

Product Data Sheet

CasTech Rep HB

Nov-2025, Ver. 01.01

High-Build Structural Cementitious Repair Mortar

DESCRIPTION

CasTech Rep HB is a ready-to-use, single-component, polymer-modified cementitious structural repair mortar specifically formulated for high-build restoration of damaged concrete.

The fibre-reinforced formulation provides excellent adhesion, high mechanical strength, and low permeability. Its thixotropic, relatively lightweight consistency makes it suitable for vertical and overhead repairs without excessive sagging.

CasTech Rep HB is supplied as a factory-blended dry powder requiring only the addition of clean water. It can be applied by hand trowel or wet-spray equipment in thicknesses from 10 mm to 50 mm in a single layer, subject to substrate condition and application orientation.

TYPICAL USES

CasTech Rep HB is recommended for:

- High-build structural repairs to vertical and overhead concrete surfaces
- Repair of honeycombs, blowholes, tie-rod holes, and surface defects
- Reinstatement of damaged column, beam, and slab edges
- Repair of damaged concrete in new and existing structures
- Interior and exterior concrete repairs
- Restoration around exposed reinforcement after suitable steel treatment
- Hand-applied or wet-spray repair works

ADVANTAGES

Key advantages:

- High-build application from 10 mm to 50 mm per layer
- Suitable for vertical and overhead repairs
- High compressive, flexural, and tensile strengths
- Excellent adhesion to prepared concrete
- Fibre reinforced to help control microcracking
- Low permeability and controlled drying shrinkage
- Helps protect reinforcement against carbonation and chloride ingress
- Single-component product—only clean water

is required

- Non-corrosive and chloride-free cementitious formulation

TYPICAL PROPERTIES

Appearance	Grey powder
Chemical base	Polymer-modified cementitious mortar
Water addition	3.5-4.0 L per 25 kg bag
Water/powder ratio	0.14-0.16
Fresh wet density at 25°C	2.30 ± 0.05 kg/L
Working time at 25°C	Approx. 20 minutes
Application thickness	10–50 mm per layer
28-day compressive strength	>60 N/mm ²
28-day flexural strength	>7 N/mm ²
28-day tensile strength	>5 N/mm ²
28-day bond strength	>1.0 N/mm ²
28-day drying shrinkage	<500 microstrain
Theoretical yield	Approx. 12.4 L per 25 kg bag
Shelf life	12 months
Form	Grey powder
Fresh wet density - BS EN 12350-6	2.30 ± 0.05 kg/L at 25°C
Working time	Approx. 20 minutes at 25°C
Compressive strength - ASTM C109	>60 N/mm ² at 28 days
Flexural strength - ASTM C580	>7 N/mm ² at 28 days
Tensile strength - ASTM C307	>5 N/mm ² at 28 days
Bond strength - BS 1881: Part 207	>1.0 N/mm ² at 28 days
Drying shrinkage - ASTM C157	<500 microstrain at 28 days

Properties are based on laboratory-controlled testing at 25°C and a water/powder ratio of 0.14 unless otherwise stated. Results may vary with water addition, temperature, curing, substrate, and test conditions. Typical values are subject to normal manufacturing and test tolerances.

APPLICATION INSTRUCTIONS

SURFACE PREPARATION

Concrete substrate

The concrete shall be sound, clean, and free from dust, oil, grease, laitance, curing compounds, release agents, coatings, and other contaminants that may impair adhesion. Remove all loose, weak, cracked, or contaminated concrete by suitable

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hand or light mechanical methods until a firm substrate is exposed.

Repair geometry and edges

Saw-cut or otherwise define repair boundaries where required and avoid feather edges. A minimum repair thickness of 10 mm is recommended, particularly at perimeter edges. Roughen smooth surfaces to provide a mechanical key.

Reinforcement preparation

Where reinforcement is exposed, remove sufficient concrete to allow access around the full bar circumference. Clean the steel by abrasive blasting where practical or by thorough mechanical wire brushing to remove rust, scale, and contaminants. Severely corroded or section-loss reinforcement shall be assessed and treated in accordance with the approved repair specification.

Pre-wetting

Thoroughly saturate the prepared concrete with clean water. Immediately before application, remove excess water so that the substrate is in a saturated-surface-dry condition with no standing water.

PRIMING

Priming is generally not required when **CasTech Rep HB** is placed onto a correctly prepared, roughened, and saturated-surface-dry substrate. In critical applications or where specified, use a compatible bonding agent from the CasTech Bond range in accordance with its latest product data sheet.

Any reinforcement protection or bonding treatment shall remain within the specified open time when the repair mortar is placed.

MIXING

Use a clean mixing container and a slow-speed heavy-duty drill fitted with a suitable mortar paddle. For each 25 kg bag, use 3.5–4.0 litres of clean potable water, depending on the required consistency and application method.

Place the measured water in the mixer. Gradually add the **CasTech Rep HB** powder while mixing continuously. Mix until a smooth, homogeneous, and lump-free mortar is obtained. Avoid entraining excessive air.

Mix only the quantity that can be applied within the stated working time. Do not exceed the recommended water addition. Do not add cement, sand, or other materials, and do not retemper material that has begun to set.

For best performance, maintain the mixed mortar temperature between approximately +10°C and +30°C. Store, mix, and apply the material in shaded conditions whenever practical.

APPLICATION

Hand application

Apply **CasTech Rep HB** by steel trowel, gloved hand, or suitable plastering tools. First scrub a thin contact layer firmly into the prepared substrate, then immediately build up the repair while the contact layer remains wet. Compact thoroughly around reinforcement and into all corners to eliminate voids.

Wet-spray application

CasTech Rep HB may also be applied by suitable wet-spray equipment. Equipment settings, hose length, air supply, and nozzle technique shall be established by a site trial and approved method statement.

Layer thickness

Apply between 10 mm and 50 mm in one layer. Actual achievable thickness depends on repair orientation, substrate profile, reinforcement congestion, and site conditions. For deeper repairs, build in successive layers.

Multiple layers

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Apply subsequent layers wet-on-wet whenever practical. If a layer has hardened, roughen or scratch the surface to form a mechanical key, remove dust, pre-wet to a saturated-surface-dry condition, and apply an approved CasTech bonding agent where required before continuing.

Finishing

Finish with a steel, plastic, or wooden float as required. Do not overwork the surface or add water during finishing, as this may reduce surface quality and increase cracking risk.

CURING

Immediately after finishing, protect the repair from rapid moisture loss. Cure with wet burlap, moist hessian, polyethylene sheeting, or another approved method. Where compatible with subsequent finishes, a suitable curing compound from the CasTech Cure range may be used.

Maintain curing in accordance with the approved repair method, particularly in hot, dry, or windy conditions.

CLEANING

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

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 area, 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 HB 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 C580 - flexural strength, as referenced in the original product data
- ASTM C307 - tensile strength, as referenced in the original product data
- ASTM C157/C157M - length change / drying shrinkage
- BS EN 12350-6 - density of fresh material, as referenced in the original product data
- BS 1881: Part 207 - bond-strength reference stated in the original product data

Test references identify the methods stated for the product properties and do not, by themselves, 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.