

Product Data Sheet

CasTech Rep MC

Nov-2025, Ver. 01.01



High-Strength, Free-Flowing Micro-Concrete Repair Mortar

DESCRIPTION

CasTech Rep MC is a single-component, high-strength, cementitious, free-flowing micro-concrete formulated for large-volume structural concrete repairs and reinstatement works.

The shrinkage-compensated and fibre-reinforced formulation is suitable for heavily congested reinforcement and restricted-access locations where conventional hand placement and compaction are difficult. Its self-compacting flow allows the material to be poured or pumped into properly sealed formwork without normal vibration.

CasTech Rep MC requires only the addition of clean water on site. It is suitable for repair sections from 50 mm to 250 mm in a single pour, subject to repair geometry, reinforcement congestion, formwork design, and the approved method statement.

TYPICAL USES

CasTech Rep MC is recommended for:

- Large-volume repair of columns, beams, walls, floors, and slabs
- Repair areas with congested reinforcement or restricted access
- Pile-head repair and structural reinstatement
- Recasting and enlargement of reinforced-concrete sections
- Grouting and bedding of suitable precast-concrete elements
- Repairs where effective vibration or conventional compaction is impractical
- Structural repair of new and existing reinforced-concrete elements

ADVANTAGES

Key advantages:

- High early and ultimate compressive strength
- Free-flowing and self-compacting placement
- Suitable for pumping or continuous pouring into formwork
- Shrinkage-compensated with controlled expansion
- Fibre reinforced to help reduce microcracking
- Low permeability for improved durability
- Helps protect repaired concrete against carbon

dioxide and chloride ingress

- Single-component system - only clean water is required
- No normal internal vibration required

TYPICAL PROPERTIES

Appearance	Grey powder
Chemical base	Cementitious micro-concrete
Water addition	3.0-4.0 L per 25 kg bag
Typical W/P ratio	0.14 at 3.5 L water
Fresh wet density at 25°C	2.35 ± 0.05 kg/L
Placement time at 25°C	Approx. 25 minutes
Application thickness	50-250 mm per pour
7-day compressive strength	>45 N/mm ²
28-day compressive strength	>65 N/mm ²
28-day flexural strength	>7 N/mm ²
Plastic-state expansion	Up to 2% positive expansion
Hardened-state expansion	0-0.3%
Setting time at 25°C	Initial >4 h; final <8 h
Theoretical yield	Approx. 12.5 L per 25 kg bag
Shelf life	12 months

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

Concrete substrate

Remove all unsound, cracked, contaminated, or weak concrete until a sound, rough substrate is exposed. Repair boundaries shall be clearly defined, and feather edges shall not be permitted. Where required by the repair design, remove concrete to a minimum depth of approximately 25 mm.

Reinforcement preparation

Expose corroded reinforcement sufficiently to permit cleaning around the full circumference and continue beyond visibly corroded areas by approximately 50 mm. Remove rust, scale, and contaminants by abrasive blasting or approved mechanical methods. Replace or supplement steel where required by the engineer, then apply a compatible reinforcement-protection coating when specified.

Pre-wetting

Thoroughly saturate the prepared concrete with clean water, preferably beginning up to 24 hours before placement where practical. Immediately before pouring, remove all standing water so the substrate is in a saturated-surface-dry condition.

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FORMWORK

Formwork shall be rigid, securely supported, and completely watertight to prevent loss of grout or mixing water. Seal joints and penetrations carefully. Provide suitable access, vents, and a head box, hopper, or pumping connection so that the **CasTech Rep MC** can be placed continuously and trapped air can escape.

Treat the formwork with a suitable release agent that will not contaminate the prepared concrete or reinforcement. The formwork and placement arrangement shall maintain adequate hydrostatic head and shall be confirmed by the approved repair method statement.

PRIMING

A separate bonding primer is normally not required when **CasTech Rep MC** is poured against a correctly prepared, roughened, and saturated-surface-dry substrate. Where a bonding system is specified, use a compatible product from the CasTech Bond range and place the micro-concrete within the stated open time.

MIXING

Use a clean, mechanically powered forced-action or suitable heavy-duty mortar mixer. Each 25 kg bag requires 3.0–4.0 litres of clean potable water. A water addition of approximately 3.5 litres corresponds to the typical water/powder ratio of 0.14 and the stated yield.

Place the measured water in the mixer. Add **CasTech Rep MC** gradually while mixing continuously. Mix for at least 3 minutes, or until a uniform, free-flowing, and lump-free consistency is obtained. Avoid excessive mixing and air entrainment.

Do not exceed the recommended water addition. Additional water may improve flow but will reduce strength and may increase segregation and shrinkage. Do not add cement, sand, aggregate, or admixtures unless specifically approved in writing by CasTech.

Mix only the quantity that can be placed within the available placement time. Do not retemper material that has begun to stiffen. In hot weather, keep bags and equipment shaded and use cool or chilled mixing water where necessary.

APPLICATION

Placement

Place **CasTech Rep MC** within approximately 25 minutes of mixing at 25°C. Pour or pump continuously from one side or one location to avoid entrapping air and to maintain a continuous material front. Do not interrupt placement once it has started.

Horizontal repairs

For horizontal applications, pour continuously into the prepared area. Gentle external tapping of the formwork may be used to release trapped air. Normal internal vibration is not required and should not be used unless specifically approved by the repair method statement.

Vertical and enclosed repairs

For columns, jackets, voids, and other enclosed repairs, introduce the material through the designed head box, hopper, pumping point, or injection connection. Continue placement until the repair cavity is completely filled and sound material is discharged from the vent or outlet.

Pour thickness

CasTech Rep MC may be placed from 50 mm to 250 mm in a single pour. For sections exceeding 250 mm, complex geometries, high-volume pours, or unusual thermal conditions, consult the CasTech Technical Department before application.

CURING

Immediately protect all exposed surfaces from rapid moisture loss. Apply a suitable curing compound from the CasTech Cure range and cover with polyethylene sheeting, or use another approved curing method.

After de-shuttering, normally after approximately 24 hours, subject to strength development and the engineer's approval, saturate exposed surfaces and cure under wet hessian or wet cloth for up to 7 days. Where continuous water curing is impractical, apply an approved curing compound and protect with polyethylene sheeting in accordance with the project method statement.

CLEANING

Clean mixers, pumps, hoses, tools and equipment with water immediately after use. Hardened material can only be removed by hand tools or mechanical means.

YIELD

Approximately 12.5 litres of mixed material per 25 kg bag when mixed with 3.5 litres of water. Actual yield may vary with water addition, mixing efficiency and site conditions.

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PACKAGING

- 25 kg moisture-resistant bag

SHELF LIFE

12 months from the date of manufacture when stored unopened in the original packaging under the recommended conditions.

STORAGE

Store under cover in a cool, dry, and shaded warehouse, off the ground, and protected from moisture, direct sunlight, and extreme temperature or humidity. Keep bags sealed until use and follow stock rotation.

HEALTH AND SAFETY

CasTech Rep MC is cement-based and becomes alkaline when mixed with water. Avoid contact with eyes, skin, mouth, and foodstuffs. Wear suitable gloves, safety goggles, protective clothing, and a dust mask during mixing and application.

In case of eye contact, rinse immediately with plenty of clean water and seek medical attention. Wash affected skin with soap and water. If swallowed, do not induce vomiting; seek immediate medical advice. Keep away from children and animals.

Refer to the latest Safety Data Sheet (SDS) before use.

TEST REFERENCES

- ASTM C109/C109M - compressive strength of hydraulic-cement mortars
- ASTM C940 - expansion and bleeding of freshly mixed grout, as referenced in the former product data
- ASTM C191 - setting time of hydraulic cement, as referenced in the former product data
- BS EN 12350-6 - density of fresh concrete, as referenced in the former product data
- The former product data referenced ASTM C307 for flexural strength; the stated value is retained, but the test method should be confirmed before project-specific declaration.

Test references identify the methods stated in the former product information and, by themselves, do not constitute certification or compliance with a particular project specification.

TECHNICAL SUPPORT

CasTech provides on-site assistance and consulting services on projects when requested. Technical data sheets on other CasTech products and guidance on their use are available on request.