TuffTex Materials
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RepShot FSC

Spray-applied, silica fume enhanced, fiber-reinforced, cementitious mortar

DESCRIPTION:
RepShot FSC is an excellent ready-to-use, high performing, pneumatically applied, non-accelerated, cementitious, silica fume enhanced, fiber-reinforced mortar with a dust control agent. **RepShot FSC** is formulated for machine applications using dry or wet process spray equipment. Advantages include high strength, improved sulphate resistance, high adhesion, low permeability, low rebound and low sag.

USES:
RepShot FSC is particularly suitable for structural repairs in large area applications and structures such as:

- Bridges, viaducts, retaining walls, parking structures
- Tunnels, galleries, industrial or residential buildings
- Piers, off-shore platforms, mines, swimming pools
- Use on grade, above, and below grade
- Use on vertical, overhead and horizontal surfaces.
- Use for dry or wet shotcrete applications

ADVANTAGES:

- One-component, ready to use mortar
- Excellent adhesion to currently prepared, sound substrates
- High compressive & flexural strength, rapid strength gain
- Fiber-reinforced, High density
- Formulated to minimize dust formation
- Low in rebound, extremely economical in use
- Low water cement ratio, very low shrinkage
- Can be troweled and screed after spraying

PACKAGING:
55 lb (25 kg) bag

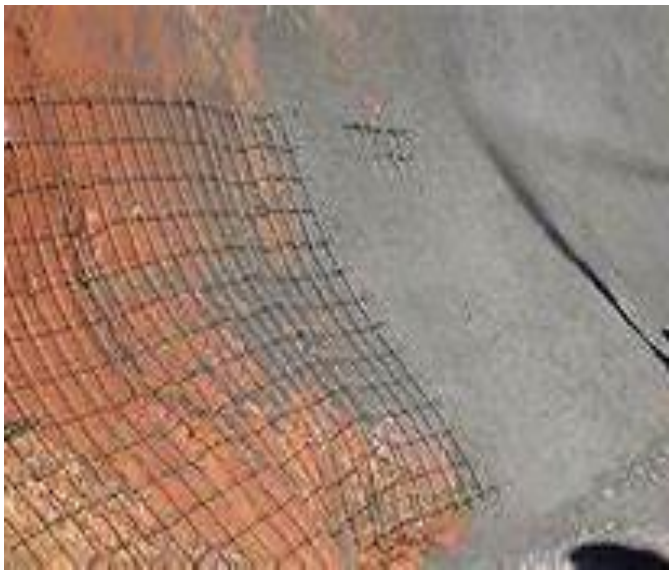
YIELD:
• A 55 lb bag will yield approximately 0.39 cubic feet.
• An 80 lb bag will yield approximately 0.61 cubic feet.
• A 2,000 lb bulk bag will yield approximately 15.18 cubic feet.

DENSITY:
137 lb/ft³ (2.2kg/l) (ATSM C-138)

COLOR:
Gray Powder

TECHNICAL INFORMATION:

Compressive Strength	1 days 7 days 28 days	3,800 psi (26.2 MPa) 4,825 psi (33.2 MPa) 6,950 psi (47.9 MPa)	(ASTM C-109) 73 °F (23 °C) 100 % R.H.
Modules of Elasticity in Compression	28 days	$5.8x10^6$ psi (40 GPa)	(ASTM C-496)
Flexural Strength	7 days 28 days	1,000 psi (6.9 MPa) 1,400 psi (9.7 MPa)	(ATSM C-293) 73°F (23 °C) 100% R.H.
Tensile Strength	7 days 28 days	290-580 psi (2-4 MPa) mostly concrete failure (substrate)	(ACI 503.R) 73 °F (23 °C) 100 % R.H.
Pull-Out Resistance	28 days	>750 C	(ASTM C-1202 AASHTO T277)
Tensile Adhesion Strength	28 days	500 psi (3.44 MPa) concrete failure (substrate)	(ACI 503.R) 73°F (23 °C) 100% R.H.
Freeze-Thaw Stability	300 cycles	95%	(ASTM C-666)
Rapid Chloride Permeability	28 days	>750 C	(ASTM C-1202 AASHTO T-277)
Length Change	28 days	0.07%	(ASTM C 157) Air Cured
Bond Strength	1 day 7 day 28 day	910 psi 1,980 psi 2,300 psi	(ASTM C-882) Modified



APPLICATION INSTRUCTIONS:

Mixing Ratio: 5-6 pts (2.4-2.8 L) per bag

Coverage: 0.48 ft^3 (0.01 m^3) per bag
(Yield will vary due to amount of water utilized in the shotcreting process)

Layer Thickness:

Large Area
Min. = 1/3” (8mm) Max. = 2” (50 mm)
Local Application
Min. = 1/4" (6 mm) Max. = 6-10” (150-250 mm)

Application Air Temperature: 40 °F (4 °C) to 90^0 F (32^0 C)
Substrate Temperature Minimum: 40 °F (4 °C)

PREPARATORY WORK:

TuffTex recommends that job mock-ups be prepared by the contractor and tested prior to beginning a project.
TuffTex recommends that American Concrete Institute (ACI) Committee 506 procedures and recommendations be followed for surface preparation. This typically includes but is not limited to removing all spalled, severely cracked, deteriorated, loose and unsound concrete from existing concrete surface by chipping, water blasting or other mechanical methods. Adequate pre-wetting of the concrete substrates should be done prior to shotcreting. Concrete surfaces receiving the Shotcrete material should be saturated surface-dry (SSD).

SURFACE PREPARATION:

- Surface must be clean and sound. Remove all deteriorated concrete, dirt, oil, grease, and other
- Bond-inhibiting materials from the area to be repaired.
- Steel reinforcement must be clean and free from any rust. Use **Rust Rehab** on all rusted surfaces.
- Be sure repair area is not less than 1/3" (8 mm) in depth.
- Preparation work should be done by high pressure water blast, scabbler or other appropriate mechanical means to obtain an exposed aggregate surface profile (CSP-6).
- **PrepEtch** will also give a CSP-3 when desired.
- To ensure optimum repair results, the effectiveness of decontamination and preparation should be assessed by a pull-off test.
- Substrate should be Saturated Surface Dry (SSD) with clean water prior to application. No standing water should remain during application.

PRIMING:

- Reinforcing steel: Steel reinforcement should be thoroughly prepared by mechanical cleaning to remove all traces of rust. Where corrosion has occurred due to the presence of chlorides, the steel should be high pressure washed with clean water after mechanical cleaning. For priming of reinforcing steel use **Rust Rehab or RepPoxy BAC.**
- Concrete Substrate: When applying on critical substrates, the use of **RepPoxy BAC** as a bonding agent is advised.

APPLICATION:

- Apply **RepShot FSC** mortar by spraying or trowelling for repairing vertical or overhead surfaces.
- Shoot perpendicular (90°) to the surface. This minimizes rebound, creates the smoothest pattern (reduces ‘bumps’) and properly encases the rebar.
- The velocity of the material is sufficient if, at a distance of 18 to 24" (457 to 609 mm), the material pattern flattens out on contact with the surface and the rebar is encased.
- After applying the material, allow it to stiffen for about 10 minutes before removing bumpy areas with a trowel.
- Before applying the next layer, allow the material to reach initial set. This will take anywhere from 2-4 hours, depending on mix consistency, mix and ambient temperature, wind conditions and humidity.
- Begin and finish a given patch on the same day.

Dry Process:

- **RepShot FSC** is applied by conventional dry spray shotcrete equipment.
- Generally, do not use equipment with high rotor
- capacity.
- Apply **RepShot FSC** in accordance with ACI 506-R85, "Guide to Shotcrete". Important factors to observe during shotcreting are nozzle distance (2–6 ft.), angle to substrate (90 °), and consistency of mortar.
- Immediately after application and before set, mortar
- consistency should be plastic, like a firm jelly.

Wet Process:

- Conventional wet-process spray equipment such as the Reed Sova Sprayer, Mayco ST-45, or C-30HD machines should be used.
- Set up wet-process equipment; then add the water (5-6 pts per bag) directly into mixer.
- Start the mixer in motion and add the **RepShot FSC** mortar while continuing to mix.
- Mix for 3 minutes to uniform consistency.

Natural finish:

- If a gun-finish is too rough, special finishes may be applied.
- Approximately 5–10 min. after initial set, excess material should be sliced off with a sharp-edged cutting screed. The surface may then be finished to your requirements:
- Broomed for a rough texture
- Wood-floated for a granular texture
- Steel-trowelled for a smooth finish

CURING:

- As per ACI recommendations for Portland cement concrete, curing is required and curing should commence immediately after finishing.
- Either Apply **RepCure P** curing compound, moist cure with wet burlap, or a continuous fine mist of water.
- Other curing compounds may adversely affect the adhesion of the following lifts of mortar or protective coatings.
- Protect freshly applied mortar from direct sunlight, wind, rain and frost.

CLEAN UP:

Clean tools and equipment with water **RepShot FSC** hardens. Hardened material must be mechanically removed.

LIMITATIONS:

- Do not use solvent-based curing compounds.
- Do not install over substrates containing asbestos.
- The minimum ambient & surface temperatures are from 40°F (4°C) at the time of application, up to 90°F (32°C).
- For best results, condition **RepShot FSC** from 65°F to 85°F (18°C to 29°C) at least 24 hours before use.
- Use only potable water at the nozzle in a dry shotcreting application and when mixing for wet shotcreting.
- **RepShot FSC** can be applied at thicknesses between 3/8" and 1-9/16" (10 mm to 4 cm) per lift, and up to 6" (15 cm) in multiple lifts.
- For temperatures below 45°F (7°C) and above 85°F (29°C), refer to the American Concrete Institute (ACI) for hot/cold weather application guidelines.
- As with all cement based materials, avoid contact with aluminum to prevent adverse chemical reaction and possible product failure. Insulate potential areas of contact by coating aluminum bars, rails, posts etc. with an appropriate epoxy such as **RepPoxy MV**.
- **RepShot FSC is not a vapor barrier.**

SHELF LIFE:
12 months from date of production if stored properly in original, unopened and undamaged sealed packaging.

STORAGE:
Store dry at 40-95 °F (4-35°C)
Condition material to 65-76 °F before using
Protect from moisture. If damp, discard material

WARRANTY:
Due to the use of this product beyond our control, we assume no liability for damages of any kind, and the user accepts the product "as is" and without warranties, expressed or implied, from either **TuffTex Materials, Inc.** or its agents. The suitability of the product for an intended use shall be solely up to the user. Our only obligation shall be to replace or pay for any material proved defective, with our liability limited to the purchase price of materials supplied by us.

DISCLAIMER:
Refer to the SDS sheet before use. The information and recommendations set forth in this Product Data Sheet are based upon tests conducted by or on behalf of **TuffTex Materials, Inc**. Such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication. Contact your local **TuffTex Materials, Inc.** distributor or technical representative for additional technical data and instructions.

APPLICABLE STANDARDS:
•ASTM C 39 *Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens*
•ASTM C 42 *Standard Test Method for Obtaining and Testing Drilled*
Cores and Sawed Beams of Concrete (AASHTO T24)
•ASTM C 78 *Standard Test Method for Flexural Strength of Concrete*
(Using Simple Beam with Third-Point Loading)
•ASTM C 109 *Standard Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50 mm] Cube Specimens*
•ASTM C 157 *Standard Test Method for Length Change of Hardened*
Hydraulic-Cement Mortar and Concrete
•ASTM C 469 *Standard Test Method for Static Modulus of Elasticity and Poisson's Ratio of Concrete in Compression*
•ASTM C 496 *Standard Test Method for Splitting Tensile Strength of*
Cylindrical Concrete Specimens
•ASTM C 642 *Standard Test Method for Density, Absorption, and Voids in Hardened Concrete*
•ASTM C 666 *Standard Test Method for Resistance of Concrete to Rapid Freezing and Thawing*
•ASTM C 882 *Standard Test Method for Bond Strength of Epoxy Resin Systems Used with Concrete by Slant Shear*
•ASTM C 1012 *Standard Test Method for Length Change of Hydraulic-Cement Mortars Exposed to a Sulfate Solution*
•ASTM C 1202 *Standard Test Method for Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration*
•ASTM C 1399 *Standard Test Method for Obtaining Average Residual-Strength of Fiber Reinforced Concrete*
•ASTM C 1480 *Standard Specification for Packaged, Pre-Blended, Dry, Combined Materials for Use in Wet or Dry Shotcrete Applications*
•ASTM C 1583 *Standard Test Method for Tensile Strength of Concrete Surfaces and the Bond Strength or Tensile Strength of Concrete Repair and Overlay Materials by Direct Tension (Pull-off Method)*
•ASTM C 1604 *Standard Test Method for Obtaining and Testing Drilled Cores of Shotcrete*