



LEWIS[®] DOVETAILED SHEETING

METHOD OF APPLICATION

When the following instructions are adhered to the LEWIS[®] dovetailed sheeting is simple to install. This advised method of application is based on over seventy years of experience in the laying of LEWIS[®] dovetailed sheeting in the Netherlands.

SAFETY

When laying LEWIS[®] sheeting always put safety first. The edges of the sheets may be sharp. Protective gloves and safety shoes should therefore be worn. Take care when walking on and working on the sheets. They should be positioned on the joists in such a way that they are load bearing.

A. LAYING THE SHEETS

Aa. Standard

1. Lay the LEWIS[®] sheeting with the grooves at right angles to the supporting structure (joists).
2. The profile of the LEWIS[®] sheeting is such that when one sheet is turned over (resulting in 1 LEWIS[®] mark underneath and 1 LEWIS[®] mark on top), the sheets can be slotted into each other over their entire length.
3. Over the breadth of the room it is possible simply to place the sheets next to each other. The only overlapping elements are the lower or upper outer flanges.
4. Lengthwise the overlap should be at least 50 - 100 mm, positioned over a joist.
5. Standard laying procedure is a first row of sheets lengthwise, the first sheet having the mark LEWIS[®] underneath, the next one having the mark LEWIS[®] on top etc. The adjacent row also starts with a sheet having the LEWIS[®] mark underneath etc. The sheets can also be laid "stretcher bonding".
6. In areas of which the length is one sheet only (for instance bathrooms), larger overlaps may be realised in the width by turning one sheet over and slotting it with one or more grooves into the adjacent sheet.

Ab. Sound-proof and fire-resistant

1. Apply strips of mineral wool - Rockwool 501 - thickness 25/20 mm, width 100 mm (or the total joist width + 10 mm), at 500 mm centres. When the sheets are being placed directly on timber joists and the spacing of the joists is greater than 900 mm the width of the strips and/or thickness should be adapted.
When the floor load is $\geq 2.5\text{kN/m}^2$ the width of the strip and/or thickness should be adapted.
2. Always position the lengthwise overlaps of approx. 100 mm on a supporting strip.

Ac. Water-proof

If possible, remove the t+g timber boards or otherwise - to allow air circulation - make ventilation openings. These are easily made using a core drill.

B. JOINS

Ba. Standard

By using edging strips both the sheets and the concrete should be kept slightly away from the vertical wall.

Bb. Sound-proof and fire-resistant

1. Use mineral wool, Rockwool 501 20/15 mm edging strips to a height of approx. 100 mm.
2. Avoid areas of possible contact where there are central heating pipes, waterpipes etc. by insulating these with identical mineral wool.

Bc. Water-proof

1. Apply strips of polyester-fibre based roofing felt to the existing masonry wall and work them into the still-wet concrete of the LEWIS[®] floor, or apply special adhesive water resistant flashing to the floor/wall join of the completed concrete floor.
2. If possible mount new lightweight compartment walls (e.g. aerated concrete, composite plasterboard etc.) on top of the LEWIS[®] concrete floor. For this purpose a poured concrete rim of roughly 50 mm height the same width as the compartment wall (minus a tolerance of approx. 10 mm) may be made.

Bd. Underfloor heating

Keep the perimeter of the floor roughly 10 mm of the vertical masonry walls by using edging strips, for instance of polystyrene foam or Rockwool.

C. SIZE ADJUSTMENT AND VOIDS

1. The most practical way of cutting the LEWIS® sheets to size, both length and width, is by using an abrasive cutting disc.
2. This can also be used for cutting out voids, as can a jigsaw.

n.b.: another possibility is to make any voids needed in the completed LEWIS® concrete floor.

D. FIXTURE

Da. Standard

1. If the timber joists and t+g timberboards are new, the LEWIS® sheets should be nailed onto them through the upper flute. No special nail type is necessary.
2. On old timber joists and t+g timberboards the sheets should be nailed through the lower flute.
3. Use pop rivets to fasten the LEWIS® sheets onto steel joists. A good fixture can also be achieved with Hilti rivets or equivalent.

n.b.: when the fastening method is Hilti rivets constructional fixture is achieved, extra contraction netting is needed in the fine-grade concrete.

4. On concrete and brickwork supporting structures the sheets should be placed in mortar and temporarily weighted until the mortar has set. Use drill point screws on aerated concrete.

Db. Sound-proof and fire-resistant

When necessary, temporarily fasten the LEWIS® sheets using drill point screws screwed through wedge-shaped wooden plugs. The top edge of the plugs should be level with the top surface of the fine-grade concrete. When the concrete has set sufficiently the drill point screws and plugs can be removed and the holes filled with mortar.

Dc. Inter-connected

In order to prevent initial deflexion of the timber supporting structure temporarily underpin it using e.g. struts. After the LEWIS® sheets have been placed at right angles on the timber joists allowing sufficient overlap, fix each one using a flat head hardened screw nail type no.10, length 63.5 mm (2.5"), diameter 3.4 mm through the lower flute. Make sure that the head of the nail does not protrude above the LEWIS® sheeting.

Dd. Underfloor heating

Mount the piping system on the upper flutes of the LEWIS® sheeting using clips and drill point screws. Do not attach the sheets as such!

E.. POURING THE CONCRETE

General

When installing LEWIS® sheeting bear in mind that this initially only acts as shuttering to support the mortar and only starts functioning as reinforcement when the concrete has set. Basically it is therefore not possible to directly apply ceramic tiles or a flat natural stone finish to the concrete mortar. Terrazzo (granito) finishes must always be applied to a smooth, completed concrete underground.

Composition and Screeding

1. The components of fine grade concrete are as follows:
 - by weight 1 part Portland cement : 3 parts concrete sand (0-4 mm) : 1.2 parts fine-grade pea gravel (2-8 mm)
 - by volume 1 Portland cement : 2½ parts concrete sand (0-4 mm) : 1 part fine-grade pea gravel (2-8 mm)Quality B15/B25. Use fairly dry concrete mortar with a slump of approx. 20 mm, flow of 115 mm and cement/water ratio 0.45 m/m.

The use of factory-made premixed fine-grade concrete mortar is recommended. If required it is possible to pump this type of fine-grade concrete mortar.

- n.b.: for structural covering floors with spacing of joists of 1200-2500 mm concrete quality B25 is necessary.

It is also possible to use a liquid Givlon type screed installed by specialists.

2. Use scaffolding elements placed at right angles to the joists when pouring the concrete.

3. Screed the concrete mortar in lengths running at right angles to the grooves of the sheets, in other words parallel to the joists.
 4. Recommended thickness of concrete:
 - standard floor housing: $16 + 20 = 36$ mm
 - standard floor public utilities: $16 + 30 = 46$ mm
 - sound-proof floor: $16 + 34 = 50$ mm
 - inter-connected floor: $16 + 30 = 46$ mm
 - underfloor heating: $16 + 20^* + 20/25 = 56/61$ mm
- n.b.: Profile height LEWIS® sheet 16 mm + concrete layer = total floor thickness.
* estimated diameter central heating pipes.
5. Cover the completed fine-grade concrete mortar floor with polyethylene film until sufficiently hardened.

Lewis Plates with Calcium Sulphate Screed on a Floating Floor

In order to prevent any leakage when pouring the calcium sulphate screed, wherever necessary silicone or foam bead must be introduced between the lengthwise overlaps of the Lewis Sheeting to prevent any leakage through the floor. The overlaps at the length of each Lewis Plate be 100mm minimum. All the overlaps over the breadth of the Lewis Sheeting should be screwed together with self-tappers at 500mm intervals. The Lewis Sheeting must be installed tightly against the mineral wool perimeter strip and masked with plastic foil in order to prevent leakage and to stop the liquid screed from contaminating the mineral wool.

Underpinning

When the spacing of joists is greater than 900 to 1000 mm or when the amount of concrete poured onto the sheets is in excess of 50 mm, it is necessary to temporarily underpin the LEWIS® sheets. When the concrete has set the struts can be removed.

Have the supporting structure (joists, vertical masonry, foundations) professionally checked to ensure it is strong enough to bear the new LEWIS® floor!

F. GENERAL

Fine-grade concrete mortar, ceramic tiles, flat natural stone or terrazzo finishes should be applied according to the regulations and standards in force. Tile adhesive may also be used.

These application instructions are part of the Dutch KOMO Certificate no. K7470/02.

environment / buildings built to last
Re-use of existing and careful use of new recyclable materials make a LEWIS® floor an environmentally responsible “renovation” floor with a long life cycle.