

## ON A CONCRETE SLAB WITH UNDERFLOOR HEATING



### GENERAL

Timber is a natural product and will absorb and transpire moisture during its life, so as flooring, there will always be movement in individual boards.

The care taken during handling, installation and finishing will minimise this movement. To achieve the best possible end result with traditional hardwood timber flooring products it is essential that correct procedures are followed.

### PRODUCTS

#### ROSENFELD KIDSON SOLID T&G FLOORING

Solid timber flooring is available in a range of species, grades and sizes. Thicknesses range from 13mm overlay to 21mm thick boards. Refer to Rosenfeld Kidson Solid Timber Flooring Brochure to see the full range.

#### TIMBER TRIM

Solid timber trim available to compliment flooring choice, such as skirting, architrave and stair nosing etc.

#### MOISTURE BARRIER

Handley Industries Vapour-Stop Concrete Slab Sealer.

#### CONCRETE PRIMER

Handley Industries H-Bond Primer and Bonding Agent.

#### LEVELLING COMPOUND (IF REQUIRED)

Handley Industries Floor Levelling Compound Blend #800.

#### ADHESIVES

Handley Industries Uni-Stick One Component Timber Flooring Adhesive.

#### PLYWOOD

CD grade or better using Type A (marine grade) adhesive in a thickness to suit.

#### COATING PRODUCT

Rubio Monocoat Oil Plus 2C

Handley Industries Aquapol Water borne Polyurethane – Satin/Lo-sheen/Matt/Matt Plus

Handley Industries Solvent borne Polyurethane – Gloss/Satin/Lo-sheen

### BEFORE INSTALLATION

#### CHECK TIMBER

Prior to laying, check the timber is the correct species, grade and size. Check the quantity is correct and no excessive damage has occurred in transportation.

Check the moisture content of the timber flooring with a calibrated moisture meter to ensure it is within the specified range.

#### DO NOT START

Do not start laying before the building is enclosed, doors are hung and lockable, including the garage, wet work complete, full lighting available and in the case of air-conditioned buildings the air-conditioning has been operating for four weeks.

#### INSPECT THE SUBSTRATE

Make sure the concrete floor slab is at the correct moisture content. The concrete slab should be at a maximum of 70% RH when using a hygrometer.

The substrate should be of a suitable finish. Do not start laying if the substrate will not allow work to the required standard.

### INSTALLATION

#### SUBFLOOR PREPARATION

Ensure concrete is clean, free of surface moisture, oils, waxes, efflorescence, old finishes etc. and is not chalky, flaky or dusty. Ensure concrete is level and the slab is in accordance with relevant compliance codes. Diamond grinding may be required to ensure these criteria are met.

New slabs should be cured for more than 28 days, be dimensionally stable and have a moisture content of below 70% RH. Again they should comply with relevant codes (AS2870-1996) and brought to an acceptable standard. Also refer BRANZ Bulletin 506 – Laying Solid Strip Flooring on Concrete Slabs.

#### MOISTURE BARRIER

Handley's Vapour-Stop is a 2 component epoxy coating designed to work as a water vapour barrier, prior to the installation of timber flooring. Vapour-Stop vastly reduces the ability of moisture to migrate from the concrete below into the timber above, thereby reducing the likelihood of flooring failure through dimensional changes in the wood.

Vapour-Stop cannot be expected to prevent eventual damage brought about through hydrostatic pressure or capillary action. These issues should be eliminated through acceptable drainage and ventilation controls.

*Refer to the manufacturer's specifications for detailed application information.*

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**Number of coats**

Two coats as per recommended coverage below. Thorough testing should then be conducted to ensure moisture has been contained as per 16 hour hygrometer test to achieve 70% RH or below.

Please also note that while 70% RH meets the requirement of AS1884-1985, 70% RH will achieve equilibrium moisture content in timber of approximately 13.3% m.c. under normal temperature conditions.

If the correct moisture content is exceeded, additional coats may be required.

**Application**

Mark out an area to be coated in 20m<sup>2</sup> sections. Shake both components well and pour into a suitable mixing vessel. Stir thoroughly for at least one minute and the contents are a consistent green colour.

After mixing, contents should be poured onto the floor quickly to prolong working time.

One 5 litre unit will cover 20m<sup>2</sup> and this is the rate at which it should be applied to ensure correct film build (approximately 4m<sup>2</sup> per litre). Use a 6mm roller sleeve. Clean up with Handley Brush Cleaner.

**Curing**

Vapour-Stop will cure in 8-12 hours depending on atmospheric conditions. Re-coating should be within 24 hours. Thorough sanding between coats with 120# paper is required if the re-coating interval is longer than this. Vapour-Stop will be ready for timber installation once cured. This should be done with 48 hours if using Uni-Stick. Again, sanding with 120# paper will be required if longer than this.

**Health & Safety**

Vapour-Stop is classified as a hazardous substance. In particular, the hardener component is corrosive. Please read and understand the Material Safety Data Sheet available from Handley Industries.

**UNDERFLOOR HEATING**

Fix underfloor heating system to manufacturer's specifications.

**LEVELLING (IF REQUIRED)**

The concrete floor must be level. The maximum allowable tolerance in level is 3mm in 3m.

Blend #800 is a rapid-setting, cementitious, self-levelling flooring compound designed to produce a heavy-duty wear surface or for preparation of concrete subfloors prior to the laying of timber flooring.

*Refer to the manufacturer's specifications for detailed application information.*

**Priming**

The concrete sub-floor should be primed with Handley 'H-Bond'.

Apply undiluted H-Bond thinly and evenly with a roller or soft broom being careful to avoid ponding. One coat is typically sufficient; however, very porous substrates may require a second coat. Allow to dry thoroughly. The correct coverage rate is approximately 10m<sup>2</sup> per litre, depending on substrate porosity.

**Mixing**

Mix 20kg bag of Blend #800 with 4.5 litre of fresh tap water. Do not over-water.

Tip all the water into a suitable bucket and add half the powder. Mix with a drill and suitable paddle until lump-free, before adding remaining powder. Continue to mix for about one minute and ensure mixture is lump-free.

**Application**

Pour mixture to sub-floor and place with trowel, if required. Working time is approximately 10-20 minutes, depending on atmospheric conditions. Do not re-work after mixture has set-up.

**Curing**

Curing time is dependent on ambient temperature. As a guide, initial set time is about 60 minutes at 20°C, with flooring covering able to be laid after 16-18 hours.

**PLYWOOD INTERMEDIARY LAYER**

Prior to laying the plywood intermediary layer, run the heating system for three days and then turn off.

Lay plywood sheets cut into 400x400mm squares in a brick pattern. Fix to the concrete slab using Handley's Uni-Stick, as per manufacturer's specifications. Allow a 2-3mm expansion gap between plywood squares. During the curing period, weight the plywood down or concrete nail (being careful to avoid damaging the heating system).

Turn on the heating system again. Begin at 11°C and increase the slab temperature by 1°C per day, to a maximum slab temperature of 23°C to allow the plywood to acclimatise for 2 weeks, until the moisture content of the plywood matches that of the room. Check these with a calibrated moisture meter.

**FLOORING INSTALLATION****Layout**

Leave a 6-8mm gap around the perimeter of the floor to accommodate movement – this can be covered by the skirting.

Install movement control joints within the floor area to accommodate movement where the floor width exceeds 9m or at 9m maximum centres for strip flooring – fill joints with either compressible cork or a sealant formulated for use with timber flooring.

When laying over concrete, softwood panel substrate or an existing floor, boards should be staggered to provide the look of a floor similar to that laid over joists. It is good practise to ensure that end-joints are 300-450mm apart and that joints do not cluster together or align.

Installers also need to consider how the boards will be distributed in the floor in terms of length, grade, feature and colour. It may be necessary to lay from more than one pack at a time so that timber variation can be blended through the floor. Single boards with highly contrasting appearance should not be installed in highly visible locations.

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**Application**

Handley's Uni-Stick is a timber flooring adhesive used to bond timber strip flooring to most types of flooring substrates including particle-board, strand-board, plywood and concrete.

Uni-Stick is a one component, moisture-curing polyurethane, timber flooring adhesive that cures rapidly at room temperature and forms a semi-rigid bond. In addition, the controlled foaming action maximises contact with the timber and the substrate, working to resist cupping and eliminate hollow spots.

*Refer to the manufacturer's specifications for detailed application information.*

Uni-Stick requires no mixing before use. Use the recommended trowel and lay out only what can be laid into within 20 minutes. Use only what the trowel delivers to the floor. Using the adhesive to fill any voids, might result in excessive foaming and an unacceptable result.

Timber should be laid into wet adhesive and secured or weighted, as per industry standards. Press the timber board firmly into the adhesive to make the glue bond to both the timber and the concrete and tap each board in place to ensure the tongue of the board is well fitted into the groove of the adjoining board – remember to tap on a packer and not directly on the board being installed.

If a pail is partly used, peel cured residue away from the lid and rim and secure lid on tightly before inverting the pail. This prevents a skin forming on the remaining material. If product has skinned, peel away and use uncured material below.

Spread adhesive at right angles to the direction the timber is being laid.

**Curing**

Uni-Stick cures substantially after about 12 hours. Floors can be walked on, sanded and coated after this time.

**Clean-up**

Use Handley Brush Cleaner to wipe away spills and clean trowels. Spills should be cleaned up before the material cures.

**Health & Safety**

Uni-Stick is classified as a hazardous substance. Please read and understand the Material Safety Data Sheet available from Handley Industries.

**AFTER FLOORING INSTALLATION**

After three days from laying, the under floor heating system can be turned on. Gradually increase the temperature no more than 1°C each day to the desired temperature. The slab temperature should not exceed 23°C (N.B. this is the slab temperature, not the air or floor temperature).

After installation, allow flooring to acclimatise to the environment for a minimum of four weeks with the underfloor heating system running.

Turn off the under floor heating system three days prior to sanding and coating.

Turn on the heating system three days after the final coat. Gradually increase the temperature by no more than 1°C each day to the desired temperature. Maximum allowable slab temperature is 23°C.

**FINISHING****Protection**

Timber floors must be protected from damage that could occur before the floor is coated and/or the building work is finished – typically softboard sheets can be laid over the surface to provide protection from foot traffic and dropped tools before and after sanding and coating.

**Preparation**

Epoxy fill knots, if present e.g. 'Feature Grade Oak'. Solid timber floors require sanding before the application of a coating system to ensure joints are level and all machine marks in the timber are removed. Good preparation of the surface is crucial for an optimum finish. The surface must be clean, dry and free from wax, grease or dust. All previous coatings must be removed. The surface should be fine sanded with a 150# sandpaper or screen disc and then vacuumed thoroughly.

Recommended floor finishing options include Rubio Monocoat Oil and Handley's Polyurethane.

**RUBIO MONOCOAT OIL PLUS 2C**

*Refer to the manufacturer's specifications for detailed application information.*

RMC Cleaner is a cleaner which, following the sanding and vacuuming processes thoroughly cleans the surface preparing it for treatment with Rubio Monocoat Oil.

Colouring and protecting is done with RMC Oil Plus 2C.

Carefully mix and stir the two components. Apply a small amount of RMC Oil Plus 2C and spread it out with a cloth, a brush or polisher with a thin beige pad. Treat one zone of 5-10m<sup>2</sup> at a time.

Leave to react for a couple of minutes. Remove all excess oil with a non-fluffy cloth or polisher with a thin white pad with 15 minutes per zone. The surface should feel hand-dry after removal of the excess product.

In a well ventilated room, the surface can be used 24-36 hours after the application.

**HANDLEY'S WATERBOURNE & SOLVENTBOURNE POLYURETHANES**

*Refer to the manufacturer's specifications for detailed application information.*

*Waterbourne polyurethanes are not recommended on dark-coloured timbers, such as Kwila and Jarrah.*

Apply the first coat evenly with a Handley approved floor coating applicator, 10mm nap roller or soft brush and allow to dry (3 to 6 hours). Lightly sand with 240# sandpaper, vacuum thoroughly and apply a second coat. Repeat this procedure until the desired finish has been attained – normally 3-4 coats are sufficient.

Coverage is approximately 8-10 sq m<sup>2</sup>/ltr (depending on porosity).

As complete curing of a polyurethane floor takes a full 7 days (usually waterproof after 3 days), care must be exercised during this time. Avoid dragging furniture etc. over the surface. Use protective mats in traffic areas. To extend the life of the floor, mats should be used in doorways in order to remove dirt and grit from feet.

Protective pads should be used on the legs of furniture. The floor should be swept frequently and washed with hot water and a small amount of dishwashing detergent, after seven days curing.

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**DOCUMENTS**

The following documents may be applicable to this work:

NZBC C/AS2-AS7	Protection from fire
NZBC C/VM2	Protection from fire
NZBC D1/AS1	Access routes
NZS 3604	Timber-framed buildings
AS/NZS 2269.0	Plywood – Structural – Specifications
AS 4586	Slip resistance classification of new pedestrian surface material
ISO 9705	Fire tests – Full scale room test for surface products
BRANZ BU 330	Thin flooring materials – 2 Preparation and laying
BRANZ BU 506	Laying Solid Strip Flooring on Concrete Slabs
ATFA	Australian Timber Flooring Association – Solid Timber Flooring Industry Standard Technical Publication Version 3 – June 2016

**MANUFACTURER/SUPPLIER DOCUMENTS**

Manufacturer's and supplier's documents relating to this part of the work:

Rosenfeld Kidson Solid Timber Flooring Brochure  
 Rosenfeld Kidson Solid Timber Flooring Specification  
 Rosenfeld Kidson timber flooring profile drawings  
 Handley Industries Uni-Stick Timber Flooring Adhesive Brochure  
 Handley Industries Uni-Stick Timber Flooring Adhesive Directions for Use  
 Handley Industries Uni-Stick Flooring Adhesive Material Safety Data Sheet  
 Handley Industries 'H'-Bond Primer and Bonding Agent Brochure  
 Handley Industries Blend #800 Floor Levelling Compound Brochure  
 Handley Industries Blend #150/Blend #800 Material Safety Data Sheet  
 Handley Industries Vapour-Stop Concrete Slab Sealer Brochure  
 Handley Industries Vapour-Stop Concrete Slab Sealer Directions for Use  
 Handley Industries Vapour-Stop (part A) Material Safety Data Sheet  
 Handley Industries Vapour-Stop (part B) Material Safety Data Sheet  
 Handley Industries Aquapol Water Bourne Polyurethane – Satin, Low-sheen, Matt and Matt Plus  
 Handley Industries Solvent Bourne Polyurethane – Gloss, Satin or Low-sheen  
 Rubio Monocoat Application Instructions  
 Rubio Monocoat Care and Maintenance Guide  
 Rubio Monocoat Oil Plus 2C Material Safety Data Sheet