

CHEMFIT MICROCRETE 114

One Component, Free Flowing, High Strength, Cement Based Microconcrete for Grouting and Repair – To Repair Deteriorated Concrete; Ideal for Volumes Too Large for Conventional Grouts

PRODUCT DESCRIPTION

ChemFit MicroCrete 114 is a high-performance, one component, free flowing, high strength, cement based microconcrete specifically formulated for grouting and repair applications. This advanced material bridges the gap between conventional cementitious grouts and concrete, making it ideal for repair volumes that are too large for traditional grouts but too small for conventional concrete placement. The free-flowing consistency allows for easy placement into cavities, formwork, and repair areas without the need for mechanical vibration. The high strength characteristics ensure durable, long-lasting repairs with excellent load transfer capabilities.

This product is designed for structural repair of deteriorated concrete, equipment foundation grouting, and general concrete restoration where high strength and flowability are required.

PRIMARY APPLICATIONS

ChemFit MicroCrete 114 is recommended for use in conditions such as:

- Repair of deteriorated concrete structures (columns, beams, slabs, walls)
- Volumes too large for conventional cementitious grouts
- Equipment foundation grouting and base plate filling
- Cavity filling and void filling in concrete structures
- Anchor bolt fixing and embedment
- Precast concrete connection grouting
- Bridge bearing pad grouting
- Structural concrete repair and rehabilitation
- Crack filling (large cracks and honeycombed areas)
- Underwater concrete repair (with appropriate placement methods)
- Tunnel and underground structure repair
- Marine structure concrete restoration
- Industrial floor repair and patching

KEY FEATURES AND BENEFITS

- **One component** – Just add water; no additional additives required
- **Free flowing** – Self-leveling consistency fills voids completely without vibration
- **High strength** – Achieves excellent compressive strength for structural applications
- **Microconcrete formulation** – Contains fine aggregates for larger volume fills than conventional grouts
- **Ideal for intermediate volumes** – Perfect for repairs too large for grout, too small for concrete
- **Excellent bond strength** – Superior adhesion to existing concrete substrates
- **Good yield** – Over 19 liters per 40 kg bag
- **Non-shrink performance** – Maintains dimensional stability for long-term durability
- **High early strength** – Rapid strength gain for quick return to service
- **Chloride-free** – Safe for use with embedded steel reinforcement
- **Corrosion protection** – Protects rebar and embedded anchors
- **Easy to mix and place** – Simple on-site preparation
- **Compatible with concrete** – Matches thermal and mechanical properties of concrete

PHYSICAL AND CHEMICAL PROPERTIES

| Property | Specification |
|--------------------------|---|
| Appearance | Fine, free-flowing powder |
| Color | Gray |
| Form | Powder (pre-blended, one component) |
| Basis | Cement based microconcrete with fine aggregates |
| Maximum Aggregate Size | 2 – 4 mm (fine microconcrete) |
| Flow Consistency | Free flowing / self-leveling |
| Chloride Content | Nil ($\leq 0.05\%$) – Non-corrosive |
| Mixing Water Requirement | Approximately 3.5 – 4.2 L per 40 kg bag |
| Yield per 40 kg bag | > 19 liters (wet) |
| Pot Life (at 25°C) | 20 – 30 minutes |
| Initial Set (at 25°C) | 3 – 5 hours |
| Final Set (at 25°C) | 5 – 7 hours |
| Application Temperature | +5°C to +35°C |

COMPRESSIVE STRENGTH

| Age | Compressive Strength (typical) |
|---------|----------------------------------|
| 6 hours | 10 – 15 MPa (1,450 – 2,180 psi) |
| 1 day | 25 – 35 MPa (3,600 – 5,100 psi) |
| 3 days | 40 – 50 MPa (5,800 – 7,250 psi) |
| 7 days | 50 – 60 MPa (7,250 – 8,700 psi) |
| 28 days | 60 – 75 MPa (8,700 – 10,900 psi) |

Flexural Strength (28 days): 7 – 10 MPa (1,015 – 1,450 psi)

Bond Strength (to concrete): > 2.5 MPa (360 psi) – substrate failure typical

NOTE: Strength development depends on temperature, mixing water content, and curing conditions. Higher temperatures accelerate strength gain; lower temperatures slow strength gain.

PACKAGING AND STORAGE

Packaging:

- 40 kg multi-layer bags with moisture barrier

Storage:

- Store in original sealed bags in a cool, dry location
- Protect from moisture, humidity, and direct sunlight
- Stack pallets off the ground on wooden pallets
- Keep bags intact and sealed until ready for use
- Do not store in areas with high humidity or risk of water damage

Shelf life: 12 months from date of manufacture when stored properly in unopened bags

DOSAGE AND COVERAGE RATES

The yield of **ChemFit MicroCrete 114** is greater than 19 liters of mixed material per 40 kg bag.

Yield per 40 kg bag: > 19 liters (wet volume) – typically 19.0 – 19.5 liters

Coverage per 40 kg bag (area x depth):

- At 10 mm thickness: Approximately 1.90 – 1.95 m² per bag
- At 25 mm thickness: Approximately 0.76 – 0.78 m² per bag
- At 50 mm thickness: Approximately 0.38 – 0.39 m² per bag
- At 100 mm thickness: Approximately 0.19 – 0.20 m² per bag

Example coverage for typical applications:

| Application | Depth | Area per 40 kg bag | Bags required per m ³ |
|-------------------------|--------|----------------------------|----------------------------------|
| Spalled concrete repair | 25 mm | 0.76 – 0.78 m ² | ~52 bags/m ³ |
| Column repair | 50 mm | 0.38 – 0.39 m ² | ~52 bags/m ³ |
| Cavity filling | 75 mm | 0.25 – 0.26 m ² | ~52 bags/m ³ |
| Equipment foundation | 100 mm | 0.19 – 0.20 m ² | ~52 bags/m ³ |
| Structural beam repair | 150 mm | 0.13 m ² | ~52 bags/m ³ |

NOTE: Coverage calculations assume proper mixing and placement without waste. For field applications, add 5-10% extra for waste, spillage, and surface irregularities. One cubic meter (m³) of mixed microconcrete requires approximately 52 bags (2,080 kg) of powder. This product is specifically designed for repair volumes that are too large for conventional grouts (typically > 50-100 mm depth).

APPLICATION GUIDELINES

Surface Preparation:

The substrate (existing concrete) must be clean, sound, and free from oil, grease, dust, loose particles, curing compounds, laitance, deteriorated concrete, and any other contaminants. Remove all loose and deteriorated concrete using mechanical methods (chipping hammer, scabbling, sandblasting, or water jetting). Expose sound, dense concrete with an open surface texture. Cut square edges around repair area (minimum 10-15 mm depth) using a diamond saw to create a sharp, defined boundary. For reinforcement that is exposed, clean to remove all rust using wire brushing or sandblasting. Apply a bonding agent or primer if required (consult ChemFit technical support). Pre-soak the substrate with clean water to achieve saturated surface dry (SSD) condition. Remove any standing water before microconcrete placement. Use formwork as needed to contain the repair material.

Mixing:

Add approximately 3.5 – 4.2 liters of clean, potable water to a clean mixing container (use the lower water content for higher strength, higher water content for increased flow). Slowly add the entire 40 kg bag of **ChemFit MicroCrete 114** to the water while mixing continuously. Mix with a low-speed electric drill and mixing paddle (400-600 rpm) or a forced action mixer for 3-5 minutes until a smooth, lump-free, free-flowing consistency is achieved. Do not add excess water beyond the recommended range as this will reduce strength, increase shrinkage, and may cause segregation. Allow the mixed material to stand for 2-3 minutes to allow any entrapped air to escape, then remix briefly for 30-60 seconds before placement. Do not remix after the material has begun to set.

Placement:

For vertical and overhead repairs, apply in layers not exceeding 50 mm thickness. For horizontal repairs (slabs, foundations), pour the mixed microconcrete continuously from one side to allow air to escape. For deep repairs exceeding 100 mm, place in multiple layers, allowing each layer to settle before placing the next. For formwork filling, pour from one point to allow air to escape through vents. Light rodding or tapping of formwork can help consolidate the material, but do not use mechanical vibration as this may cause segregation. The free-flowing nature of the material allows it to self-level and fill voids without vibration. For large pours, use multiple mixers or a continuous mixing system to maintain continuous placement. The pot life is approximately 20-30 minutes at 25°C; mix only as much as can be placed within this time.

Curing:

Protect the freshly placed microconcrete from rapid moisture loss, direct sunlight, wind, and extreme temperatures. Apply curing compound, cover with plastic sheeting, or use wet burlap immediately after the material has hardened sufficiently (approximately 1-2 hours after placement). Maintain moist curing for a minimum of 3 days (7 days recommended for structural repairs, 14 days for critical applications). For hot weather (above 30°C), use cool mixing water (10-20°C), protect from direct sunlight, and apply curing immediately after placement. For cold weather (below 10°C), use warm mixing water (20-30°C), provide insulating covers, and protect from freezing. Do not apply when ambient temperature is below 5°C or expected to drop below freezing within 24 hours. For underwater applications (with appropriate placement methods), no additional curing is required once placed.

HEALTH AND SAFETY

ChemFit MicroCrete 114 is alkaline and may cause severe eye and skin irritation. In fresh, wet state, the product is caustic. If eye contact occurs, rinse immediately with plenty of water for 15-20 minutes and seek medical attention immediately. For skin contact, wash immediately with soap and water; remove contaminated clothing. If swallowed, do not induce vomiting; rinse mouth and drink water, then seek medical attention immediately. Use gloves, safety glasses, and protective clothing during handling. Avoid inhalation of dust – use dust mask if ventilation is poor. Refer to the Safety Data Sheet for detailed information.

CLEANG OF TOOLS

Clean all mixing equipment, tools, and spillages with water immediately after use. Dried or cured material may require mechanical removal.

APPROVALS AND STANDARDS

ChemFit MicroCrete 114 conforms to the following standards:

- One component, free flowing, high strength, cement based microconcrete
- Suitable for repair of deteriorated concrete and volumes too large for conventional grouts
- Meets industry requirements for structural concrete repair materials

LEGAL NOTES

All technical data provided in this Product Data Sheet is based on laboratory testing under controlled conditions. Actual field performance may vary due to differences in substrates, application methods, site conditions, and environmental factors. ChemFit makes no warranty of merchantability or fitness for a particular purpose. Users shall conduct their own trials to validate product suitability for the intended application. ChemFit reserves the right to modify product specifications without prior notice. For the most current documentation, request the latest Product Data Sheet and Safety Data Sheet from ChemFit.

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