SUBSTRATES FOR WOOD FLOOR SETTING
UNDER- & SUBFLOORS
FROM CONCRETE TO SCREEDS

First: Concrete Slab

- Typical thickness: 20 cm (housing)
- Long drying times required (months)
- Shrinking during whole drying period
- Substrate for the screed

Second: Screed

- Poured onto the concrete slab
- Levelling of existing floors
- Raise of floor to necessary height
- Floating installation
- Numerous setups and materials
# INSTALLATION OF SCREEDS

**ALMOST A SCIENCE**

<table>
<thead>
<tr>
<th>Monolithic Screed</th>
<th>Screed on Underlay</th>
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<tbody>
<tr>
<td>- Directly onto concrete slab</td>
<td>- Sheet between concrete slab and screed</td>
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<tr>
<td>- Suitable for heavy loads</td>
<td>- No horizontal transfer of force</td>
</tr>
<tr>
<td>- No MB, no ISI</td>
<td>- MB possible, no ISI</td>
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<table>
<thead>
<tr>
<th>Screed &amp; Insulation Layer</th>
<th>Heating Screed &amp; Layer</th>
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<tr>
<td>- Called “floating screeds”, with insulation</td>
<td>- Heating elements are built into the structure</td>
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<td>- Insulation must be capable to withstand the static load</td>
<td>- Electric wire mesh or water heating</td>
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ANHYDRITE &
CALCIUM SULFATE SCREEDS

- Composition: cement, aggregates, water and additives
- Shrinking during setting and hardening
- Deformation and cracking can follow
- Not moisture sensitive, good absorbency
- Conventional (semi-dry) & SL (flowable)
- Critical factors: laitance, strength, evenness

- Composition: gypsum, aggregates, water and additives (many formulations)
- Dimensionally stable, suitable for large areas
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- Grinding and vacuum cleaning after installation and before parquet laying
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MASTIC ASPHALT &
PLASTERBOARDS / GYPSUM FIBRE BOARDS

- Composition: bitumen, aggregate, gravel, sand and additives
- Hot application (200–250 °C)
- No curing, but cooling down / hardening
- No moisture content, non-absorbent surface
- Surface of asphalt has to be broadcasted with excess of quartz sand (when hot)

- Composition: Gypsum, fiber (reinforcement) and shell of paper (stability)
- High content of cellulose fiber and thus water-sensitive
- Approval of manufacturer necessary
- Lower flexural rigidity than wood based panels; only highly dimensionally stable wood floor types for full surface bonding
- Only for dry areas rooms etc.
CEMENT FIBER BOARDS &
ORIENTED STRAND BOARDS / CHIPBOARDS

- Composition: Cement, fillers and fibers (reinforcement)
- Heavier than plasterboard / gypsum fiber board
- Not moisture sensitive, non-absorbent substrate
- Old cement fiber boards may contain asbestos fibers

- Composition: wood chips of various sizes and binder
- Mostly fixed to substrate below
- **OSB vs. chipboards:**
  - Coarser chips, top layer at right angles
  - Rougher surface texture
  - Better mechanical characteristics
  - Less binder content
EXISTING, OLD SUBSTRATES RENOVATION

Critical Factors / Open Questions:

- Old adhesive residues (effect on adhesion)
- Unknown surface treatment(s) (effect on adhesion)
- Stains (oil, fat, paint)
- (Un) evenness
- Existing moisture barrier (longtime moisture transmission)
- Strength (hardness, brittleness, compressive strength)
- Cleanness
RENOVATION
EXISTING TIMBER FLOORS OR CERAMIC TILES

- Boards fixed directly to floor joists
- Boards screwed /nailed to floor battens
- Boards which are under load, bounce or are loose must be firmly fixed
- The new wood floor should be laid at an angle of 90° to existing floor

- Degrease rigorously
- Grinding of tile-surface and cleaning thoroughly with an industrial vacuum cleaner
- Vinyl tiles often have inadequate adhesion to the substrate
GENERAL SUBSTRATE ISSUES
IMPORTANT TO CONSIDER

- Is substrate strength high enough to handle distributed forces?
- Do we need a substrate preparation?
- 1C PU: for proper curing of the adhesive sufficient ambient moisture is necessary
- Can adhesive sufficiently wet the substrate?
- Is there a danger of plastisiser migration?
- Influence of paints, plasters, wallpapers, bad cement, ...
- Influence of plastics, other adhesives, ...
- Poor quality materials will always stay poor quality materials!