

CHEMFIT AF400

Epoxy Anchoring Adhesive – For Heavy Duty Anchoring

PRODUCT DESCRIPTION

ChemFit AF400 is a high-strength, two-part, solvent-free epoxy anchoring adhesive designed for heavy-duty anchoring applications. This 100% solids, thixotropic formulation provides exceptional bond strength, chemical resistance, and durability for anchoring threaded rods, reinforcing bars (rebar), and bolts into concrete, solid masonry, stone, and other substrates. The solvent and styrene-free formula eliminates unpleasant odors and is safe for indoor and confined-space use. Ideal for structural connections, machinery anchoring, and seismic retrofitting where high load capacity and long-term reliability are critical.

PRIMARY APPLICATIONS

ChemFit AF400 is recommended for use in conditions such as:

- Heavy-duty anchoring of threaded rods, bolts, and reinforcing bars (rebar) in concrete
- Post-installed rebar connections for structural extensions and retrofits
- Anchoring machinery, heavy equipment, and structural steel to concrete foundations
- Seismic anchoring and structural upgrades in cracked and uncracked concrete
- Anchoring into solid masonry, brick, block, stone, and natural rock
- Fixing handrails, bollards, safety barriers, and heavy-duty racks
- Infrastructure rehabilitation, bridge repair, and tunnel anchoring
- Chemical plant, industrial flooring, and marine environment anchoring

KEY FEATURES AND BENEFITS

- **High strength** – Ultra-high compressive and bond strength for structural loads
- **Solvent and styrene free** – Low odour, zero VOC, safe for confined spaces
- **Thixotropic** – Non-sag formulation allows vertical and overhead application without dripping
- **All-weather performance** – Cures in dry, damp, or water-filled holes (moisture insensitive)
- **Cracked concrete approved** – Suitable for use in cracked and uncracked concrete (ETAG 001)
- **Fast curing** – Quick strength gain for early loading (cure time varies with temperature)
- **Long shelf life** – 24 months when stored in unopened cartridges at proper temperature
- **CE marked** – Conforms to European and international standards
- **Available in multiple formats** – Cartridge kits for standard caulking guns

PHYSICAL AND CHEMICAL PROPERTIES

Property	Specification
Appearance	Two components: resin + hardener
Mixed colour	Grey
Basis	High-strength epoxy resin
Solvent content	Nil (100% solids)
Styrene content	Nil
VOC content	Zero
Viscosity (mixed)	Thixotropic (non-sag)
Mix ratio (cartridge)	10:1 or 3:1 (by volume)
Density (mixed)	1.6 – 1.8 kg/L
Pot life (at 25°C)	20 – 40 minutes
Cure time (full load, at 25°C)	30 – 90 minutes (depending on temperature)
Final cure	24 – 72 hours
Application temperature	-5°C to +40°C
Service temperature	-40°C to +80°C

MECHANICAL PROPERTIES

Property	Value (typical at 7 days / 25°C)
Compressive strength (ASTM D695)	70 – 100 MPa (10,150 – 14,500 psi)
Tensile strength (ASTM C307)	15 – 25 MPa (2,180 – 3,600 psi)
Flexural strength (ASTM C580)	30 – 45 MPa (4,350 – 6,500 psi)
Bond strength to concrete (ASTM C882)	> Concrete substrate failure (> 20 MPa)
Shear strength	10 – 15 MPa (1,450 – 2,180 psi)
Elastic modulus (compression)	~7,000 MPa

PACKAGING AND STORAGE

Packaging:

- 150 mL twin cartridges (with static mixing nozzle)
- 300 mL twin cartridges (with static mixing nozzle)
- 550 mL twin cartridges (with static mixing nozzle)
- Bulk kits (as specified)

Storage:

- Store in original sealed cartridges at +5°C to +25°C
- Protect from direct sunlight, frost, and extreme heat
- Do not freeze; shelf life reduces at high temperatures
- Keep nozzles clean and capped when not in use

Shelf life: 24 months from date of manufacture (unopened, proper storage)

DOSAGE AND COVERAGE RATES

Yield per cartridge (linear metres per hole diameter):

Hole Diameter (mm)	150 mL cartridge (m)	300 mL cartridge (m)	550 mL cartridge (m)
10	3.5 – 4.0	7.0 – 8.0	13 – 15
12	2.2 – 2.5	4.5 – 5.0	8 – 9
14	1.5 – 1.8	3.0 – 3.5	5.5 – 6.5
16	1.1 – 1.3	2.2 – 2.6	4.0 – 4.8
20	0.7 – 0.8	1.4 – 1.6	2.6 – 3.0
25	0.4 – 0.5	0.8 – 1.0	1.5 – 1.8

Anchor rod vs. hole size: Rod diameter + 4 mm for concrete (e.g., M12 rod → 16 mm hole)

NOTE: Coverage is approximate; depends on hole cleanliness, oversizing, substrate type, and application technique.

APPLICATION GUIDELINES

Surface Prep:

- Drill hole to specified diameter and depth; clean with brush and compressed air (blow 2x, brush 2x, blow again)
- Hole must be clean, dry, and free of dust, debris, oil, ice, or any contaminants
- For damp or water-filled holes, product is suitable – no special drying required (follow temperature-specific cure times)

Mixing:

- Insert cartridge into standard caulking gun; attach supplied static mixing nozzle
- Discard first 2-3 cm of mixed adhesive (incomplete mix); ensure mixed colour is uniform grey

Injection:

- Inject adhesive from bottom of hole moving upward to avoid air pockets
- Fill hole to 2/3 depth for vertical or 80% for horizontal/overhead applications
- For hollow masonry, insert mesh sleeve before injecting adhesive

Insertion:

- Insert rod/bolt with slow twisting motion to ensure full coating
- Press until full depth is reached; slight adhesive overflow is normal
- Do not disturb during cure time (see table below)

Curing Times (full load capacity):

Temperature	Cure Time
-5°C to 0°C	120 – 180 minutes
0°C to 10°C	60 – 120 minutes
10°C to 20°C	30 – 60 minutes
20°C to 30°C	20 – 40 minutes
30°C to 40°C	15 – 25 minutes

- For water-filled holes: double cure time
- Avoid mechanical shock during cure
- Full chemical resistance after 7 days

HEALTH AND SAFETY

Epoxy resins and hardeners may cause skin and eye sensitisation and irritation. If eye contact occurs, rinse with water for 15 minutes and seek medical attention. For skin contact, wash immediately with soap and water; remove contaminated clothing. If swallowed, seek medical attention immediately – do not induce vomiting. Use gloves (nitrile), safety glasses, and protective clothing during handling. Ensure adequate ventilation – use respiratory protection if ventilation is poor. Refer to the Safety Data Sheet for detailed information.

CLEANG OF TOOLS

Clean all mixing equipment, nozzles, and spillages with acetone, xylene, or epoxy thinner immediately after use before material cures. Dried epoxy requires mechanical removal. Dispose of cleaning materials in accordance with local regulations.

APPROVALS AND STANDARDS

ChemFit AF400 conforms to the following standards:

- **ASTM C881 / C881M** – Types I, II, IV, and V, Grade 3, Class B and C (Epoxy bonding systems for concrete)
- **ASTM D695** – Compressive strength testing
- **ASTM C882** – Bond strength testing by slant shear
- **ASTM E488** – Strength of anchors in concrete (testing method)
- **ETAG 001** – European Technical Approval for metal anchors in concrete (Option 1 for cracked concrete)
- **ISO 834** – Fire resistance testing (component of larger system approvals)
- **CE marked** – Declared performance for structural anchoring
- 100% solids, solvent-free, styrene-free – Zero VOC, safe for confined spaces
- Suitable for cracked and uncracked concrete, heavy-duty structural anchoring
- **Chloride free** – Safe for reinforced concrete

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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