LEWIS®

DOVETAILED SHEETING METHOD OF APPLICATION

LEWIS®

LEWIS® sheeting is easy to install by following instructions in the method of application below. These general application recommendations are based on more than 80 years of experience.

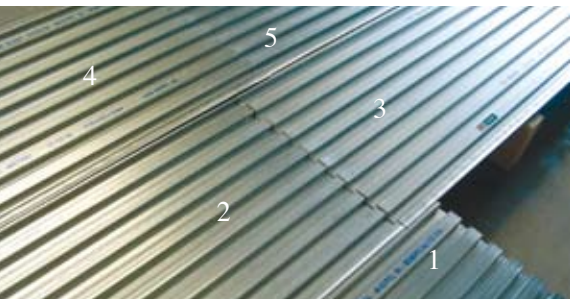
Safety

When laying LEWIS® floors, always pay attention to safety as the edges of the sheets may be sharp. Therefore, wear protective gloves and safety shoes. Keep in mind that the sheets may be damaged if they are exposed to excessive loads.

Shortening and cut-outs

To cut LEWIS® sheets to size, both width-wise and lengthwise, the use of a carborundum disk is preferable. Cut-outs can also be made this way or with a jigsaw.

Laying the sheets



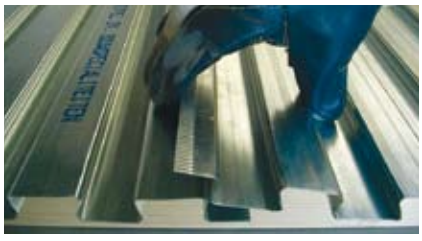
Standard laying procedure is to lay the first row lengthwise, the first sheet with blue print down, then alternate each sheet with print up, down, up etc.
The adjacent row starts with a sheet with the blue print on top, etc. The sheets can also be laid "stretcher bonding".
The LEWIS® sheets must be laid at right angles across the timber joisting, even if directly laid on the floor boards.

Crosscut overlaps

- ≥ **50 mm overlap if completely supported and nailed onto the existing floor.**
- ≥ **100 mm overlap if laid on the timber joists or "floating" on resilient strips.**

Crosscut overlaps are made by having the sheets "click" into each other alternately (one with the blue print below and one with the print up) over a length of 50 - 100 mm. Crosscut overlaps can be adjusted by sliding the sheets together or apart. If LEWIS® mineral wool resilient strips are used, first click the sheets together on a hard (not springy) surface!

Lengthwise overlaps



Overlaps should not be limited to the side flanges. In order to make the LEWIS® floor less vulnerable to construction traffic, it is necessary to also include part of the profile itself in the overlap.
For this purpose, slide the side flanges as far as possible over the first profile. The upright part of the first profile will butt against the upright part of the first profile of the adjacent sheet.

Connections

Allow approx. 10 mm of space between the sheets and the perimeter, if necessary by using suitable strips.

Mechanical fixing

LEWIS® sheets should be fixed through the upper flange where the sheets overlap on new timber joists and floor boards. This can be done with regular wire nails or self-drilling screws.
On existing timber joists or floor boards, the sheets can be fixed through the lower flange. On steel beams, the LEWIS® sheets can be pop riveted. Good attachment can also be achieved with Hilti rivets, dowels or tec screws.

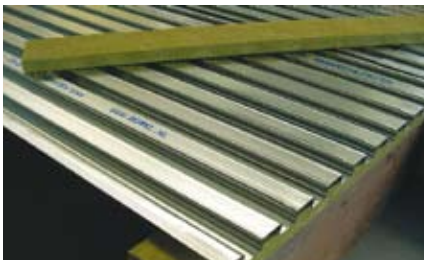
Note: when immobile connection is achieved by attachment with dowels or a nail gun, additional anti-shrinkage reinforcement is needed. Details can be provided.

On concrete beams and masonry supports the sheets must be laid in cement mortar and temporary weighted until the mortar has set. Parker screws can be used on aerated concrete blocks.

Interconnected (wood-concrete) floors

In order to prevent initial deflection of the timber supporting structure, it must be underpinned temporarily, e.g. by means of an ACROW prop. After the LEWIS® sheets have been laid at right angles to the timber joists in the usual way and allowing sufficient overlap, a hardened LEWIS® screw nail is driven into each lower flange. After fixing, the head of the screw nail should be at the same level as the top of the LEWIS® sheeting.

Floating sound resistant floors



Install LEWIS® mineral wool resilient strips – nominal thickness 25mm, width 100 mm (or the full width of the beam +10 mm), at 500 mm centres.

Strips can be laid onto the flooring (over the joists!) or directly on the joists. If the centre-to-centre distance exceeds 800 mm and/or the load applied exceeds 2.5 kN/m^2, CDM 45017/17-9 or Sylomer TSS resilient strips should be used.

Note: lengthwise overlaps of the LEWIS® sheeting, that are approx. 100 mm wide, must always be made over a supporting resilient strip. LEWIS® mineral wool perimeter strips 20 mm thick and 100 mm high must be used.
The creation of sound bridges by contact

with central heating ducts, pipes, etc. must be avoided by insulating with the same mineral wool.
As a result of uneven drying and setting, the

LEWIS® concrete floor may be pushed up in the corners and along the edges. Therefore, the LEWIS® sheets must be temporarily fixed, for instance by self drilling screws that are screwed through wedge-shaped wooden flutes. Make sure the level of the flutes is the same as the thickness of the fine gravel concrete. After the concrete has hardened sufficiently, remove the self drilling screws and the flutes and fill in the holes with mortar. As an alternative, the LEWIS® floor can be weighed down or can be supported against the storey above by using slats.

Floors with underfloor heating

Keep a 10 mm space at minimum between the perimeter of the floor and the vertical walls by using LEWIS® edging strips, for example. Mount the floor heating pipes to the upper flange of the LEWIS® sheeting by means of (plastic) seats and self drilling screws. Do not attach the sheets themselves to the subfloor!

Concrete composition / application general

When installing the LEWIS® sheeting, bear in mind that this initially serves only to support the concrete and will only start functioning as reinforcement after the concrete has set.

Therefore it is not possible to lay a ceramic or natural stone floor finishing in the wet concrete. Terrazzo (granite) floors must always be applied to a smooth, finished concrete substrate.

Type of concrete floating floor:

< 800 mm centres
fine gravel concrete or liquid screed

> 800 mm centres
liquid screed*

Fixed/non-floating floor:
Fine gravel concrete or liquid screed

**alternative: fine gravel concrete + anti-shrinkage reinforcement at the crosscut overlaps (Ø5-150).*

Composition

The fine gravel concrete can be mixed as follows:

- **by weight**
  1 part Portland cement:
  3 parts concrete sand (0-4 mm):
  1.2 parts fine gravel (2-8 mm)
- **by volume**
  1 part Portland cement:
  2.5 parts concrete sand (0-4 mm):
  1 part fine gravel (2-8 mm)

For 1 m³ concrete:
285 litres Portland cement, 715 litres concrete sand and 285 litres fine gravel.

Quality B25 (C20-25)

The use of factory-made premixed concrete is recommended. Such mixes can be pumped with a suitable pump. Another option is using GD20 quality liquid screed.

Recommended thicknesses of concrete:

standard floor for housing:
16 + 20 = 36 mm
standard floor for commercial construction:
16 + 34 = 50 mm
soundproof floor:
16 + 34 = 50 mm
interconnected floor:
16 + 34 = 50 mm
floor heating:
16 + 20* + 20/25 = 56/61 mm

* to accommodate diameter of heating ducts.

Note:
Profile height of LEWIS® sheet 16 mm + concrete cover layer = total floor thickness.

Usage

Floor thickness 16 + 34 = 50 mm / average concrete thickness = LEWIS floor thickness 50 - 8 = 42 mm.

Underpinning

If the centres of joists are greater than 1000 mm or when the amount of concrete poured onto the sheets exceeds 50 mm, it may be necessary to temporarily underpin the LEWIS® sheets.

Note: Ensure the supporting structure (joists, walls, foundation) is professionally checked to ensure that it can support the new LEWIS® floor!

Application/drying

Use scaffolding boards placed at right angles to the supporting joists when pouring concrete. Screed the concrete mortar in lengths running at right angles to the grooves in the sheets.

Allow the fine gravel concrete mortar applied to the LEWIS® sheeting to dry / harden gradually. Although it is always possible that a limited amount of cracking will occur in this type of thin concrete flooring, cracks due to shrinkage and the so-called burning of the concrete mortar can be prevented to a considerable extent. Cover the finished mortar floor with polyethylene foil and do not apply any stress to the floor until it has hardened sufficiently!

Waterproof (bathroom) floors

To improve cross ventilation it is preferable to remove the floor sections or otherwise install ventilation openings. These openings are easily made with a core drill.
Apply edge strips of standard d.p.c. to the existing masonry wall and work them into the concrete on the LEWIS® sheet or apply a waterproof strip of special water resistant flashing (sealing tape) to the floor/wall on the finished concrete floor in the wall and floor connection, finishing it with a suitable coating/paste.

New light-weight partition walls (e.g. aerated concrete, composite plasterboard, etc.) should preferably be mounted on top of the LEWIS® concrete floor.
For this purpose, a vertical concrete rim approximately 50 mm high can be poured of the same width as the partition wall (minus a tolerance of approx. 10 mm).

General

Fine gravel concrete, tiles, flagstones, natural stone or terazzo must be applied according to the current standards and regulations. Tile adhesive may be used.

Sustainable design

The capability to re-use existing floor bearing structures and extremely economic use of new, recyclable materials make LEWIS® floors some of the most desirable designs in a modern sustainable built environment.

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