

Dramix[®]



**Steel fibres
for
industrial floors**

Dramix[®]

THE CONSTRUCTIVE IDEA

Dramix®

Steel fibres for concrete reinforcement

Dramix® glued together in bundles :

- ✓ *is the only guarantee for a homogeneous distribution.*
- ✓ *allows the use of fibres with high l/d ratio.*
- ✓ *can easily be added in the batching plant or in the truck mixer.*



Dramix® steel wire for high tensile strength.

Mechanical anchorage (hooks) at the ends for optimal pull-out resistance.

P R A C T I C A L

Construction Advantages

FASTER
+15% to 30%

- ✓ No time consuming placing of the mesh.
- ✓ Reinforcement always in the right place.

E C O N O M I C A L

Economical advantages

CHEAPER
-10% to 30%

- ✓ The use of Dramix® reinforced concrete reduces the construction time of the floor compared to mesh reinforcement.
- ✓ The floor thickness can be reduced by using Dramix® steel fibres.
- ✓ Dramix® steel fibres with a high l/d ratio offer the most economic solution compared to other types of steel fibres.
- ✓ A Dramix® steel fibre floor offers the best cost/performance ratio.



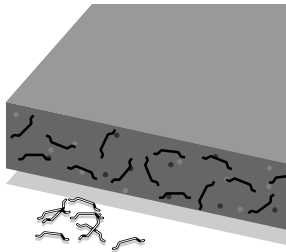
T E C H N I C A L

Technical advantages

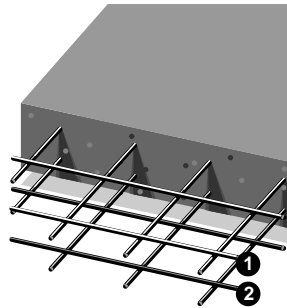
BETTER

- ✓ An increase in load bearing capacity due to the redistribution of stresses.
- ✓ Reinforcement throughout the full depth offers excellent crack - control.
- ✓ Optimal resistance against impact and dynamic loads.
- ✓ Joint spacings can considerably be increased.

Dramix® versus double mesh



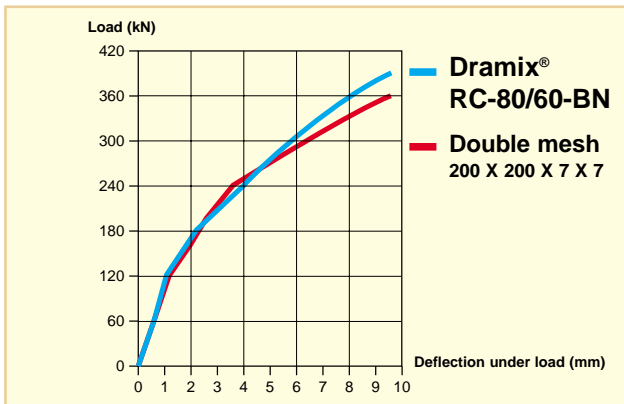
Dramix® RC-80/60-BN
30 kg/m³



Double mesh
200 x 200 x 7 x 7



Thames Polytechnics (GB)



Conclusions

- ✓ Dramix® Steel fibres offer the same load bearing capacity as double mesh.
- ✓ Same deformation as a double mesh floor.

Aspect ratio l/d

A key factor in quality fibre concrete is the relationship between the length and diameter of the fibres : the higher the l/d ratio, the better the performance.



l/d 45 : the basic requirement



l/d 65 : for quality concrete



l/d 80 : for maximum performance

Product development

Soluble bags:

- ✓ 20 kg bags for easy handling in accordance with health and safety legislation.
- ✓ Reduced waste material on the job site.
- ✓ Very suitable in combination with the glued fibres.
- ✓ Mixing according the Dramix® product data sheets.



NEW

Automatic dosing equipment

- ✓ New dosing equipment for:
 - high accuracy.
 - on site data recording.
- ✓ Big bags to further reduce labour cost



NEW

VA dosing

Conventional Dramix® industrial floors



1

The fibres are added and mixed in the concrete.



2

The concrete is cast using a pump, dumpers or direct discharge from the truck mixer.



3

The correct level is checked by means of laser equipment.



4

While hardening the concrete is power floated. For special surface finishes, toppings can be used.



5

Immediately after being power floated the floor must be cured using either a chemical curing compound or covering the floor with a plastic foil.



6

After 1 - 3 days contraction joints are cut into the floor.



1976. Back to the past ... Labour intensive placing techniques of 20 years ago in a Bekaert production plant using Dramix® reinforcement.



Forward to the present ... Modern placing techniques are labour efficient (laser screed, dumpers ...)



Workshop with high impact resistance and full flexibility for moving machinery around.



This production area needed a foundation for heavy machinery.

Conventional Dramix® industrial floors



Warehouse. Even the biggest warehouses pose no difficulty for Dramix®. A warranted design offers all the security needed.



Brighter working environment with a coloured floor.



Colour can be added during or after casting. (paints or toppings ...)



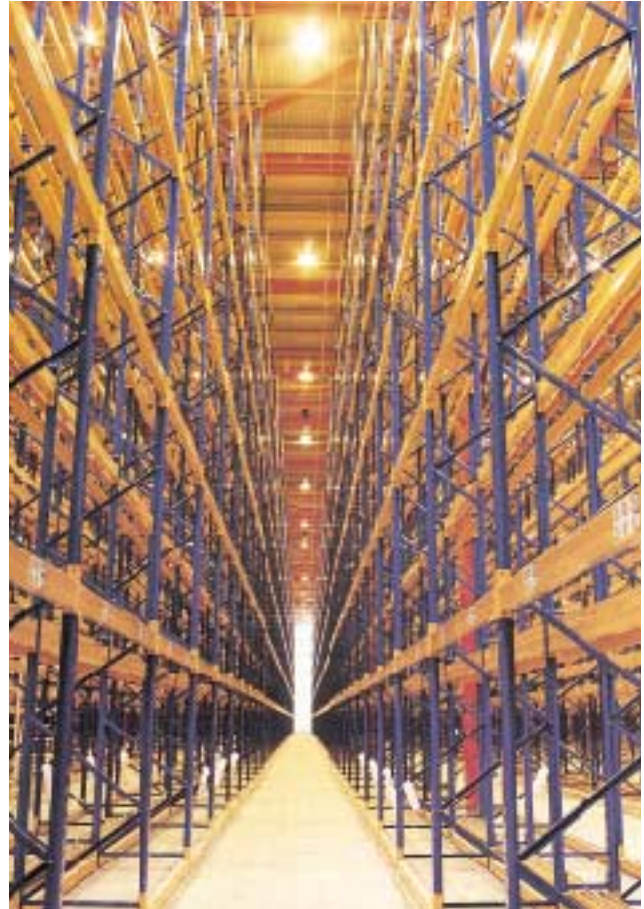
High durability with Dramix® steel fibres.

Jointless Dramix® floors

NEW



Superflat jointless warehouse floor. Discontinuous reinforcement makes a superflat floor easier to construct. As there are no joints a high tolerance is maintained over the whole area.



Jointless warehouse floor. No joints means full flexibility for racking lay out and lower maintenance costs.



APPLICATION

Application field:

- ✓ Warehouses with intensive traffic.
- ✓ Superflat floors.
- ✓ Cold storage rooms.
- ✓ Floor for wire guided vehicles (EGV).

Jointless cold storage room. No joints for a hygienic environment.

Jointless Dramix® floors

NEW



A D V A N T A G E S

Advantages:

- ✓ Full flexibility of racking lay out.
- ✓ No curling.
- ✓ Lower maintenance cost.
- ✓ A hygienic and esthetic floor.

**ASK ASSISTANCE
to Dramix® people**

Jointless floors in a heavy duty warehouse results in less maintenance for fork lift trucks.

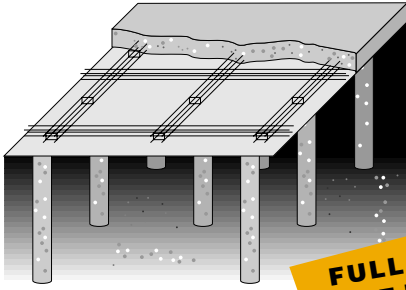


Warehouse. With heavy dynamic loads Dramix® steel fibre floor for a long life cost effective solution.

Dramix® floors on piles

NEW

PATENT PENDING
PCT/EP98/00719
Test and design in cooperation with TU Braunschweig
(Germany) in accordance with Eurocode 2.



FULL DESIGN SERVICE



A P P L I C A T I O N

Application field:

- ✓ Weak sub-bases.
- ✓ Pile spacing up to 5 m.
- ✓ Loads up to 50 kN/m².

A D V A N T A G E S

Advantages:

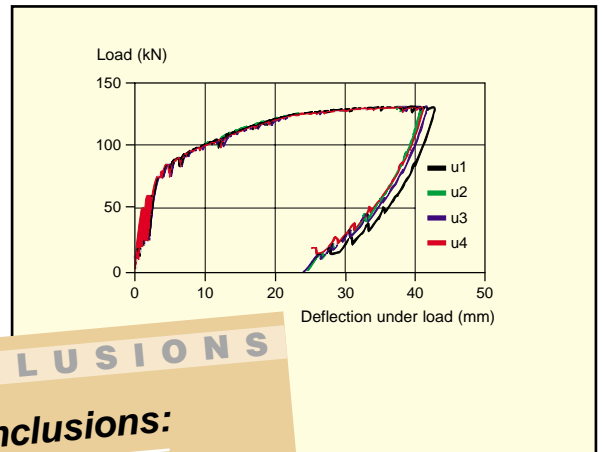
- ✓ Time savings up to 40%
 - no placing of double layers of reinforcement.
 - no pile caps required.
 - lay out of prefabricated steel cages allows the use of laser-screed machines.
- ✓ Total costs savings up to 20%
 - up to 15% concrete saving.
 - up to 40% steel saving.
 - less labour costs.
 - special subbase unnecessary.

Dramix® floors on piles



Testing

Extensive testing on serviceability, dynamic and ultimate load.

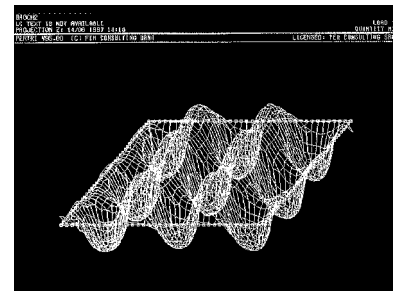
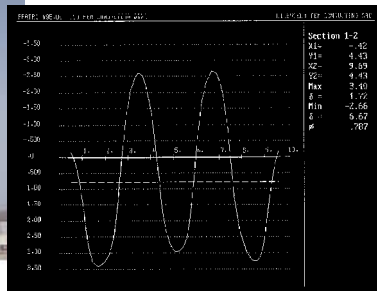


CONCLUSIONS

Conclusions:

- ✓ High ultimate load.
- ✓ High crack control.
- ✓ No punching.

Floors on vibro-compacted gravel piles



APPLICATION

Application field:

- ✓ Semi-compressible ground layers (Clay).
- ✓ Stiff layers at max. 8 m.
- ✓ Situations where minor settlements (1 cm) are acceptable.

ADVANTAGES

- ✓ Maximum negative and positive bending moments are of the same order of magnitude.
- ✓ The ductile steel fibre floor excellently withstands moderate deformations.
- ✓ Dramix® floors with or without joints are possible.
- ✓ For certain ground types the whole system "Vibro compacted piles + Dramix® floor" is cheaper than a floor on foundation piles.
- ✓ Faster construction time.

Dramix® outdoor pavements



Harbour pavement.



Loading dock.



Distribution center.

Outdoor pavements



Heavy duty pavements. No loads are too high for Dramix® reinforced pavements.



Container dock.

Environment



Petrol station according to most severe German guidelines (DAfStb-Richtlinie) with a fluid tight floor.



Combustion furnace.



Scrap yard.

Should you require further information please contact us for:

- ✓ **Information**
 - Industrial Dramix® floors
 - Jointless Dramix® floors
 - Dramix® floors on piles
 - Dramix® fluid tight floors

- ✓ **Application specifications**

- ✓ **Design advice and assistance**
 - fast
 - professional
 - warranted

- ✓ **Dramix® specifications on floor executions**
 - product data sheets
 - design assistance

- ✓ **Assistance in optimizing the mix design**

- ✓ **On site support**

- ✓ **Professional co-operation for R&D and application development**



Soluble bag
(50 bags of 20 kg)



Bigbag
(1100 kg)

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