under a testing load of 44N the level of bowing under load may not exceed 0.15 mm.

Before the installation of natural stone all screeds must be able to prove their nominal strength, levelness, shrinkage. The thickness of the screed and the climate conditions on site influence whether or not these specifications can be reached. In order to meet the requirements, the screed must have a residual moisture of:

2.0 CM-% on unheated cement screeds

1.8 CM-% on heated cement screeds

0.5 CM-% on unheated calcium sulphate screeds

0.3 CM-% on heated calcium sulphate screeds

All measurements must be conducted with the use of a CM Meter. It is to be noted that the measured object is taken from the entire cross section of the screed.

Heated screeds are to go through a gradual heating and cooling process according to specifications before the slabs are installed. A process report is subject to disclosure.

2.5 Calcium sulphate screeds need to be mechanically honed at 16 grade as well as thoroughly cleaned with an industrial vacuum cleaner. The honed surfaces must be permanently blocked from any grout moisture.

Calcium sulphate bound screeds cannot be subject to any level of moisture.

2.6 After being swept, poured asphalt screeds must show a bonding structure. Should there be no way of proving the hardness of asphalt screeds, they must then undergo a hardness test in an appropriate institute. No ancillary services are allowed as stated by VOB.

Fillers that are suitable for poured asphalt must be used for levelness and height adjustment. Calcium sulphate bound fillers are to be tested for any residual moisture ( $\leq 0.5\text{CM-\%}$ ) and to be primed with the necessary primer as stated by the manufacturer before installing.

Any height compensation that exceeds 15mm must receive an additional asphalt layer.

2.7 In order to maintain a load carrying connection and to avoid sound bridges, the edges can be cut after grouting.

### **3.0 Terms of Construction:**

3.1 Construction is only possible at temperatures of 5 degrees Celsius and above.

3.2 Destructive factors such as driving rain and direct sunlight should be avoided.

### **4.0 Laying, setting and Installation:**

4.1 The back side of the pavers and tiles need to be clean and adhesive

4.2 The backside of the flooring pavers should be evenly striped with a contact layer of the to be used thin bed mortar/gluing material .

4.3 Hydraulic hardening thin bed mortar are to be handled according to DIN 18157, part 1, Reactive adhesives as stated by the manufacturer.

4.4 The tiles and slabs are to be laid and placed in the freshly applied thin bed mortar. The tooth height of the scrapers notches are measured by the amount of mortal applied and the thickness it reaches as well as the manufacturer's instructions.

It is important to pay close attention to the manufacturer's stipulations on the cure time , open and working times.

### **5.0 Joints:**

5.1 Joints for interior use and are closed with mineral based joint mortar . Application should have a thickness of 3mm. Longer edges will most likely

require wider joints. Joints should be able to compensate for any additional plate tolerances.

5.2 In order to guarantee dryness of all coverings and claddings, all joints should remain open. Depending on the climate conditions on site, the drying time should be at least 7 days. This especially applies to separate layer based surfaces. In the case of quick hardening grout please comply with the manufacturer's instructions.

All coverings and claddings should be moistened before applying joints. When using grout supplied directly from the distributor please comply with manufacturer's instructions.

Larger areas of coverings and claddings with rough, honed or brushed surfaces are to be worked in smaller sections in order to avoid grout residue. Immediate cleansing is required.

To further avoid any damages or impurities to the open joints and to keep the adhesive bond between the floor tiles and the grout at a minimum, the surface is not to be exposed to pressure nor should it be walked on.

5.3 Joint grout of pozzolanic Portland cement and washed sand (finely sieved) with a mixture ratio of 1:2 to 1:3 or other grout is normally applied using water. The maximum grain size of grout should comply with the joint thickness.

In order to avoid discolorations, it is recommended to use pozzolanic Portland cement with a trass content of  $\geq 40\%$ .

## **6.0 Expansion Joints**

6.1 The layout of expansion joints are determined by the overall construction planning.

6.2 Expansion joints must be applied in accordance with the spatial geometry, expected expansion, and appropriate intervals. Normally, sections of up to 40 m<sup>2</sup> should be applied on screeds. The edges of the screed areas should not exceed 8 meters and the aspect ratio of the edges should be smaller than 2:1. Expansion joints are to be applied with each change of subsurface material in the area of wall connections, doorways, and with expected width changes as well as wall coverings. (See illustration 2 and 3)

6.3 All construction joints and expansion joints in the screed must be adopted and interlocked in the same places with sufficient spacing in the covering and cladding making sure of appropriately closing them with joint sealing compounds or joint profiles.

6.4 Joint sealing compounds are to be processed according to the manufacturer's instructions. They are to be applied on cleaned joints and may require a standardized primer to be brushed along the edges beforehand.

## **7.0 Initial Use/Safeguards:**

7.1 Floors should not be used before ample hardening of the sealants and grout has been given. Normally, the duration of hardening time is no less than 7 days after grouting. Areas that have a higher level of point loads require a hardening time of at least 28 days.

The drying period is dependent on the site's climatic situation which could take even more than 28 days. It is important to allow proper drying time in order to allow for sufficient bonding between the covering slab and grout.

Please comply with manufacturer's instructions when dealing with rapid hardening grout.

7.2 In case a special protection is required, please use non-staining, non coloring, absorbent and diffusible materials for cover.

## **8.0 Special Instructions:**

8.1 The introduction of de-icing agents and scratching contaminants should be avoided through the implementation of sufficiently sized door mats, grids or similar applications.

8.2 Due to moisture absorption, freshly laid tiles may become darker or duller in color. This will disappear during the drying process. It also applies in case of exposure to wetness in future situations, for example, during cleaning or bathing.

## **9.0 Maintenance and Care:**

Please refer to information sheet "Recommendations for Cleaning and Care of Coverings and Claddings made from Jura Marble and Solnhofener Natural Stone Slabs and Tiles." It is recommended that a copy of this information sheet be handed out to the owner.

## **10.0 References to Norms, guidelines and information sheets**

For a listing of all above-mentioned categories regarding the processing of Jura Limestone and Solnhofen Natural stone slabs and tiles, please refer to separate site.

Additional stipulations may be required depending on the construction or design of the finished product.