

Cosinus Slide[®] joint

patent pending

THE ROXELER ENGINEERING MODEL

as guideline for designing Industrial floors using the Cosinus Slide® technology



The Cosinus Slide[®] joint

enhances the basic principles a designer has to comply with: securing the stability and the ongoing usability of the floor

STABILITY VERIFICATION

Thanks to the Sinus-Cosinus geometrical shaped form of the joint and the concrete, load transfer is not realized by the joint but by the floor itself. Each sinus corrugation on top is opposed by a cosinus corrugation underneath. These staggered arranged sinus corrugated steel plates shape small vertical reinforced concrete consoles over each other. The load bearing of these columns determines the load bearing capacity of the complete floor. **STABILITY CALCULATION ON REQUEST.**

ONGOING USABILITY OF THE FLOOR

The Cosinus Slide[®] joint satisfies the requirements of floor usability such as shock- and vibration free joint crossings regardless the speed of forklifts. This feature generates extended advantages in the field of:

- Environment
- ✓ Durability of the floor
- ✓ Healthcare and well-being at work
- enhanced profitability of operators and cost savings



> THEORY

Where theory meets practice

The European standard EN 1991-1-1 takes for granted wheel loads of 13kN until 85kN. The standard also assumes wheel contact surface of 20 x 20 cm which represents pneumatic tyres. The contact pressures and the corresponding shock impact of this type of tyres on a linear profile is minor or even negligible.

> PRACTICE

However, in reality small hard synthetic wheels (vulkollan, polyamide) are used which are not included in the European standard EN 1991-1-1. These types of tyres causes heavy shock impacts on linear profiles which will damage the floor, the joints and the forklifts. The tendency to increase speed of forklift traffic makes it even worse.

THE ROXELER ENGINEERING MODEL

eliminates these problems and secures the stability and ongoing usablity of your floor

ONGOING USABILITY by minimum 2x5mm sinus edge protection

STABILITY VERIFICATION Cosinus + Sinus = h2 + h1





Forklift category	Wheel load Qk Contact area 200x200mm kN	Stability verification Pneumatic tyres 200x200 mm Cosinus+Sinus h2 + h1 in cm min.	Stability verification Synthetic tyres 20x100 mm Cosinus+Sinus h2 + h1 in cm min.
G1 = F1	13	5 + 6 = 11 cm	7 + 6 = 13 cm
G2 = F2	20	<mark>6</mark> + 6 = 12 cm	7 + 6 = 13 cm
G3 = F3	32	<mark>8</mark> +6=14 cm	10+8=18 cm
G4 = F4	45	9+6=15 cm	20+8=28 cm
LM 1		11 + 6 = 17 cm	
G5 = F5	70	12+8=20 cm	
G6 = F6	85	(16 + 8) = 24 cm	

Tyres effect on the contact pressure of the floor slab with different forklift categories



Impact effect on the linear joint profile edges contingent on the diameter of the wheel and speed



Vectorial presentation of shock events on the joint edges contingent on the diameter of the wheel

Sinus joint with slide effect Shock free and no damage

а

Linear joint profile and forklift with synthetic tyres Heavy impact and extended damage

b

Linear joint profile and forklift with pneumatic tyres

limited impact, damage is minor or even negligible.

DIRECTION OF TRAFFIC



b₂

