PLADECK®

POLYMER CONCRETE MOULDING SYSTEMS

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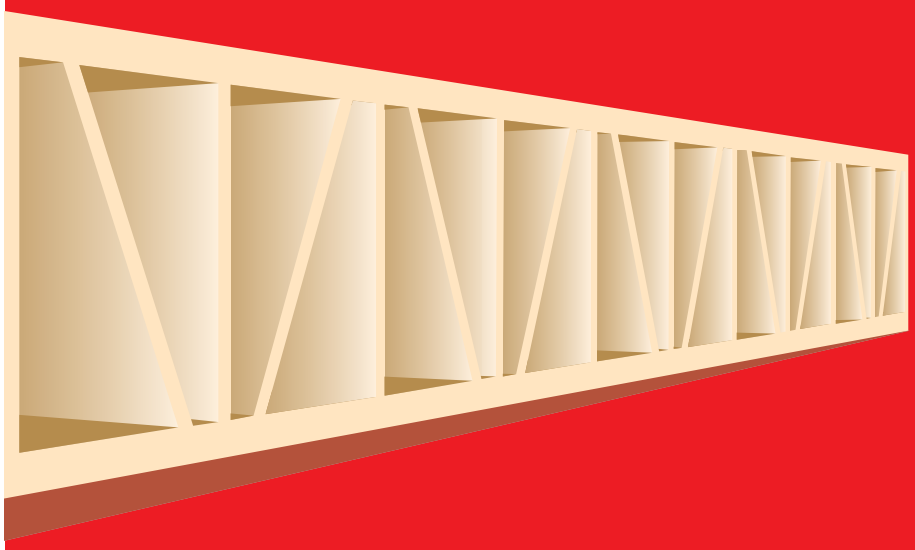
PATENT NO: 2006 • 01395

revolution in concrete moulding



www.pladeck.com

WHAT IS PLADECK ?
APPLICATION AREAS

Pladeck is a polymer product, developed for concrete moulding in columns, floors, joists and all kinds of concrete mouldings. With its suitable cost, pladeck is an ideal alternative for other concrete moulding systems such as plywood.

Mechanical properties of Pladeck is not dependent on duration of load. Different loads do not cause Pladeck to deform. Not effected by water, humidity and weather conditions, durable against fire. Not flammable.

ADVANTAGES OF PLADECK

1 - End product is attained. Initial plastering is not necessary. Plastering of paris and painting can be applied directly.

2 - Product is light. Easy to carry during mounting and dismantling.

3 - According to project requirements,can be produced in different lenghts.

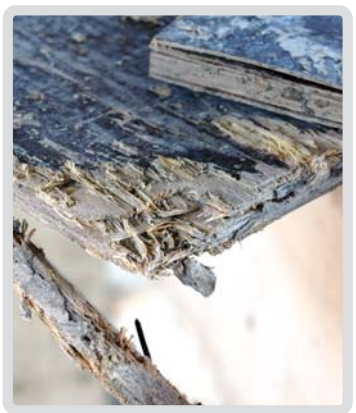
4 - No need to use moulding oil. Mould is not adhered to concrete and can be seperated from concrete very easily. This abates cost of moulding oil and labour and also abates negative effects on concrete adherence due to interaction of oil and iron.

5 - Durable against nailing, drilling and cutting. For ideal application, it is recommended to use special wide capped Pladeck nail.

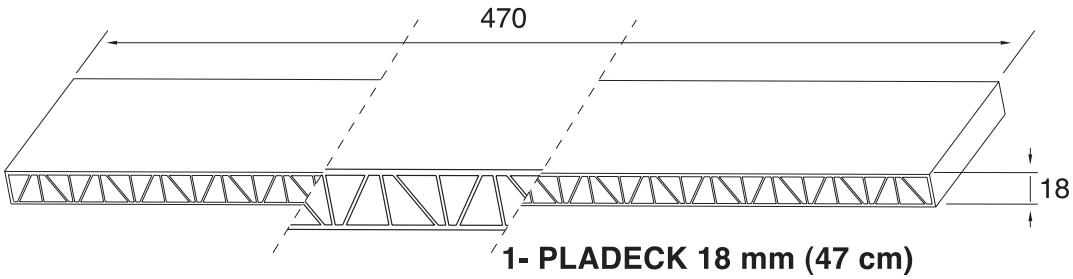
6- No need to paint with epoxy dye to get rid of water absorption. In plywood systems, this application is needed.

7 - Long life. Number of re-use is much larger than plywood.
8 - Most important thing; Pladeck is recycable. Waste material after last re-use and even small parts can be returned to manufacturer.
9 - After last re-use, waste can be returned to manufacturer partially or fully according to request of buyer.
10 - Environment friendly, because Pladeck is recycable, it can be re-produced and forests of our planet remain for us.

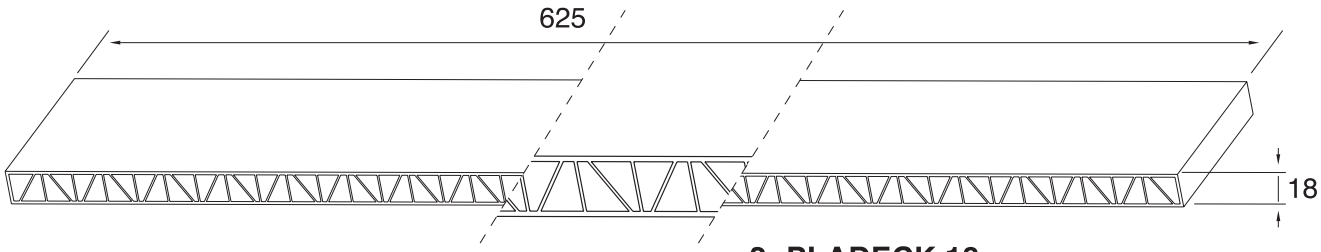
Not recycable waste Plywood.
(An example in construction site)



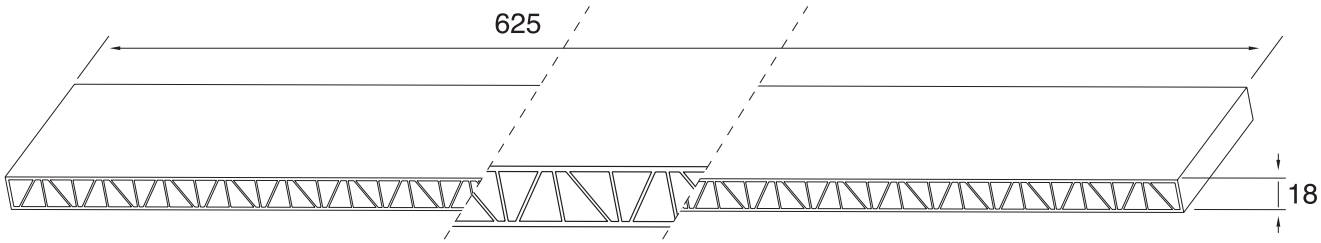
PLADECK MAIN PROFILES



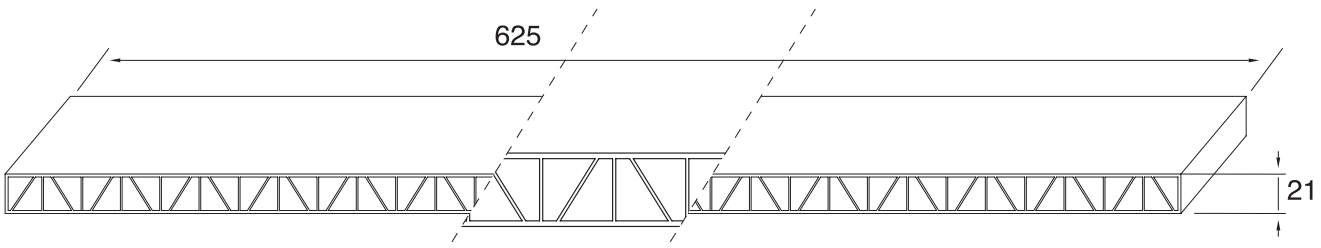
1- PLADECK 18 mm (47 cm)
470 mm * 2500 mm * 18 mm



2- PLADECK 18 mm
625 mm * 2500 mm * 18 mm



3- PLADECK
625 mm * 2500 mm * 18 mm

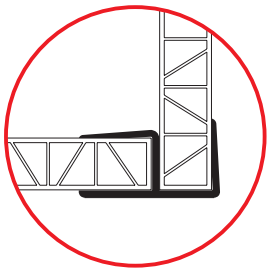


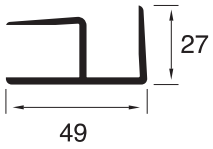
4- PLADECK FLOOR 21 mm
625 mm * 2500 mm * 21 mm

Note : Measurements in mm.

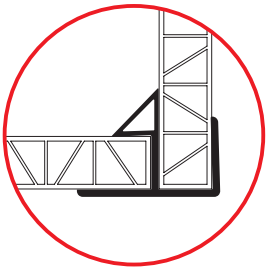
SIDE PRODUCTS

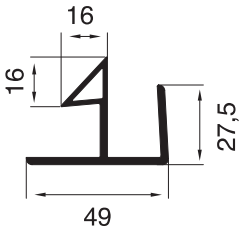
6- PLADECK CORNER PROFILE



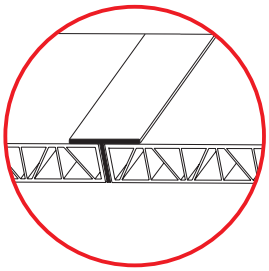


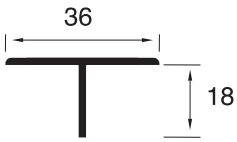
7-PLADECK CHAMBERED CORNER PROFILE





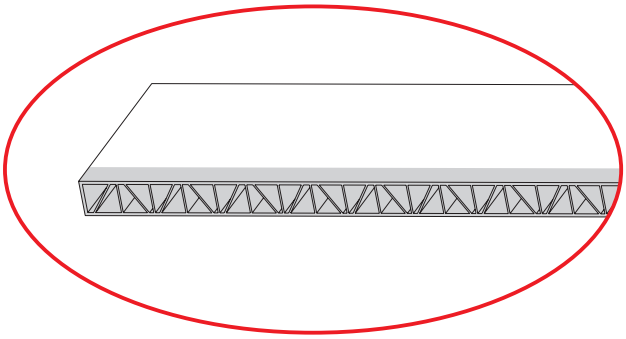
8- PLADECK T PROFILE





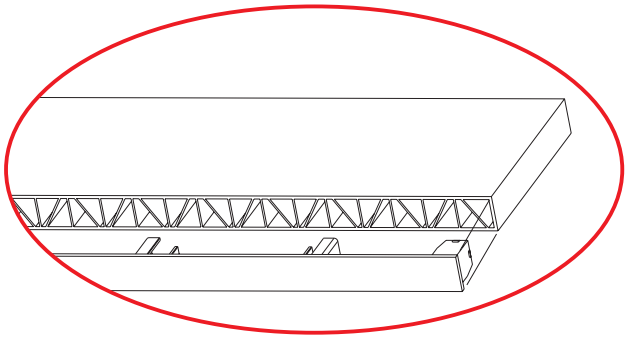
9- COVERING OPEN END

b - With scoth



* Standard production.

a - With cover



* Production according to request.

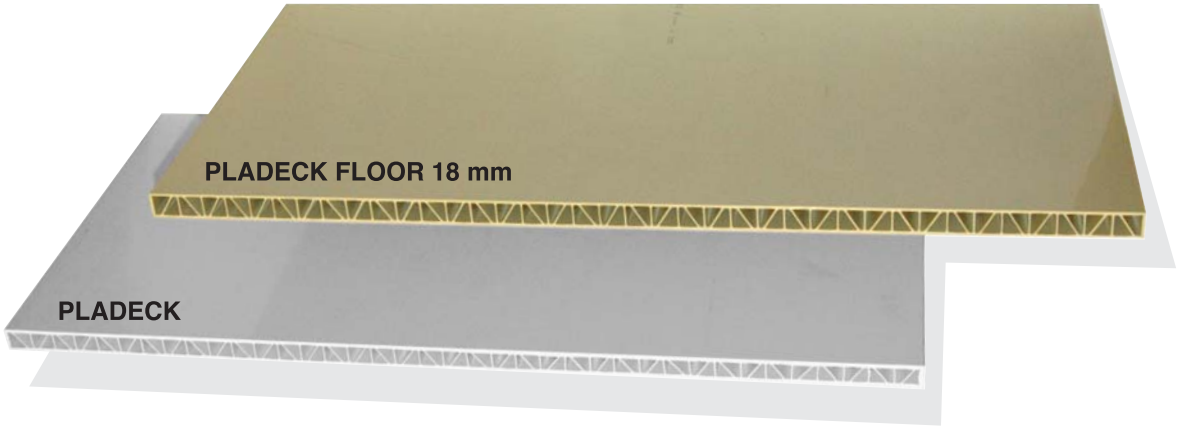
10 - PLADECK NAIL

Special Pladeck nail (wide capped)

Note : Measurements in mm.

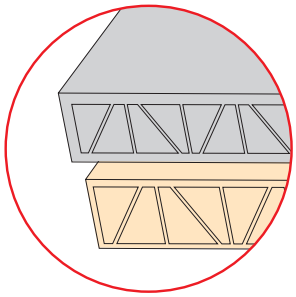
PRODUCTION AND PACKAGING

Our production is carried out in modern sites, with warranty of international quality standards ISO 9001 and ISO 14001.



PLADECK 62,5

Plate Sizes	: 625 x 2500 x 18 mm
Area of 1 Plate	: 1,5625 m²
1 Package	: 4 Plate (6,25 m²)
1 Bale	: 15 Package (60 Plate) (93,75 m²)
1 Pallet	: 2 Bale (30 Package = 120 Plate = 187,5 m²)
1 Truck	: 15 Pallet (1800 Plate = 2800 m²)



PLADECK SPECIAL 62,5

Plate Sizes	: 625 x 2500 x 18 mm
Area of 1 Plate	: 1,5625 m²
1 Package	: 4 Plate (6,25 m²)
1 Bale	: 11 Package (44 Plate) (68,75 m²)
1 Pallet	: 2 Bale (22 Package = 88 Plate = 137,5 m²)
1 Truck	: 15 Pallet (1320 Plate = 2060 m²)

PLADECK 47

Plate Sizes	: 470 x 2500 x 18 mm
Area of 1 Plate	: 1,175 m²
1 Package	: 4 Plate (4,75 m²)
1 Bale	: 15 Package (60 Plate) (70,5 m²)
1 Pallet	: 2 Bale (30 Package = 120 Plate = 141 m²)
1 Truck	: 20 Pallet (2400 Plate = 2820 m²)

Loading

Packaging

Wrapping 4 plates

1 Pallet

DETERMINING MECHANICAL PROPERTIES OF PLADECK POLYMER CONCRETE MOULDING SYSTEMS AND PREPARING TABLES FOR APPLICATION

TECHNICAL REPORT

•In case of vertical applications (colums etc.) of PLADECK SPECIAL product; with 3 m mould depth and 30 m/h concrete loading speed, fresh concrete pressure on surface of mould will be 75 kN/m2. For this case, deflections formed in 30 cm support gap are within defined limits

•Because Pladeck does not absorb water, when Pladeck is used as concretemould, relatively more water will be used in hydrotation of concretein comparison with wooden concrete moulds.This will effect durability of concrete positively.

- Pladeck mould systems can be used safely by using tables and graphics obtained from this experimental study

Note : Measurements in mm.

SUBJECT

Determining mechanical properties of Pladeck polymer concrete moulding systems and preparing tables for application.

TARGET

Experiments have been carried out in material laboratories of Istanbul Technical University, Faculty of Construction to determine mechanical properties of Pladeck polymer concrete moulding system. Experiments are classified in two groups. In first group of experiments; characteristic properties are determined such as elasticity module, endurance against leakage and rupture. In second group of experiments; loading experiments done on different support gaps to obtain loading capacity and deflection values. Characteristic values obtained from experiments are used in theoretical calculations to form calculation tables.

Loading Experiments

Loading experiments done on Pladeck plates with thickness of 18 mm and width of 62,5 cm. Flexure experiments done to obtain flexure values in vertical and horizontal applications. In both cases, worked with 3 examples of 3 different gap of support.

Way of Effective Application

Flexure experiments on different support gaps done to obtain flexure values in vertical application. In results of these experiments important structural properties such as load interchange, maximum vertical load values, deflection values, collapse shapes are obtained.

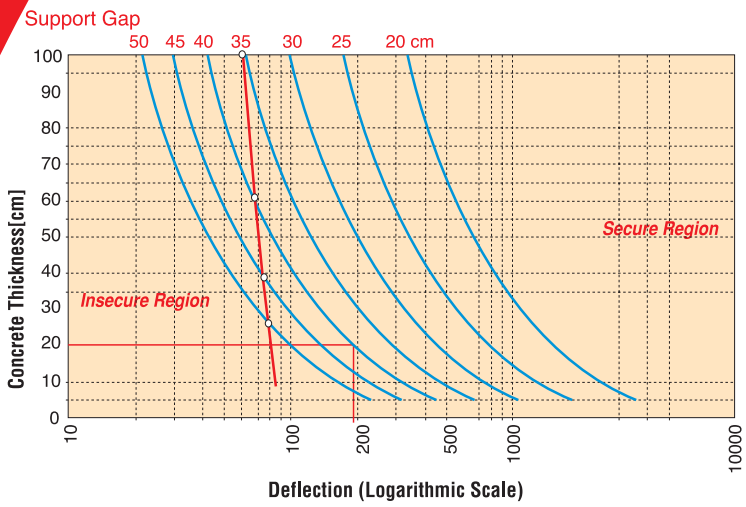
As a result, it is accepted that support is applied vertically to be able to achieve effective application of Pladeck.

SECURE USAGE TABLES WHEN USED AS FLOOR COVERING MOULD

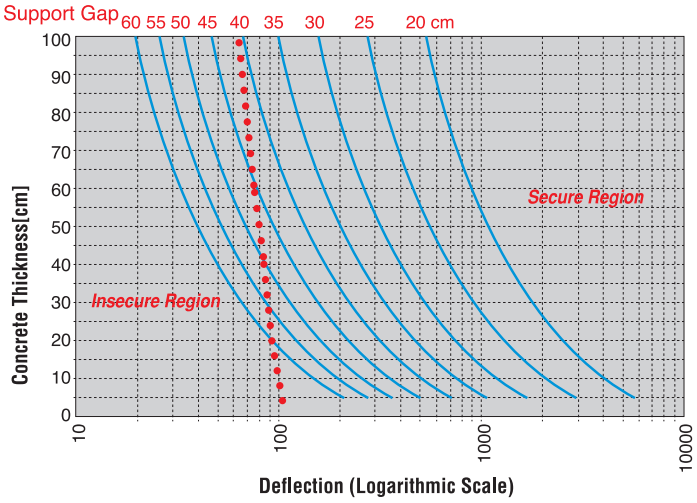
FLOOR COVERING CLASS 1

Floors with template, Industrial grounds

Pladeck Floor



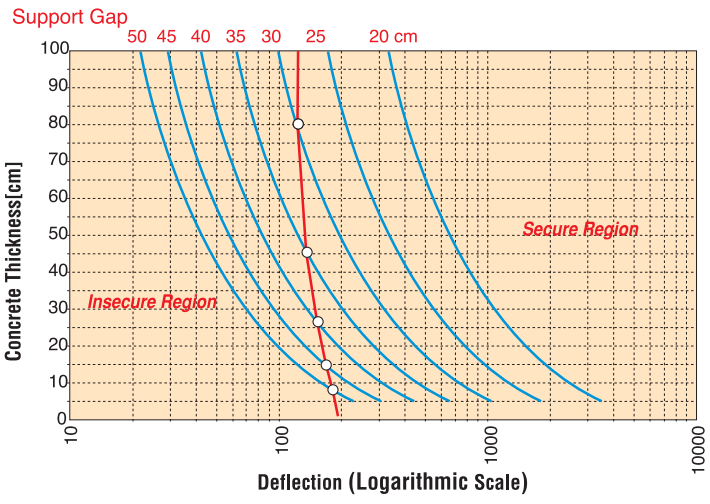
Pladeck Special



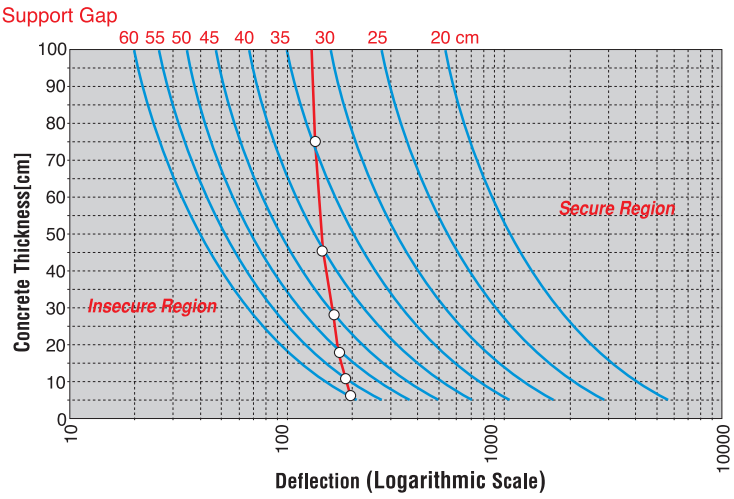
FLOOR COVERING CLASS 2

Coated floors, clad surfaces, ceramic coated floors, adhesion surfaces

Pladeck Floor



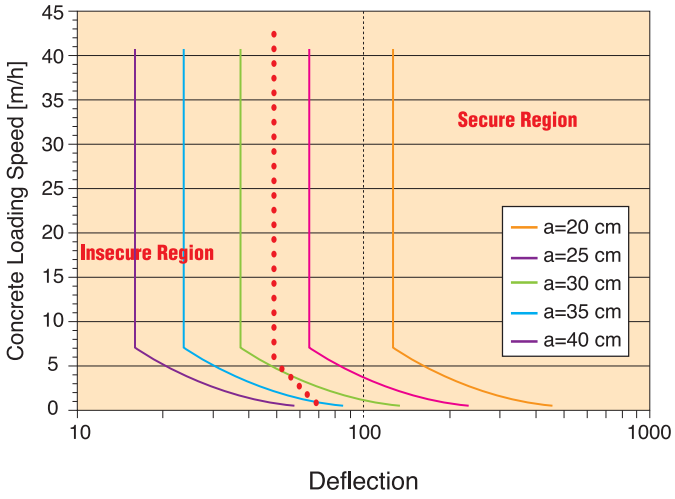
Pladeck Special



SECURE USAGE TABLES WHEN USED AS VERTICAL CONCRETE MOULD

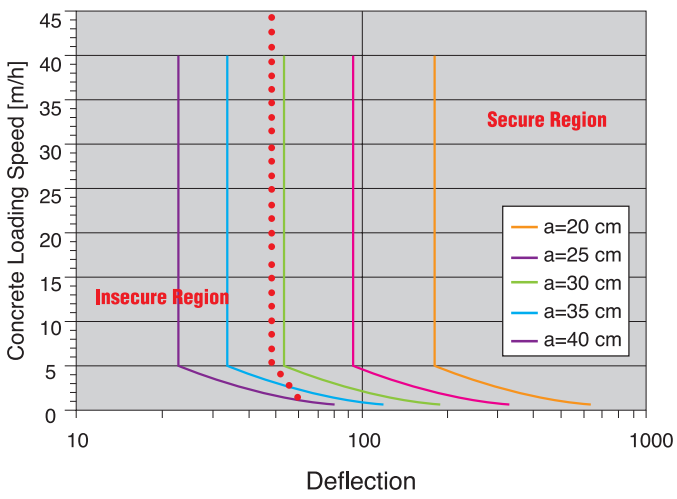
Pladeck

MOULD DEPTH = 3.5 m

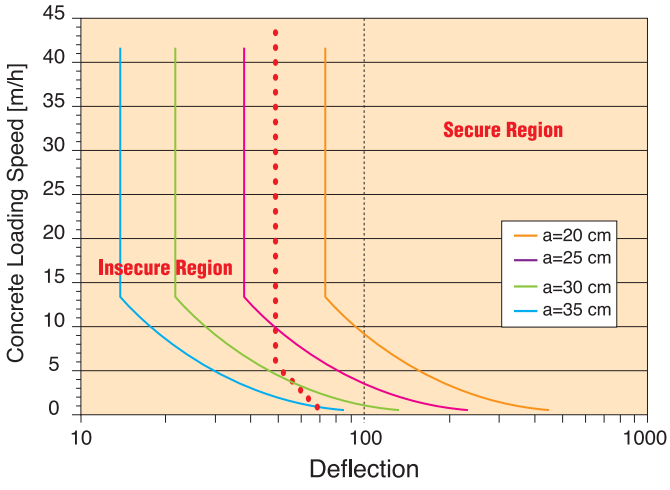


Pladeck Special

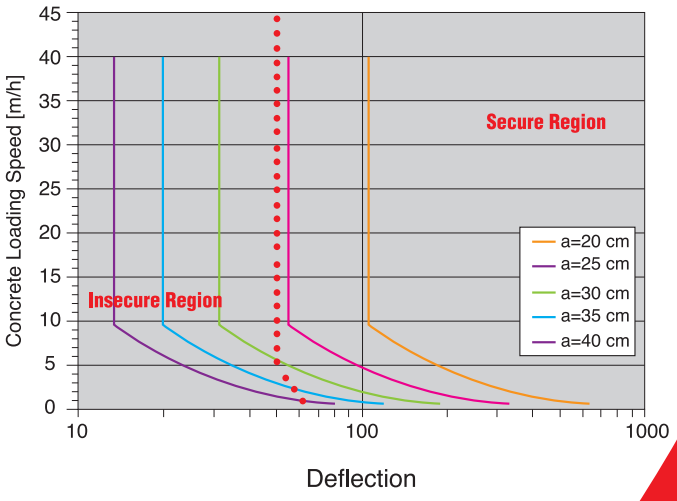
MOULD DEPTH = 3.5 m



MOULD DEPTH = 6.0 m



MOULD DEPTH = 6.0 m



a=Support GAP

APPLICATION AS FLOOR COVERING MOULD

According to DIN 1055;
Weight of Concrete : 25 kN/m^3
Addition for fresh concrete : 1 kN/m^3
Additional Load : %20 , of fresh concrete weight (Minimum 1.50 kN/m^2 Maximum 5.00 kN/m^2), (DIN 4421).
Weight of Mould : 10 kg/m^2

Concrete Load (kN/m^2)	DIN 4421	
Fresh Concrete Weight	g =	26 kN/m^3 x d (m)
Dynamic Weight	q =	1,5 kN/m^2 (1,5< g < 5,0 kN/m^2)
Pladeck Weight	p =	0,1 kN/m^2
Total Concrete Load	Q =	g + q + p

Example For Floor Covering

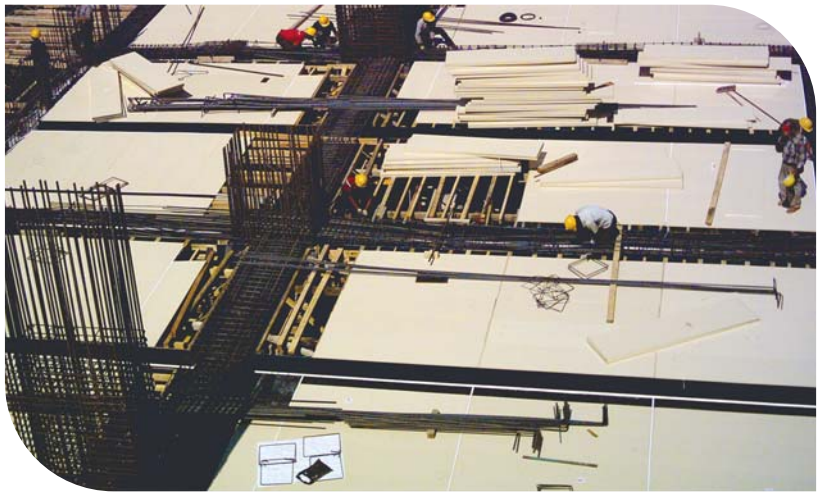
Below there is an example where Pladeck is used as floor covering mould. Load analysis belonging to concrete load of 20 cm thickness is given below.

Fresh concrete weight	: 26 kN/m^3 x 0.20 m = 5.2 kN/m^2		
Additional load	:	= 1.5 kN/m^2	
Pladeck weight	:	= 0.1 kN/m^2	

Total	:	6.8 kN/m^2	= 680 kg/m^2
For 0,625 m plate width	: 680 kg/m x 0,625 m		= 425 kg/m

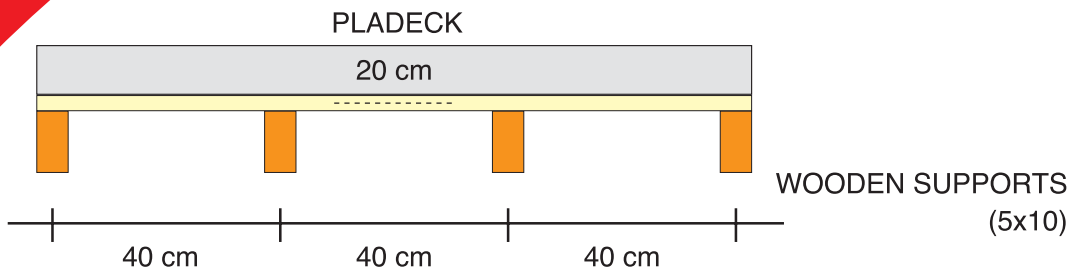
In case of vertical support application; lowest limit of flexure rigids obtained by experiments (this value will be used in calculations) is EI= 353410 kgcm^2.

In calculations, Pladeck moulding system will be considered as continuous joist which has minimum two support gaps. Consequently, biggest flexure momentum and deflection values of continuous joist which is under evenly distributed load will be used.



Biggest flexure momentum: $M = -0.125qL^2$ (two gapped continuous joist, middle support)

Biggest deflecion : $\delta = 0.667\frac{qL^4}{EI}10^{-2}$ (three gapped continuous joist, end open)



Thickness of concrete floor to be produced is 20 cm. Gap between wooden supports under Pladeck mould system is 40 cm. Chosen support gap is to be examined.

Biggest flexure momentum : $M = -0.125*425*0.40^2 = 10.125\ kgm$

Biggest deflection : $\delta = 0.677\dfrac{425*0.40^4}{35.341}10^{-2} = 0.00208\ m = 2.08\ mm$

Gap / Deflection : $L/\delta = \dfrac{400}{2.08} = 192$

In concrete thickness versus deflection table, for 20 cm concrete thickness, maximum deflection will be 2,08 mm. Gap/deflection ratio will be 192.
Accepted deflection limit is 67. Because 192 > 67 chosen support gap is sufficient for this deflection limit.

Similar results can be reached at table given for floor covering Class 1. If intersection point of 40 cm support gap curve and 20 cm concrete thickness is on or at right side of red limit line, choice will be satisfactory.

RESULTS

Number of experiments carried out to determine mechanical properties of PLADECK polymer concrete moulding systems. Calculation tables and graphics depending on results of experiments are formed for practical usage of product. Main results of this study are summarized below.

- In load capacity test, Pladeck is seen to be linear elastic up to big interchange levels. Applied load and interchange of material is proportional. But after release of load, material returns to its original shape.

For effective usage, supports must be applied perpendicularly. In both tests, it is seen that theoritical flexure rigids form lower limit for experimental values. Consequently, theoritical flexure rigids can be used in general deflection calculations.

- For 20 cm concrete thickness and 40 cm support gap, deflections formed in Pladeck is within defined limits


revolution
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