



El evento del Cemento, el Concreto y los Prefabricados



Morteros hiperliquidos en la construcción – Morteros en el bosque

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OVERVIEW

- **DESCRIPTION**
- TECHNICAL ATTRIBUTES
- APPLICATION
- QUALITY CONTROL



PRODUCT DESCRIPTION

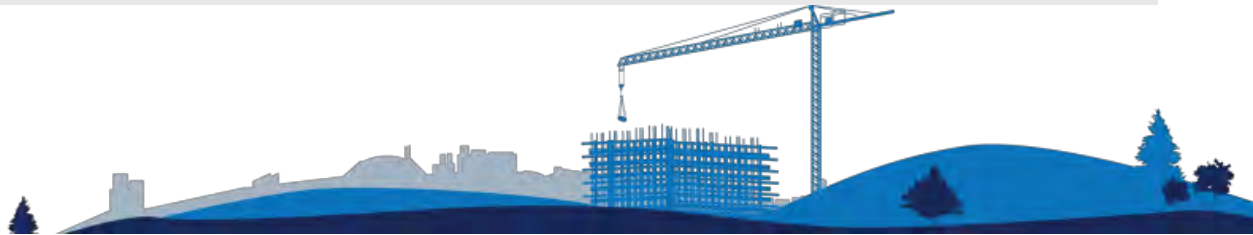
- Thin top layer mortar (< 10cm) poured in situ on top of the horizontal structural concrete or insulation
- This product gives a smooth surface finish on top of which other finishing materials can be applied.



- Cement or Anhydrite

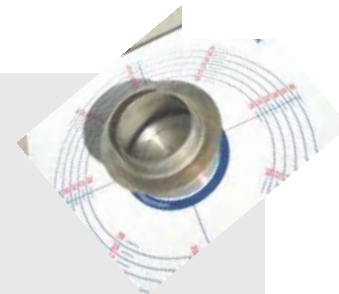
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TECHNICAL ATTRIBUTES

- Slump (Hagermann cone) :
 - 250 ± 30 mm (heating floors application)
 - 230 ± 30 mm (non heating floors applications)
- Rheology : 2h30 workability retention



- Strength Class:

Strength	Heating Floors applications	Non heating floors applications
Compressive strength	20 MPa	16 MPa
Flexural strength	4 MPa	3 MPa

- Thermal conductivity > 1.2 W/m.K (cement) $> 2,5$ W/m.K (Anhydrite)
- Setting time :
 - Start at 20h
 - End at 24h

TECHNICAL ATTRIBUTES

- Shrinkage at 28 days < 700 $\mu\text{m/m}$

- Technical Agreement in France:

Maximum Area (m ²)	
60 m ² non heating floors 40 m ² heating floors	cement
1000 m ² non heating floors 300 m ² heating floors	anhydrite

BENEFIT TO USE SELF LEVELING SCREED

TRANSPORTATION

- RMX solution delivered in RMX truck
- Fast application by pumping

APPLICATION

- Planarity
- Reduce labor of application
- Better covering of tube (heating floor)
- Identical drying time compare to dry mortar

KEY NUMBERS

- For a 100 m² screed flooring:
 - Dry mortar: 3-4 persons in 6 hours
 - Screed: 2-3 persons in 1 hour
 - 2 jobsites per day

FIBRES

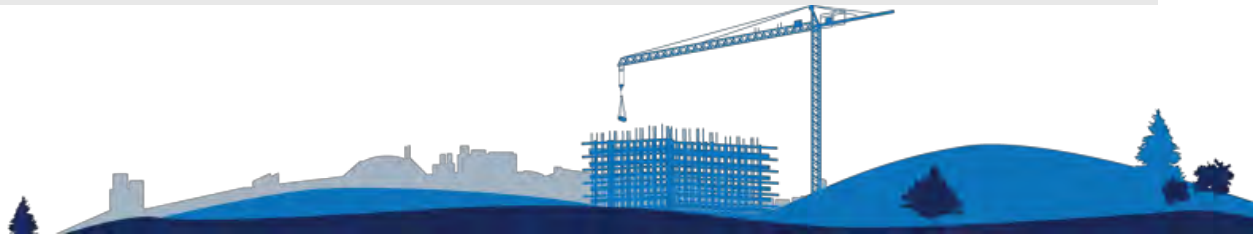
- Synthetic polypropylene fibres
 - Length (mm) : 6 à 12
 - Diameter (μm) : 32
 - Quantity (kg/m^3) : 0,3 à 0,9
- Structural metallic fibres
 - BEKAERT DRAMIX ZP305
 - Length (mm) : 30
 - Diameter (mm) : 0,55
 - Quantity (kg/m^3) : 10
 - ARCELOR HE 55/35
 - Length (mm) : 30
 - Diameter (mm) : 0,55
 - Quantity (kg/m^3) : 10
- Structural Macro- synthetic fibres
 - CHRYSO Fibre S25
 - Length (mm) : 25
 - Diameter (mm) : 0,9
 - Quantity (kg/m^3) : 3
- Structural Glass fibres
 - ANTICRACK HP 67/36 Owens Corning (alkali resistant fibres)
 - Length (mm) : 36
 - Slenderness ration (length/ \varnothing) : 67
 - Quantity (kg/m^3) : 5



In France, meshes are no longer recommended due to problems of positioning

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APPLICATION

- Screed is applied exclusively inside buildings
- Need to be cured – or use internal curing
- Can be used for heating floors
- Cannot be used for industrial floor - high load / traffic



TYPE OF SYSTEMS

- Bonded screed
- Un-bonded screed
 - plastic film
 - thermal insulation
 - acoustic insulation
- Heating floor – water
 - Hot water
 - Reversible (hot/low temperature)
- Heating floor – electric
- Retrofitting – new floor



SCREED THICKNESS & REINFORCEMENT

- Maximal thickness: 10cm
- Separator wall can be fixed with density lower than 150 kg/ml
- Reinforcement (structural fibres) is needed in the case of heating floors

	House / Building		Industrial / traffic	
	Thickness(cm)	Reinforcement	Thickness(cm)	Reinforcement
Bonded	3	-	4	-
Un-bonded				
- Polythene film	4	-	5	YES
- Insulation materials	4 to 4,5	YES		

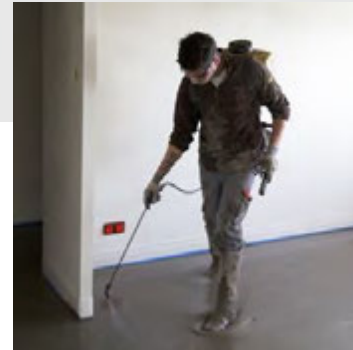
CONDITIONS FOR PLACEMENT

- Building closed – windows and doors placed
- Separation walls placed
- Heating system checked and waterproof
- Room temperature between 5°C et 30°C and no risk of freeze during minimum 4 days after pouring



EQUIPMENT

- Equipment to measure flow (cone and plate)
- System to measure the thickness of the screed (laser level)
- Leveling gauges (tripods)
- Dappling Bar to finish the screed
- Curing agent with spraying equipment

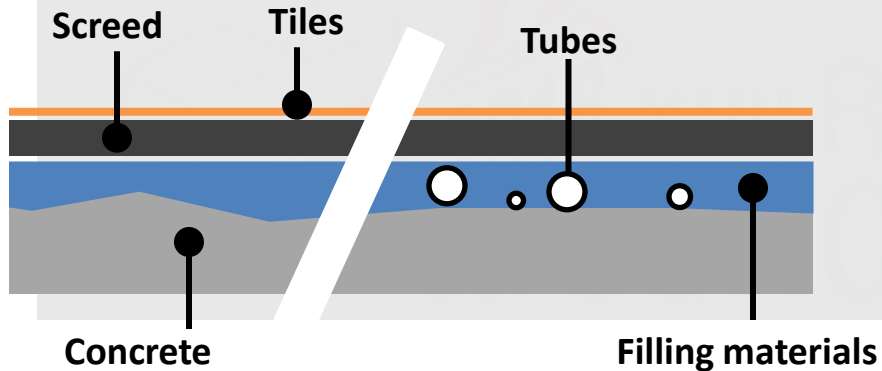


EQUIPMENT



SURFACE PREPARATION

- Remove all dust and debris from the floor surface and leave free from contamination
- Must cast screed on plane surface to avoid differential drying
- In case of non flat surface or canalization (water/electrical...), apply a non structural filling material to finalize the support



BONDED SCREED

- Substrate (floor slab / unit) may require mechanical treatment to remove laitance and other adhered material. Shot blasting or scabbling would be appropriate.
- Then the substrate surface should be:
 - swept or vacuumed to remove any dust
 - humidified
- Prior to installation, a primer / sealer should be used (see manufacturer's instructions).

UN-BONDED SCREED

Two options:

- Screed placed on polythene laid direct to substrate
- Screed floating on insulation

INSULATION

When placing insulation:

- Ensure that insulation boards are laid flat (no rocking)
- Boards must be stable when walked on
- Boards must be tightly butt jointed

EDGE STRIP

To allow for any minor expansion once the screed is dry, an edge strip need to be applied at the bottom of walls, pillars, stairs...

**Strip minimal
thickness 5 mm**

**Tack the edging strip
to the walls**



UN-BONDED SCREED

- Tanking membrane: Polythene film 150 μm place on top of insulation
- Plastic films have 10 cm overlap and are fixed with adhesive tape
- The plastic film need to be 10cm higher than the screed level on the periphery of the wall



JOINTS - 1/4

Structural joints

- Respect the existing structural joints of the building

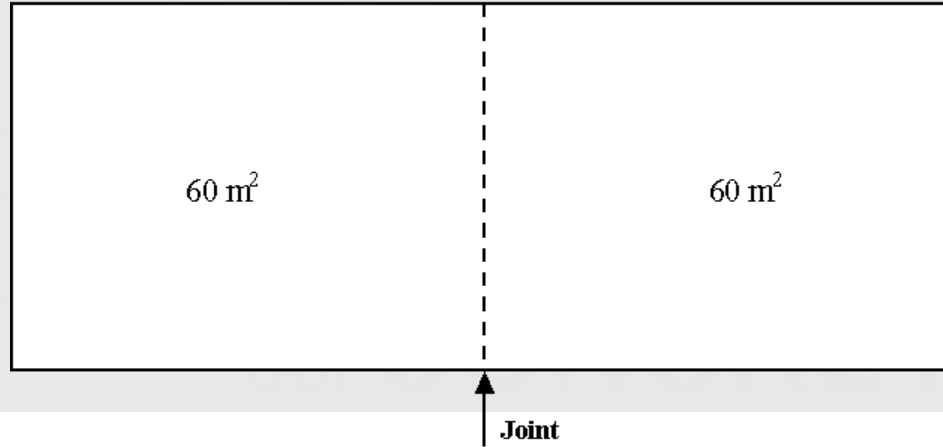
Doors

- Independently of the normal joints surface – all the doors need to be treated



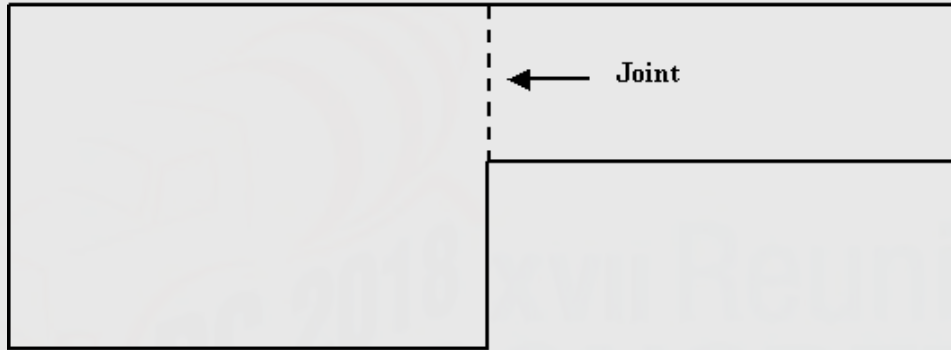
JOINTS - 2/4

- Maximum surface for **non heating floors** 60 m² (cement) 1000 m² (anhydrite)
- Maximum surface for **heating floors** 40 m² (cement) 300 m² (anhydrite)
- Maximum length < 8 m



JOINTS – 3/4 ANGLES

- Angles need to be treated specifically with adapted joints



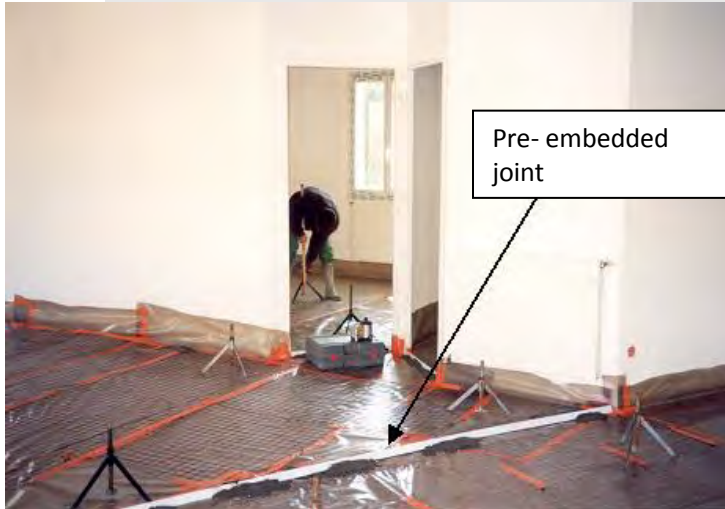
- Corridor (width ≤ 3 m) : joints every 5m maximum

JOINTS – 4/4

- Joints must be done between **24 to 48 hours**

Or

- Plastic shape can be installed before pouring the screed



PUMPING

- Specific screed pump (thermal or electric, rotor) must be used to apply the screed (15m³/h)



PUMPING

Before pumping the screed for the placing, tubes need to be greased with a slurry composed by :

- Mix of about 10 kg cement with 10 L of water

Or

- Mix of about 5 L of screed with 5 L of water

THIS SLURRY MUST BE RECOVERED



SCREED PLACING

- Start the pouring from the far point of the jobsite and progress backwards
- Try to maintain the tube not higher than 15 cm from the support
- Cast the screed until the targeted level is reached (use laser or ruler system)



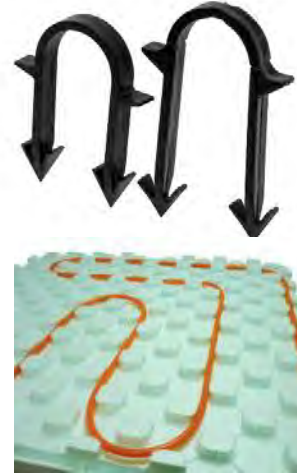
HEATING FLOOR

INSTALLATION CONSIDERATIONS

- Ensure that the floor heating pipes are appropriately fixed
- Fill the under floor heating pipes with water and check for any signs of leaking.
- Perform a pressure test to ensure the pipes hold water under pressure.

MIX DESIGN

- Must contain structural fibres



HEATING FLOOR

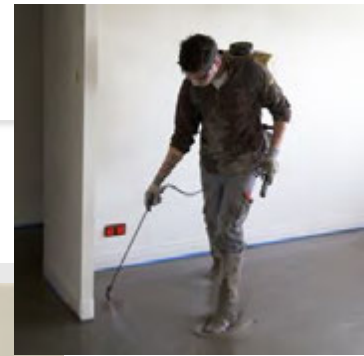
FIRST HEATING

- Wait minimum 7 days after the placing of the screed
- The heating system temperature should be built up gradually
- The procedure for the first heating is different for each type of heating floor (electrical, water).



FINISHING

- Use leveling bar to disperse and improve flatness (pass in 2 directions)
- If the screed does not contain curing, finish with a curing agent



OPEN TO SERVICE/USE

- It is possible to walk on the screed after 24h (cement) 48h(anhydrite)
- Temporary storage directly on the screed after 3 days
- For correct drying, the surface need to be free
- Joints need to be done after 24h to 48h

OPEN TO SERVICE/USE

- Moisture evolution – for a 5 cm screed

Relative moisture *	Drying time
5 %	7d
4 %	15d
3 %	28d

*Estimated for a temperature of 20 °C and a relative humidity of 65%



Plastic film taped



Electronic meter



Carbide bomb

OPEN TO SERVICE/USE

- Eliminate the superficial film by brushing or polishing the surface
- Delay:
 - Minimum 7 days of drying
 - Maximum 8 days before covering



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RECEPTION ON THE JOBSITE

- The flow must be in a range of
 - 22 - 28 cm for heating floors applications
 - 20 - 26 cm for non heating floors applications



Slump flow need to be controlled before pouring

RECEPTION ON THE JOBSITE

- If the flow is under the minimum target

Heating floors application - Ø 22cm

Non heating floors- Ø 20cm

- Possibility to add water. The maximum authorized is of 10 L/m³ (in steps of 5 L/m³)
- Rotation of the truck mixing during minimum 1 min/m³ and less than 10 minutes maximum
- Finish the pouring maximum 2h30 after production



PRODUCTION AND CONTROLS

- Slump test realised at the RMC plant and value written on the delivery ticket
- Slump test realised on the jobsite by the applicator and value written on the delivery ticket



CONCRETE DELIVERY TICKET

Client: **CONCRETE DELIVERY TICKET**
 Date: **2018-05-10**
 Time: **10:00**
 Location: **CONCRETE DELIVERY TICKET**
 Project: **CONCRETE DELIVERY TICKET**
 Batch: **CONCRETE DELIVERY TICKET**
 Slump: **CONCRETE DELIVERY TICKET**
 Temperature: **CONCRETE DELIVERY TICKET**
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French experience Self-levelling screeds

Self levelling screeds – french



Morteros en el bosque



En ville, on les trouvera souvent sur :
des aires de jeux pour enfants ou jeux de boules,
sur certains stationnements.
des promenades en bordure de fleuves
ou sur certaines voies vertes.



- une **connotation « nature »** forte et s'intègrent bien dans l'environnement.
- Leur **confort sonore** est un véritable atout.
- La variété de leurs teintes leur permet de s'intégrer au mieux aux espaces qu'ils revêtent.
- L'utilisation de granulats locaux renforcera d'autant plus cette perception.
- Ils sont facilement associés à des bétons comportant les mêmes granulats.
- Économiques et de mise en oeuvre rapide



La stabilisation du sable est essentielle.

Elle est toujours réalisée mécaniquement à l'aide d'un compacteur.

Pour améliorer sa pérennité, on peut lui ajouter un liant.

On distingue alors deux familles de matériaux :

1. les sables stabilisés mécaniquement
2. les sables stabilisés avec un liant.





Préparation du fond de forme
20 cm de grave compactée
Bien arroser support



Mise en œuvre du produit

- De 10 à 20 cm de de sable stabilisé
- Compacter







Gracias

Thank You

Merci