

# LEWIS®

## ON CDM PF RESILIENT STRIPS

### LEWIS®

LEWIS® Dovetailed metal decking is a self-supporting, light gauge galvanized steel reinforcement sheet used for shuttering and reinforcing concrete or screed floors of limited thickness on wooden or steel frame constructions.

LEWIS® provides a professional and reliable decking solution for renovation and new build applications.

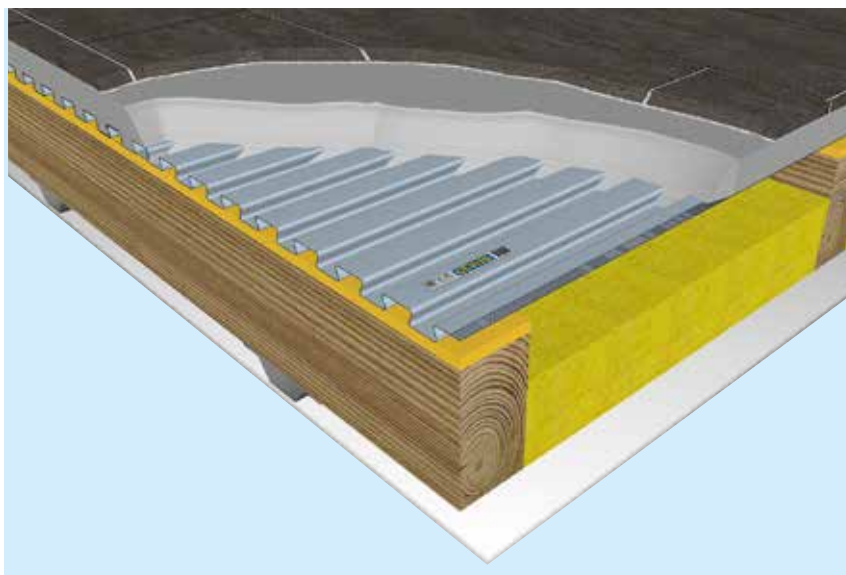
#### Common applications for LEWIS® Dovetailed sheeting

- Up-grading floors on existing timber joists, timber engineered or structural steel beams
- Acoustic separating floors within all types of new build construction
- Upgrading acoustic, fire and load bearing floor performance within existing buildings
- Timber framed floor systems
- Light gauge Steel Frame (LSF) floor systems



#### Acoustics

Besides high load bearing capacity requirements there is also an increasing demand for high quality acoustic separating floor systems. LEWIS® composite floors make it possible to create a so called "floating floor". Depending on acoustic requirements, a range of different types of resilient strips can be chosen to create an optimal mass-spring system.



The highest possible acoustic performance of the LEWIS® decking system can be achieved by using LEWIS® CDM PF resilient strips.

#### CDM PF resilient strips

CDM PF is a high quality polyurethane foam (elastomer) that because of its permanently elastic behaviour is perfectly suitable to create a mass-spring system that decouples the vibration source from its surroundings and suppresses impact noise and vibrations.

CDM PF resilient strips are specially developed by CDM to be used in combination with the LEWIS® metal decking. Successful acoustic tests have been carried out in cooperation with the University of Eindhoven and Level Acoustics & Vibration on LEWIS® acoustic floor constructions with resilient strips.

With CDM PF resilient strips it is easily achievable to design LEWIS® composite floor systems exceeding the standard requirements for acoustic separating floors in current UK Building Regulations.

#### Features of LEWIS® CDM PF

- permanent elastic behaviour
- suitable for high load bearing performance requirements
- resistant to ageing
- highly stable material
- low installation height (12 mm)

Coloured yellow and blue, we have 2 different types of CDM PF resilient strips available.

LEWIS® CDM PF is available in 80 mm wide x 12 mm thick x 2 m roll lengths.

Type CDM PF	Density*	Max. static load	Max OC. load	Creep rate**	Resonance-frequency	Deflection	C <sub>dyn</sub> ***
Yellow	280 kg/m <sup>3</sup>	0,04 Mpa	1 Mpa	1.98 % H/DEC	20 - 40 Hz	< 3 mm	50 MN/m <sup>3</sup>
Blue	365 kg/m <sup>3</sup>	0,065 Mpa	2 Mpa	1.04 % H/DEC	15 - 40 Hz	< 3 mm	71 MN/m <sup>3</sup>

(\*)ISO 845 - (\*\*)ISO 8013, at 0.091 MPa - (\*\*\*)EN 29052-1

## Design information

Joist and beam centres, spans, load bearing requirements and weight of the LEWIS® floor must be taken into account for the selection of the appropriate LEWIS® acoustic floors with CDM PF resilient strips. To select the appropriate type of CDM PF please make use of the design table below.

The design table is based on the building categories according to EN 1991-1-1, table 6.1. For deviating load bearing capacities please feel free to contact us.

### Design table LEWIS® acoustic floors with CDM PF

Category	Specific use	qk (kN/m <sup>2</sup> )	Qk (kN)	LEWIS® floor thickness	Centre to centre span of the beams (m)																		
					0,4	0,5	0,6	0,7	0,8	0,9	1	1,1	1,2	1,3	1,4	1,5							
A	Areas for domestic and residential activities	2,0	2,0	50 mm/1,06 kN/m <sup>2</sup>	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	
B	Office areas	3,0	4,5	50 mm/1,06 kN/m <sup>2</sup>	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Yellow	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	
C	Areas where people may congregate	C1	3,0	4,0	50 mm/1,06 kN/m <sup>2</sup>	Yellow	Yellow	Yellow	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	
	(with the exception of areas	C2	4,0	4,0	50 mm/1,06 kN/m <sup>2</sup>	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	
	defined under categories A, B and D)	C3	5,0	4,0	50 mm/1,06 kN/m <sup>2</sup>	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	
		C4	5,0	7,0		Not possible for LEWIS® due to high concentrated load																	
D	Shopping areas	C5	5,0	4,5	50 mm/1,06 kN/m <sup>2</sup>	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
		D1	4,0	4,0	50 mm/1,06 kN/m <sup>2</sup>	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue	Blue
		D2	5,0	7,0		Not possible for LEWIS® due to high concentrated load																	

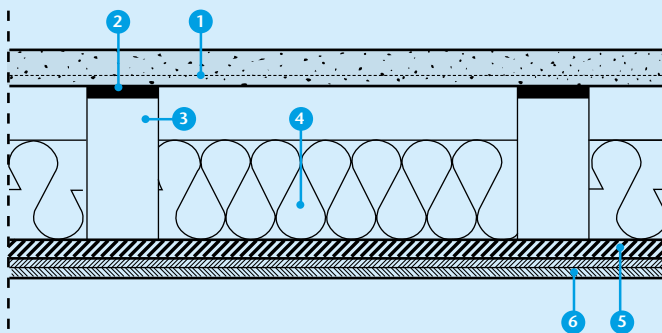
#### Assumptions

- actions according to EN 1991-1-1, table 6.1
- concentrated load area dimensions 50 mm x 50 mm
- no free edges in categories B, C and D
- concrete C20/25
- reinforcement mesh Ø5-150 (Q131) or Ø6-200 (A142) for floor thickness 50 mm in categories B, C and D

CDM PF CDM PF On request

### LEWIS® acoustic separating floors

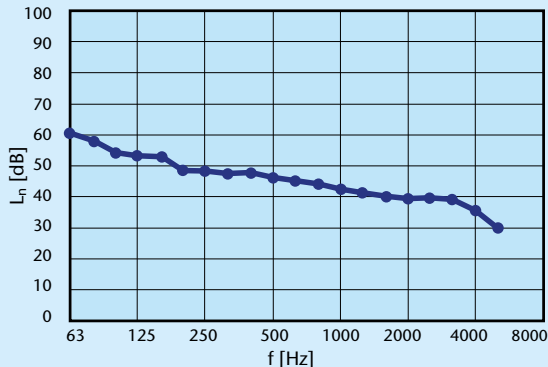
Requirements		
New build	Airborne sound	Impact sound
England & Wales	$D_{nT,w} + C_{tr} \geq 45$ dB	$L_{nT,w} \leq 62$ dB
Scotland	$D_{nT,w} \geq 56$ dB	$L_{nT,w} \leq 56$ dB
Ireland	$D_{nT,w} \geq 53$ dB	$L_{nT,w} \leq 62$ dB
Conversion		
England & Wales	$D_{nT,w} + C_{tr} \geq 43$ dB	$L_{nT,w} \leq 64$ dB
Scotland	$D_{nT,w} \geq 53$ dB	$L_{nT,w} \leq 58$ dB



- |   |                             |              |
|---|-----------------------------|--------------|
| 1 | LEWIS® Deck                 | 50 mm        |
| 2 | CDM PF strips               | 12 x 80 mm   |
| 3 | Timber joists c.t.c. 600 mm | 200 x 100 mm |
| 4 | Mineral wool                | 140 mm       |
| 5 | Spring stirrups             | 27 mm        |
| 6 | Gypsum board                | 2 x 12,5 mm  |

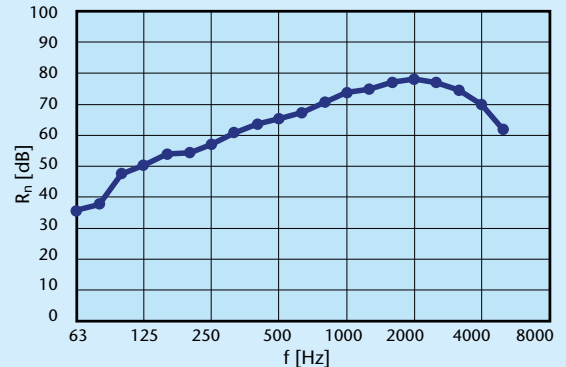
Performance	England/Wales/Ireland	Scotland
Airborne sound	58 dB	65 dB
Impact sound	52 dB	52 dB

#### Impact sound



$L_{n,w}(C_{100-2500}; C_{150-2500}) = 48$  dB (-3;-6)

#### Airborne sound



$R_w(C_{100-3150}; C_{tr100-3150}) = 69$  dB (-2;-7)

