Non-Shrink Grouts and Micro-Concrete

Properties and Applications

Trust & Reliability
25 Years

Innovation in Building Chemicals

Emcekrete and MC-Expacrete

Range of Grouts and Micro-Concrete

The use of micro-concrete and grouts for repairs, foundations or filling, for e.g. machine plates on a concrete foundation, is daily practice. These Materials should be capable of leveling the uneven concrete substrate, be stable and ensure reliable load transmission. These situations demand a reliable grout or micro-concrete, with a high flowability and low voids for strength and impermeability.

MC-Bauchemie's grouts and micro-concretes can be either manually or mechanically processed. This manual provides information on proper and professional processing of our product systems in a handy form.

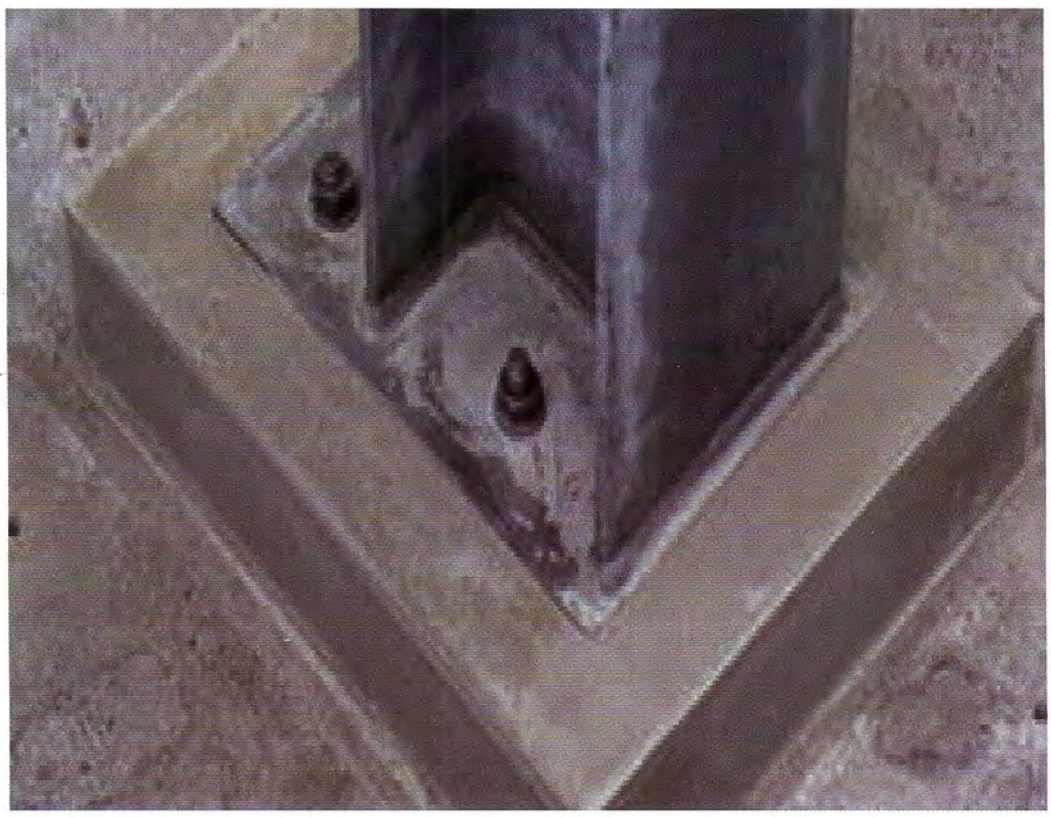
MC offers a comprehensive product range, which is characterized by its variety of applications, ease of use and high quality. Detailed processing instructions can be found in "general processing instructions for grout and mortar" as well as the technical datasheets of the products. In addition, relevant safety standards must be observed.

Definition

Non - shrink grouts are a class of construction materials that consist of a dry mixture of cement, mineral aggregates and admixtures and additives. They are factory-made, dry-stored and protected from the weather. These materials are processed by mixing water at the site to a flowable / pourable consistency. Their advantages include high compressive & flexural strength, fast rate of compressive strength development, no shrinkage and low amount of voids.

Micro-concretes have all the advantageous associated with non-shrink Grouts and are additionally formulated to have a better flexural strength, to allow its use in repairing structural elements.

If you have further questions about our products and systems, or on specific topics of processing- Please call us.



Application Areas

Micro Concrete

Joints Between Precast Panels

Column Foundations and Plinths

Grouting of Floor Joints

Grouting for Fencing Use as Installation Aids

As Dry-Concrete for Filling Annular Spaces around Pipes, Joints and Masonry

Grout

Foundation for Rails For e.g. Crane Rails

Wind Turbine Foundations

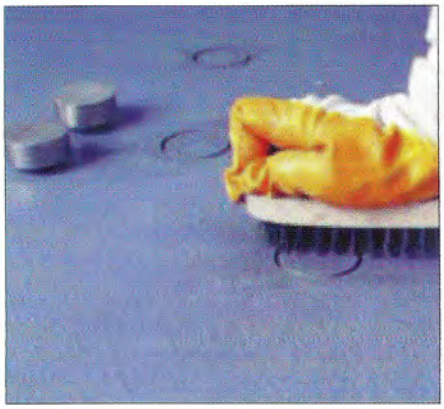
Bridge Supports and Bearings

Anchor Bolts or Structural Steel Components

Grouting under Dynamic Loads like Machines and Micro-Piles

Processing Grouts / Micro - concrete

The Procedure to process grouts remain similar due to nature of the materials. Adequate care is mandatory.



Surface Preparation

The substrate must be free of adhesion-reducing elements, such as grease, oil, dust and laitance, so a good bond between substrate and the material is ensured.

Surface Properties

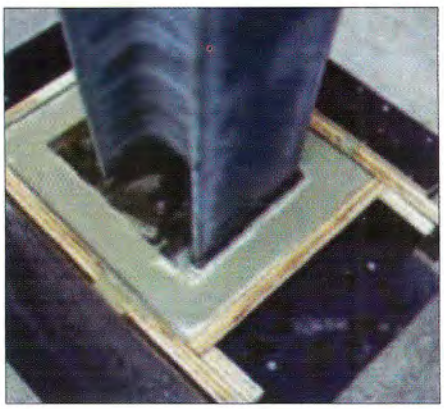
Grouts or Micro-concrete can only transfer loads effectively as long as the substrate has sufficient load bearing capacity. Destroyed or damaged areas are to be removed until a sound concrete is reached. In addition, the substrate must have a tensile adhesion strength of at least 1.5 N/mm^2.

Substrate Temperature

The substrate must be free of frost or at temperatures between 5° and 30° C. If the grout or micro - concrete is poured onto a hot or frozen ground, the concrete or mortar hardens without forming an effective bond with the substrate to transfer loads effectively.

Formwork Requirements

The formwork must be non-absorbent and leak-proof. The height of the formwork must exceed the fill height. Do not lay Grout in excess of 50mm thicknesses. It is mandatory to restrain the faces of the material as much as possible.



Pre-Wetting

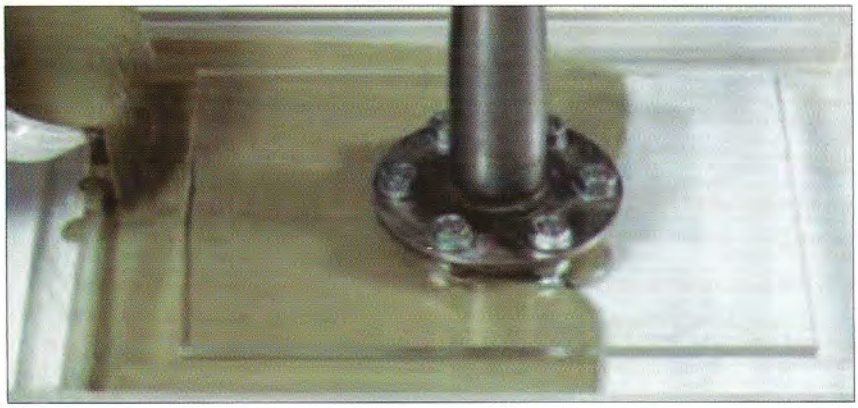
The formwork to be used is thoroughly pre-wetted and any excess water is to be completely removed. Excess water if any will alter the w/c ratio of the grout or microconcrete and may hinder the bond of the grout / micro-concrete to the substrate.

Mixing

The grout / micro-concrete is mixed using a forced action mixer or a slow speed mixer (twin paddles at max. 400 rpm). A mixing time of 3 minutes should not be exceeded. The grout / micro-concrete powder should be added to the water in the bucket and not vice versa. For a homogenous grout always mix full bags.

Placing

The grout / micro-concrete is placed immediately after mixing. To avoid air pockets, the grout / micro-concrete is placed along the longer side of the form, from one end only. In case of complicated flow patterns, a wire loop can be used as an aid to placing the grout evenly in the formwork.



After Placing

The setting and hardening process of the grout / micro-concrete is related to the placement thickness with liberation of heat. To prevent the grout from drying out too rapidly, the grout needs to be cured appropriately using **Emcoril** Range of Curing Compounds.

The grout / micro-concrete can be de-shuttered in 24 hours after placement. After this, anchoring / fastening bolts if any can be tightened. In strong sunlight and winds, the de-shuttered sides of the grout should also be adequately cured using **Emcoril** Range of Curing Compounds.

Precautions

Working At Low Temperatures

- The substrate must be free of frost
- The substrate and ambient temperature should be at least 5° C.
- The dry mortar shall not be stored below 15° C.
- To mix use warm water, at about 30° C.
- The fresh mortar temperature should be about 20° C.
- After placement, the material is to be protected against rapid cooling using insulating foils until an initial strength of 5 N / mm^2 is achieved.

Working At High Temperatures

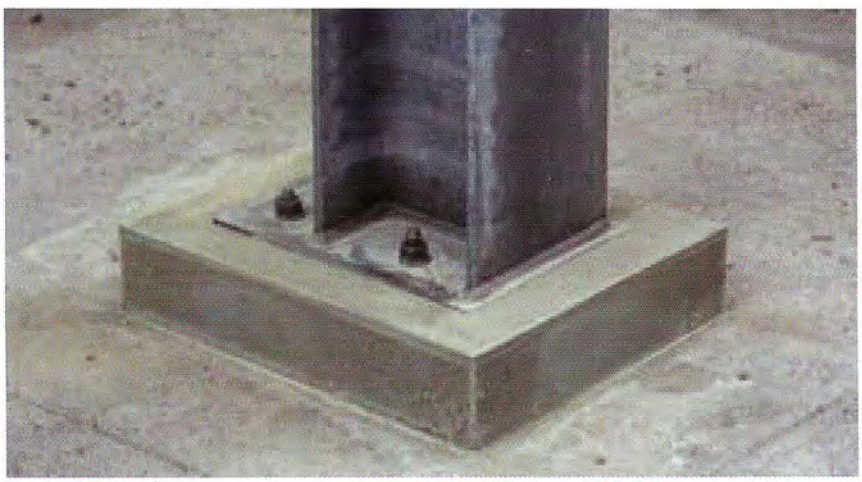
- The Substrate must be pre-wetted.
- The dry mortar should be stored in a cool place and protected from direct sunlight.
- For mixing cold or chilled mixing water shall be used.
- The fresh mortar temperature should be about 20° C, however mix temperatures must not exceed 30° C.
- Protect Exposed surfaces after grouting immediately from direct sunlight and wind.

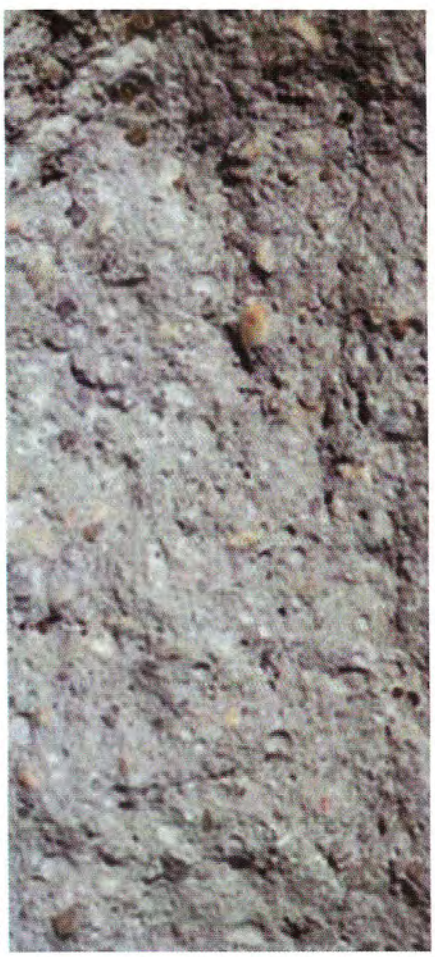
Placement Thicknesses

The placement thickness of the grout / micro-concrete should not exceed 50 mm. In case, higher thicknesses need to be placed, the grout should be mixed with suitably graded coarse aggregates e.g. 4-8 mm upto generally 20% by weight of the grout. Other mixing ratios may be possible. Please contact us for assistance.

Other Precautions

While placing the grout / micro-concrete and upto approximately 2 hours thereafter, strong vibrations of any kind should be avoided. Never mix more material than can be placed within a period of 30 minutes. High temperatures accelerate hardening while low temperatures have a retarding effect. Strengths of cement based products are slightly lowered after 6 months of storage, or if stored improperly.





International Guidelines

Slump Flow

This is measured mainly for Micro-Concretes. International Guidelines according to German Standards *DafStb Directive "Production and use of cementitious Grout and Micro-Concrete" provide the values given below to classify these materials.

Class	Slump Flow (in mm)
a1	500 to 590
a2	600 to 690
a3	> 700

Flow

This is measured mainly for Grouts. International Guidelines according to German Standards *DafStb Directive "Production and use of cementitious Grout and Micro-Concrete" provide the values given below to classify these materials.

Class	Slump Flow (in mm)
f1	550 to 640
f2	650 to 740
f3	> 750

Compressive Strength

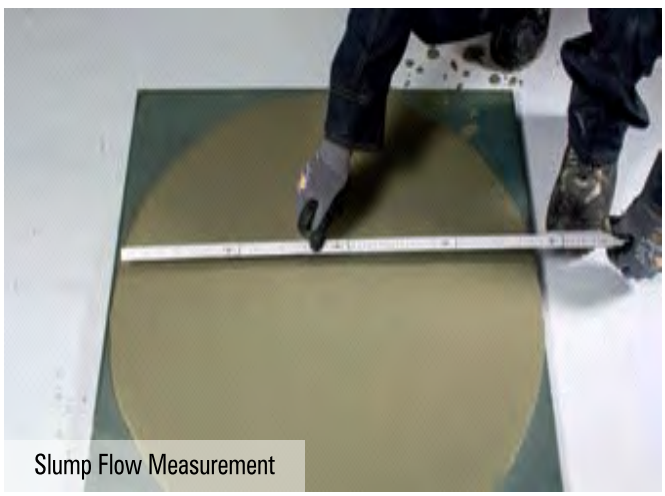
For Early Strength, the German Standards *DafStb Directive "Production and use of cementitious Grout and Micro-Concrete" provides for the following values to classify the Grouts / Micro-Concrete: Each individual value of the compressive strength f_c, cube must have the following values at 24 hours:

- Early strength class A: 40 N / mm ²,
- Early strength class B: 25 N / mm ²,
- Early strength class C: 10 N / mm.

Tested micro - concrete and grout must have a high early strength as given above and have a minimum compressive strength of at least 50 MPa at 28 Days.

The DafStb Directive shall not apply to:

- Grout and Micro-Concrete with lightweight, heavy or recycled aggregate;
- Grout and Micro-Concrete with specially entrained air



Slump Flow Measurement

Flow Measurement

Use as a Fill Mortar for Sealing Interfaces

Apart from standard applications as on page 3, **MC-Bauchemie's** grouts and micro concretes can be used for a variety of other applications, as in the following pages. Please contact us for further details.

Uses for Micro-concrete

1. Sealing Interfaces Between Masonry and RCC

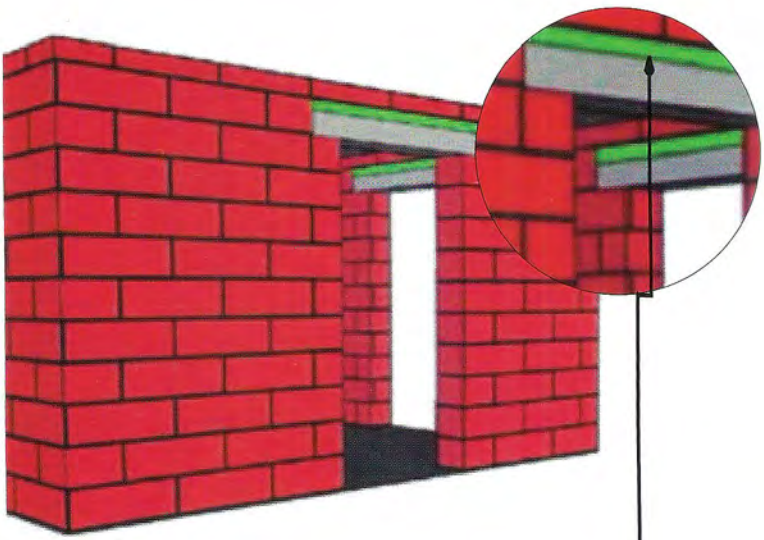
Emcekrete Type A or **MC-Expacrete Type A** (micro - concretes) can be used as a sealing mortar on interfaces between RCC and Masonry. The material can be mixed at a lower water/powder ratio and can be applied using a trowel or spatula.

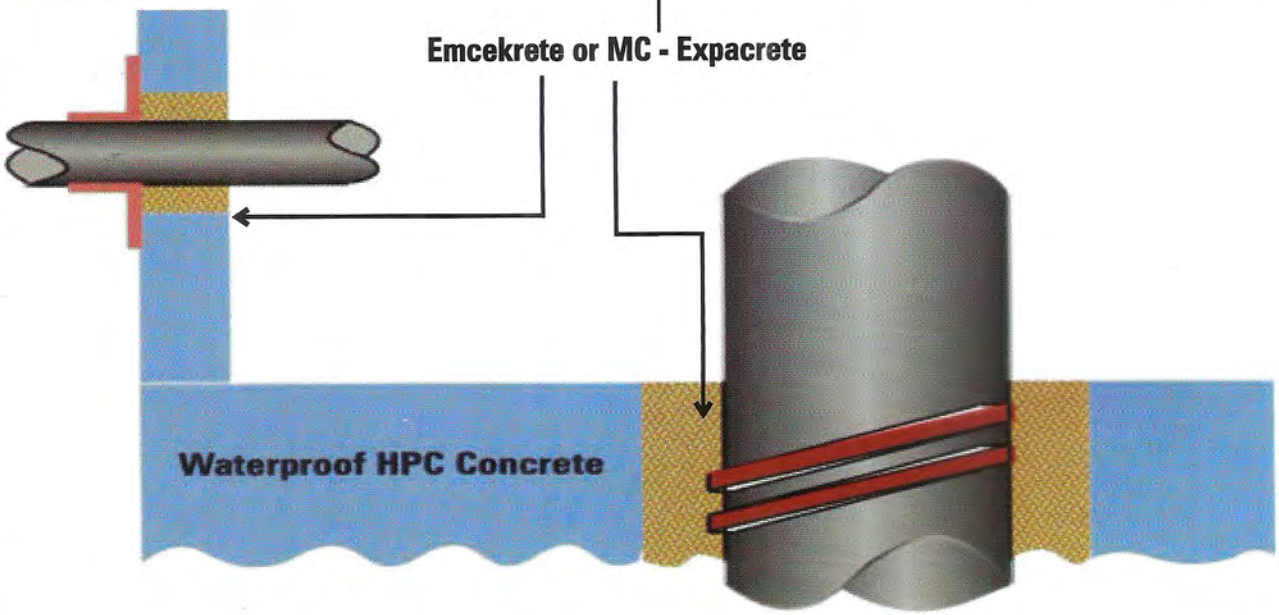
2. Sealing Interfaces Between Columns and Slabs

Pictures alongside explain this particular application.

3. Sealing Annular Ring Spaces Between Plumbing and Slabs or Punched Areas

Emcekrete Type A or **MC-Expacrete Type A** in a flowable mix can be used to fill annular spaces between plumbing / conduits and concrete.





Anchoring Poles or Temporary Structures

Emcekrete or **MC-Expacrete Type A** in Flowable Form can be used in the foundations to anchor Poles, temporary structures like security cabins or site office trailers.

Overview of MC Range of Grouts / Micro-Concrete

Emcekrete and MC-Expacrete

Product Properties

Products / Properties	Emcekrete	MC-Expacrete	Emcekrete Type A	MC-Expacrete Type A	MC-DUR Grout
Product Type	Cementitious Grout		Cementitious Micro-Concrete		Epoxy Grout
Mixing Ratio (Water by % of Powder)	14 to 15	15 to 18	13 to 14	14 to 15	-
Epoxy Grout Mixing Ratio	-	-	-	-	Resin : Hardener 2:1 Epoxy:Filler 1:2 (flowable) 1:6 (castable)
Flow on Flow Table (mm)	> 250	> 250	> 250	> 250	-
Density (Kg/litre)	≈ 2.2 to 2.3	≈ 2.2 to 2.3	≈ 2.2 to 2.3	≈ 2.2 to 2.3	≈ 2.2 to 2.3
Pot Life / Processing Time (Min.)	30	30	30	30	30
Compressive Strength N/mm^2	28D: 75	28D: 65	28D: 60	28D: 55	28D: > 65
Flexural Strength N/mm^2	28D: 10	28D: 8	28D: 8	28D: 7	28D: >7

Our Grouts Material Systems include:

- Emcekrete
- MC-Expacrete
- Emcekrete Type A
- MC-Expacrete Type A
- Emcekrete HS
- Centricrete
- MC-DUR Grout
- MC-DUR 1264

Information

Request MC-Bauchemie Product information now –

by post, fax, phone or email

Product of Interest: _____

Yes, I would like:

☐ You to send me the technical datasheets of _____

_____

☐ You to call me

☐ Please arrange an appointment with me.

Company: _____

Name: _____

Address: _____

Phone: _____

Email: _____

In your area we are represented by

Note: Every reasonable precaution is taken in the manufacture of the MC-products to ensure that they comply with MC's high standard of quality. The recommendations and properties of the product are based upon what is believed to be most reliable information available and are not intended as recommendations which infringe other patents. Although all MC products are subject to rigid quality tests, no specific guarantee can be given, because results depend not only on quality, but also on other factors beyond our control. We therefore welcome consultation in the event of doubt concerning application or performance, but point out that oral recommendations, which vary to the instruction contained here in are not binding us. All transactions shall be subject to our terms of sale, delivery and payment. This leaflet supersedes the previous one and a new issue may take place without notice to supersede this edition as and when it becomes necessary. E. & O. E.

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