

# MasterFlow 928

Ready to use, precision, non-shrink grout, natural in colour, fluid, high strength. Placement by pouring or pumping. Meets non-shrink requirements of CRD-C 621-83. SECO quality label. Low chromate content (Cr-VI) < 2 ppm.

## DESCRIPTION

MasterFlow 928 is a specially prepared, ready-to-use, non-shrink, high-strength grout. The product contains sulphate resistant Portland cement (HSR LA). It is formulated for use at any consistency from fluid to damp pack for precision grouting of equipment, concrete systems, structural building members, curtain walls, precast wall panels, beams and columns. It contains natural aggregates and provides a grout that is similar in appearance to mortar. The maximum grain size is 1,4 mm.

## ADVANTAGES

MasterFlow 928 provides:

- A ready-to-use grout that hardens free of bleeding, settlement of drying shrinkage when mixed and placed at any consistency: fluid, flowable, plastic or damp pack.
- A grout that retains good workability even after 1 hour at 20°C.
- A non-shrink grout that can be pumped into intricate areas or areas inaccessible to conventional grouting methods.
- A non-shrink grout for use where a grout similar in appearance to mortar is required or desired.
- A non-shrink, dense grout which contains no gas-generating or air-release agents such as aluminium powder, fluid coke, etc.
- A grout that develops high strengths at fluid and flowable consistency without vertical confinement.

## APPLICATIONS

MasterFlow 928 is recommended for:

- Grouting precision equipment, baseplates, soleplates, and columns with a typical layer thickness of 2,5 cm up to 5 cm.
- Grouting application where shrinkage must be eliminated and where high-strength grout similar in appearance to mortar is required or desired.
- Non-shrink grouting of precast wall panels, beams and columns, anchor bolts and reinforcing bars.
- Use for exposure classes XC4, XF4, XD3, XA3 according to EN 206-1 (Concrete standard).

In optimal conditions MasterFlow 928 can also be applied from 10 mm -100 mm. For a layer thickness above 100 mm we recommend the use of MasterFlow 980.

## STRENGTH DEVELOPMENT

The strength of the grout is often the determining factor in deciding when loads can be put on structural members or machinery that where grouted. The strength of the grout depends on:

- the amount of mixing water
- the temperature of the object grouted
- curing
- age of the hardened grout.
- ambient temperature and humidity.

The table below gives the typical average strengths of 25 kg MasterFlow 928 at 20°C, mixed with 4 litres (flowable) and 4,6 litres (fluid) of water.


Days	Compressive strength		Flexural strength**
	Flowable* MPa (N/mm <sup>2</sup> )	Fluid** MPa (N/mm <sup>2</sup> )	
1	40	28	5,5
3	50	35	6
7	58	45	8
28	72	60	9,5

Compressive and flexural strength tested by ASTM C-348 and C-349 on prism (4 x 4 x 16 cm).

\* Flow through: 480 – 610 mm.

\* 20–30 seconds flow, by Corps of Engineers Flow Cone Method CRD-C 611 or Cerilh Cone Method.

\* Average: air-content: 4,2%

 <b>0749</b>	
<b>BASF Belgium Coordination Center Comm. V.</b> <b>Business Belux - Construction Chemicals</b> Nijverheidsweg 89, B-3945 Ham  <b>12</b> <b>BE0055/01</b>	
<b>EN 1504-6</b> <b>Cement based grout / Anchoring of reinforcing steel bar</b>  <b>EN 1504-6 Principles 4.2</b>	
Pull-out strength	Displacement ≤ 0,6 mm at 75 kN load
Chloride ion content	≤ 0,05 %
Reaction to fire	Euroclass A1
Dangerous substances	Complies with 5.3

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**Note:** The data shown are based on controlled laboratory tests. Reasonable variations from the results shown can be expected. Field and laboratory tests should be controlled on the basis of the desired placing consistency rather than strictly on the water content. If the work requires that strength tests be made at the jobsite or in the laboratory, do not use cylinder moulds. Consult your Master Builders Solutions UK Ltd representative for special procedures required when mixing and casting cubes of fluid or flowable, non-shrink grout for compressive strength tests.

## PREPARATION OF THE GROUT

Do not add cement, sand or other materials to this quality-controlled product. Do not use the contents of packages that are damaged or broken.

Use one or more mixers to permit mixing and placing operations to proceed simultaneously without interruption.

**DO NOT MIX BY HAND.**

Mix with potable water only. Put 3/4 of the water required in the mixer first, then slowly and steadily add the grout. Mix until homogeneous mortar (2-3 minutes), add the rest of the water and continue to mix for at least 2 more minutes. MasterFlow 928 mixed with 4 litres of water produces approximately 12,85 litres of grout, with 4,6 liters of water produces approximately 13,5 liters of grout.

Less water may be used to meet consistency requirements, thus decreasing the yield.

Use of ice water to produce mixed grout temperatures of +5°C to +35°C will reduce water required for a given consistency and increase strength and working time accordingly.

Do not retemper grout by adding water or remixing after it stiffens.

## DIRECTIONS FOR PRECISION GROUTING

### 1. PREPARATION OF THE FOUNDATION AND MACHINE

Clean out bolt holes and have foundation area to be grouted thoroughly clean, rough but level. To achieve a good bonding surface, the use of a small chipping hammer is preferable to the use of a bush hammer.

For maintaining proper elevation, base plates should be aligned and firmly bolted down, prior to grouting.

### 2. WATER SATURATION

Saturate the cleaned foundation and any bolt holes with water for at least 6 hours, preferably 24 hours. Just before grouting, remove all free water.

Always grout the clean, saturated (no free water) bolts first. If all free water cannot be removed, contact your local Master Builders Solutions UK Ltd representative for suggested placing methods.

### 3. FORMS

Build strong, tight, well-braced forms.

On the grout-placing side, slant the form at approximately 45° outward and extend this form suitably high to provide a head of grout during placement. Grout should be poured directly on the sloped form to minimize entrapment of air during placement.

Use methods of forming that will allow the grout to flow by gravity between the plate and the foundation and keep the grout in full contact with these surfaces until it has hardened.

### 4. PLACEMENT OF THE GROUT

After MasterFlow 928 has been mixed following the suggested procedure (see "Preparation of the grout"), the placing operation can be started as follows:

Before grouting, determine if there is excess vibration of the foundation or baseplate caused by nearby operating equipment.

Consider shutting down this source of vibration until after the newly-placed grout has taken final set. Excessive vibration can cause settlement and bleeding and disturb the set. Vibration can be determined by observing any disturbance of the surface of water in a pan resting on the base plate or foundation to be grouted.

Before pumping or dry packing MasterFlow 928, discuss the condition with the local Master Builders Solutions UK Ltd representative.

When grouting in environments below +5°C or above +35°C, contact Master Builders Solutions UK Ltd for our Hot Weather or Cold Weather grouting bulletins and/or job-site service.

Mix and place grout as close as possible to the plate being grouted. Have sufficient manpower, materials and tools to make mixing and placing rapid and continuous. Where grout must flow some distance, make the initial batch slightly more fluid or flowable than required; this lubricates the surfaces and avoids blockage of the grout that follows.

The grout shall be poured or pumped continuously and from one side only, to avoid entrapment of air while grouting.

Make sure grout fills the entire space to be grouted and remains in contact with the plate throughout all of the grouting placement. **DO NOT VIBRATE.**

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Where the thickness of grout exceeds 100mm the addition of clean, graded 10mm aggregates at up to one to one by weight is recommended. In this instance normal concrete mixers and pumps may be used.

## 5. PRECAUTIONS

The temperature of both the grout and elements coming into contact with the grout should be in the range of +5°C to +35°C. Do not use water in an amount or at a temperature that will produce a consistency more than fluid or cause mixed grout to bleed or segregate.

When the grout will be in contact with steel which is or will be stressed to over 550 MPa, do not use MasterFlow 928. Contact your local Master Builders Solutions UK Ltd representative in this case.

## 6. CURING

Immediately after MasterFlow 928 is placed, cover all exposed grout with clean wet rags (burlap) and keep these moist until grout surface is ready to be finished, or until final set.

Never remove forms or cut back grout below underside of object grouted before grout has hardened sufficiently to prevent penetration with a pointed mason trowel.

Following removal of moist rags, forms, or finishing of shoulders, coat exposed grout with MasterTop CC 713 curing compound.

## 7. NOTE

The fatigue and impact resistance of MasterFlow 928 is exceeded only by metallic reinforced non-catalyzed MasterFlow 4800. The specially prepared metallic aggregate in this product contributes to impact resistance, a desirable property of grout to be subjected to severe dynamic operating forces and repetitive loading such as found in steel and aluminium rolling mills, crane rails, heavy presses, etc.

For additional information on MasterFlow 928 or other non-shrink grouting materials, contact your local Master Builders Solutions UK Ltd representative.

## PACKING, STORAGE AND SHELF LIFE

MasterFlow 928 is packaged in 25kg moisture-resistant bags. Do not use the product if bag is damaged.

Kept frost-free and dry, MasterFlow 928 can be stored for 12 months in the tightly closed original packages.

## HANDLING AND TRANSPORT

Usual preventive measures for the handling of chemical products should be observed when using this product, for example do not eat, smoke or drink while working and wash hands when taking a break or when the job is completed.

Specific safety information referring the handling and transport of this product can be found in the Material Safety Data Sheet. For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

Disposal of product and its container should be carried out according to the local legislation in force. Responsibility for this lies with the final owner of the product.

## CONTACT DETAILS

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MasterFlow 928 – Master Builders Solutions UK Ltd, Version 1

## Health and Safety

\*For full information on Health and Safety matters regarding this product the relevant Health and Safety Data Sheet should be consulted.

The following general comments apply to all products.

As with all chemical products, care should be taken during use and storage to avoid contact with eyes, mouth, skin and foodstuffs, (which may also be tainted with vapour until the product is fully cured and dried). Treat splashes to eyes and skin immediately. If accidentally ingested, seek medical attention. Keep away from children and animals. Reseal containers after use.

## Solvent Based Products

Use in well ventilated areas; avoid inhaling. Suitable respiratory equipment may be needed, e.g. when spraying. Can cause skin, eye irritation. Wear protective eye shields and gloves during use. Do not smoke or allow sparks or naked lights when stored or in use.

## Resin Products

Can cause irritation, dermatitis or allergic reaction. Use protective equipment particularly for skin and eyes. Use only in well ventilated areas.

## Spillage

Chemical products can cause damage; clean spillage immediately.

## DISCLAIMER

"Master Builders Solutions UK Ltd " (the Company) endeavours to ensure that advice and information given in Product Data Sheets, Method Statements and Material Safety Data Sheets (all known as Product Literature) is accurate and correct. However, the Company has no control over the selection of its products for particular applications. It is important that any prospective customer, user or specifier, satisfies him/her-self that the product is suitable for the specific application. In this process, due regard should be taken of the nature and composition of the background/base and the ambient conditions both at the time of laying/applying/installing the material and when the completed work is to be brought into use.

Accordingly, no liability will be accepted by the Company for the selection, by others, of a product, which is inappropriate to a particular application.

Products are sold subject to the Company's standard conditions of sale and all customers, users and specifiers, should ensure that they examine the Company's latest Product Literature.