Fiber Reinforced Underlayment

1. PRODUCT NAME

TEC® Fiber Reinforced Underlayment
(565)

2. MANUFACTURER

H.B. Fuller Construction Products Inc.
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3. DESCRIPTION

TEC® Fiber Reinforced Underlayment is a pumpable/ pourable, cement-based product that can be used as a high performing self-leveling underlayment designed for use over a variety of substrates. The resulting smooth finished surface is ideal for the installation of all types of floor covering, including carpet, ceramic or natural stone tile, resilient, laminate flooring and wood flooring.

Note: All surfaces must be primed with TEC® Multipurpose Primer before installing Fiber Reinforced Underlayment.

Key Features and Benefits

- Calcium aluminate technology for rapid strength development
- Triple fiber-reinforced
- No reinforcement mesh required over wood substrates*
- Can be applied directly over new or moist concrete [15 lb. per 1000 ft^2 (0.07 kg/m^2) per 24 hours, RH 99% or lower]
- Thickness ranges from 1/16" (1.6 mm) up to 1½" (38 mm) depth in a single pour
- Self-drying formula
- Walkable in 2-4 hours; install flooring as soon as 6 hours
- Recommended for use with radiant heating systems
- Contains 10% pre-consumer recycled material
- Contributes to LEED® project points
- VOC 0

*See section 5 for wood substrates installation guidelines.

Packaging

50 lb. plastic bags (22.68 kg)	Product #15035752
50 lb. moisture-resistant bags (22.68 kg)	Product #15035753

Coverage

Coverages shown are approximate. Actual coverages may vary according to substrate conditions and thickness of applications.

Application Depth	Approximate Coverage per 50 lbs. (22.68 kg)
1/8" (3 mm)	44-50 sq.ft. (4.1-4.6 m^2)
1/4" (6 mm)	22-27 sq.ft. (2.0-2.5 m^2)
1/2" (12 mm)	11-13 sq.ft. (1.0-1.2 m^2)
1" (25 mm)	5-6 sq. ft. (0.5-0.6 m^2)

Suitable Substrates

When properly prepared, suitable substrates include:

- Concrete
- Ceramic, porcelain, or quarry tile
- Cement or epoxy terrazzo
- Cement backerboard
- Exterior grade plywood
- Oriented Strand Board (OSB)
- VCT or full glued down, non-cushioned vinyl sheet goods
- Existing tongue and groove wood flooring
- Gypsum substrates–minimum tensile bond strength 72 psi (0.5 MPa)

Substrate Preparation

General: All surfaces must be structurally sound and free from any contaminants that may inhibit bond, including oil, grease, dust, loose or peeling paint, floor finishes or waxes, etc.

Surfaces must be primed with TEC® Multipurpose Primer prior to installation of TEC® Fiber Reinforced Underlayment. See Primer label for application instructions. Minimum tensile bond strength of 72 psi (0.5 MPa) is required.

Substrate temperature should be a minimum of 43°F (6°C) during application and air temperature maintained above 50° (10°C). DO NOT cover existing building expansion or dynamic (moving) control joints or cracks. Provide joints where specified. Create 1/8" to 1/4" (3-6 mm) wide gaps where self-leveling underlayment abuts walls, columns, and fixtures by installing a self-sticking foam weather stripping tape or damp sand (vacuum up sand after self-leveling underlayment has cured). Plug all floor openings, gaps and static (non-moving) cracks and install termination dams to prevent any seepage.

Concrete: TEC® Fiber Reinforced Underlayment can be installed over new ("green") concrete with a maximum of 99% RH or 15 lbs per 1000 ft^2 (0.07 kg/m^2) per 24 hours. **However, when installing moisture sensitive floor coverings refer to the finished floor manufacturer's specifications on moisture limitations.** Remediation of excessive moisture conditions must be addressed prior to the installation TEC® Fiber Reinforced Underlayment. This product is not a moisture vapor barrier. If substrate moisture content exceeds the maximum allowed by the flooring manufacturer, then moisture mitigation must be applied prior to application of Fiber Reinforced Underlayment. To reduce moisture vapor emissions to an acceptable level, use TEC® LiquiDam™ Penetrating Moisture Vapor Barrier or LiquiDam EZ™ Moisture Vapor Barrier prior to application of TEC® Multipurpose Primer and TEC® Fiber Reinforced Underlayment (see product data sheet for details).

A successful application to concrete requires evaluation of the concrete surface and preparation to address any conditions that would prevent a good bond. Following are the four conditions you need to check for. Check for Condition 1 on the entire concrete surface. Check for Conditions 2 through 4 on several areas, typically every 100 square feet (9.3 m^2) on applications of 1000 square feet (93 m^2) or less and every 500 square feet (46.5 m^2) on larger applications. Once you have completed the preparation method, always re-check to confirm the method worked.

Shot blasting is one of the most effective methods of removing a wide variety of contaminants, or laitance (weak concrete surface material) from concrete. A shot blast machine will remove sealers, coatings, curing compounds and other contaminants quickly and effectively, leaving behind a proper surface ready to receive the primer and underlayment. Thickness of surface removal must be deep enough to eliminate penetrated contaminants or laitance.

CONDITION 1: Surface coatings and/or contamination such as gypsum plaster, joint compound, or adhesive.

Evaluation: Look at the surface and note the type and location of the surface contamination.

Preparation: First scrape off any lumps and loose material. Then use an appropriate cleaning method for the type of contamination. Examples include:

- Coatings or paints – Application over coatings is acceptable if they are well bonded and achieve a minimum of 72 psi (0.5 MPa) tensile bond strength. Coating surface must be free from any contaminants that may inhibit bond. Poorly bonded or peeling coatings must be removed by mechanical method.
- Gypsum plaster and joint compound – Scrub with warm water and detergent to remove any remaining material. Thoroughly rinse off any residue and allow concrete surface to dry prior to application of any TEC® materials.
- Adhesive
  - Cutback Adhesive Residue (non-asbestos) – Application over asphalt-based cutback adhesive residue is acceptable provided the residue is well bonded and can achieve a minimum of 72 psi (0.5 MPa) tensile bond strength. Scrape and remove adhesive until all that remains is a thin, transparent layer.

Note: Mechanical removal of cutback by sanding, grinding or blasting can be hazardous since old cutback adhesive may contain asbestos. Harmful dust may result. Inhalation of asbestos dust may cause asbestosis or other serious bodily harm. Consult all applicable government agencies for rules and regulations concerning the removal of floorings and adhesives that contain asbestos.

- Tacky or pressure-sensitive adhesive – Do not apply TEC® underlayments over these adhesives. They must be mechanically removed by a method such as shot blasting.

CONDITION 2: Weak top layer (laitance) or damaged concrete (spalling, scaling, or crumbling).

Evaluation: First scrape the surface with a knife blade. If this produces a fine powder, then laitance is present. Then use a hammer or other heavy object to sound out weak or hollow areas. Note the areas that are weak or damaged.

Preparation: Weak or damaged concrete must be removed by mechanical method such as shot blasting.

NOTE: Acid washing or etching is not recommended because it is difficult to control and to fully remove contaminants and properly neutralize. The acid can penetrate into the porous concrete and chemically undermine the cement, weakening the concrete. Acid washing will not remove grease or oil.

CONDITION 3: Invisible contamination such as sealers, curing compounds or oil.

Evaluation: Sprinkle water onto the surface. If water forms droplets without absorbing immediately, the surface is probably contaminated.

Preparation: Contaminated concrete must be removed by mechanical method such as shot blasting.

- Curing Compounds
  - Petroleum based, wax emulsion or dissipating curing compounds must be removed by mechanical means such as shot blasting. If the type of curing compound is unknown, removal is required.
  - Silicate or Acrylic resin curing compounds may be acceptable. Install primer test sample areas to evaluate bond strength first. Samples must achieve 72 psi (0.5 MPa) tensile bond strength. For silicate types, all residual salts must be removed prior to application of the primer and underlayment.

CONDITION 4: Surface dirt and dust.

Evaluation: Wipe the surface with a clean dark cloth. If powder is visible on the cloth the surface is not clean enough. Note the areas that require cleaning.

Preparation: Always use a two step method to remove surface dirt and dust. First use a dry clean broom and sweep the entire surface. Do not use sweeping compounds. They can leave an oily or waxy film on the concrete surface that will prevent a proper bond. The second step should consist of one of the following:

- Vacuuming – use a heavy-duty industrial type vacuum to provide a dust-free surface.
- Water cleaning – use a stream of potable water with sufficient pressure to remove dust and dirt. When necessary, also scrub with a stiff bristled brush. Thoroughly remove all wash water and allow concrete surface to dry prior to application of any TEC® materials.
- Detergent water cleaning – Using a stiff bristled brush or broom, scrub the entire concrete surface with a cleaning product intended for concrete or a solution of at least 4 ounces (118 mL) of trisodium phosphate per gallon (3.78 L) of warm water. Before the surface dries, thoroughly flush the concrete with clean potable water to remove all wash water and residue. Allow concrete surface to dry prior to application of TEC® materials.

Single Layer of Exterior Grade Plywood or Oriented Strand Board (OSB) without Lath: Wood subflooring must be securely fastened with screw type or ring shank nails and adhesive. Installations of exterior grade plywood or OSB (APA Rated Sturd-I-Floor OSB, Exposure 1 or better) require 5/8" (15 mm) single layer minimum thickness on bridged floor joists up to 20" (50 cm) on center, or require 3/4" (19 mm) single layer minimum thickness on bridged floor joists up to 24" (60 cm) on center, with a maximum deflection of 1/360 of the span. Allow a gap of 1/8" to 1/4" (3-6 mm) between sheets of plywood or OSB. Long edges of subfloor must be tongue and groove or supported by bridging between floor joists. Use suitable TEC® surface preparation products (PerfectFinish™, VersaPatch®, Fast-Set Deep Patch) to plug all floor openings, gaps and cracks and install termination dams to prevent any seepage. Prime the floor and allow it to dry to a clear film. Install TEC® Fiber Reinforced Underlayment based upon the following joist spacing in the table below:

Joint Spacing (o.c.)	Minimum SLU thickness over single layer:	
	5/8" (15 mm) tongue and groove subfloor	3/4" (19 mm) tongue and groove subfloor
16" or less (40 cm or less)	5/8" (15 mm)	5/8" (15 mm)
20" or less (50 cm or less)	5/8" (15 mm)	5/8" (15 mm)
24" or less (60 cm or less)	NA	3/4" (19 mm)

Radiant Heating Systems: For radiant heat system installations, always prime the substrate before installing heating system components on the substrate surface. Heating system must be off 2 days before and kept off for 7 days after installation.

Electric Wire Systems Installed Over Substrate – TEC® Fiber Reinforced Underlayment may be used in conjunction with wire systems installed over concrete, single layer plywood/OSB subfloors. Follow the requirements for each substrate stated above and maintain minimum thickness of self leveling underlayment above the wire of 1/4" (6 mm).

Electric Mat Systems Installed Over Substrate – Mat system configurations can vary by system manufacturer. Contact system manufacturer for installation instructions.

Hydronic Systems Installed Over Substrate – TEC® Fiber Reinforced Underlayment may be used in conjunction with hydronic systems installed over concrete or single layer plywood/OSB subfloors. Follow the requirements for each substrate stated above and maintain minimum thickness of self leveling underlayment over the heating tubes of 5/8" (15 mm) (depending on the diameter of the tubing, two lifts of self leveling underlayment may be required). When installing ceramic tile over hydronic systems the application of a crack isolation membrane over the self leveling underlayment is recommended.

Hydronic Systems Embedded in Concrete Substrate – Follow the requirements for concrete substrate installations stated above and maintain minimum thickness of concrete over the embedded heating tubes of 3/4" (19 mm). When installing ceramic tile over hydronic systems the application of a crack isolation membrane over the self leveling underlayment is recommended.

Metal Substrates: Suitable metal substrates include non-galvanized steel, stainless steel, copper, aluminum and lead. Metal substrates must be fully supported, firmly attached and rigid with no flexing or vibration. In addition to the General surface contaminants listed above, metal surfaces shall be free of rust or corrosion. Remove by sand blasting, wire brush or other mechanical means. To prevent rusting of unpainted steel, prime with TEC® Multipurpose Primer immediately after surface cleaning.

Solid Hardwood Flooring: Existing 3/4" (19 mm) thick tongue and groove solid hardwood flooring only (laminates are not acceptable) with maximum deflection of 1/360 of the span. Remove surface contaminants and ensure 72 psi (0.5 MPa) tensile bond strength. Prime with TEC® Multipurpose Primer full strength (undiluted). Maintain minimum thickness for TEC® Fiber Reinforced Underlayment of 3/4" (19 mm).

Storage

Store in cool, dry area away from direct sunlight. Do not store open containers.

Shelf Life

Maximum shelf life is from date of manufacture in unopened package.
Plastic bag: 1 year Moisture-resistant bag: 1 year

Limitations

- For interior use only.
- Do not apply when the temperature is below 50°F (10°C).
- Not for use in conditions of hydrostatic pressure or excessive moisture [15 lb. per 1000 ft² (0.07 kg/m²) per 24 hours, RH 99% or lower].
- Do not apply over sealed concrete, tempered hardboards (e.g. Masonite), particle board or lauan plywood.
- Do not use as a wear surface.

Cautions

For medical emergency information, call 1-888-853-1758.

This Product Data Sheet has been prepared in good faith on the basis of information available at the time of publication. It is intended to provide users with information about and guidelines for the proper use and application of the covered TEC® brand product(s) under normal environmental and working conditions. Because each project is different, H.B. Fuller Construction Products Inc. cannot be responsible for the consequences of variations in such conditions, or for unforeseen conditions.

4. TECHNICAL DATA

TEC® Fiber Reinforced Underlayment (565)

Description	Test Standard	Typical Results
28 Day Compressive Strength	ASTM C109	6000 psi (41.0 MPa)
28 Day Flexural Strength	ASTM C580	1200 psi (8.2 MPa)
Tensile Strength	ASTM C307	350-400 psi (2.4-2.7 MPa)
28 Day Shrinkage	ASTM C531 (Modified)	0.025-0.050%

Physical Properties

Description	
Physical State	Dry powder
Color	Gray
Working Time	15-20 minutes
Walkable Hardness	2-4 hours[1]
Flooring Installation*	Permeable Coverings: 6 hours[1] Non-Permeable Coverings: 12-24 hours[1]
Ideal Slump Range**	Ideal Slump Range** 10.5"-11.5" (22.6-29.2 cm)
Storage	Store in cool, dry location. Do not expose to nor store in direct sunlight. After opening, remove air from bag and seal tightly.
Shelf Life	Maximum shelf life is from date of manufacture in properly stored, unopened package. Plastic bag: 1 year Moisture-resistant bag: 1 year

[1]Colder temperatures and higher humidity will extend cure times.
*Flooring material installation within hours shown above after application is dependent on thickness, drying conditions, and type of flooring.
**Ideal slump range is based in 2" (5 cm) diameter plastic/metal pipe by 4" (10 cm) high.

5. INSTALLATION INSTRUCTIONS

Mixing

Add the entire bag of the TEC® Fiber Reinforced Underlayment to 5-5.25 quarts (4.7-5.0 L) of clean, cool water and mix with a high power drill (650 RPM). Avoid breathing dust and contact with eyes and skin. Mix thoroughly for two-three minutes. Scrape container's sides and remix to ensure a smooth, lump-free consistency. TEC® Fiber Reinforced Underlayment can also be used in most pump equipment, please consult a TEC® representative to verify equipment compatibility. A slump test should always be performed to ensure that mix is homogenized and free from separation.

Application

Immediately after mixing, pour TEC® Fiber Reinforced Underlayment onto the primed substrate. Spread into place with a long-handle, gauge rake or smoother covering all high spots on the floor. Working time is approximately 15-20 minutes, depending on ambient air temperature, substrate temperature and relative humidity of the air. High temperatures and low humidity will shorten working time. TEC® Fiber Reinforced Underlayment can be applied from a 1/16" up to 1½" (1.6-38 mm) depth in a single application up to 3" (7 cm) with two applications. (Wait until walkable hardness between coats. If waiting 6 hours or more between applications, surface of first layer must be primed with TEC® Multipurpose Primer.)

Up to 5" (12 cm) thickness may be poured with the addition of aggregate [well-graded, washed, dry pea gravel 1/8" (3 mm) or larger]. First mix TEC® Fiber Reinforced Underlayment as instructed. During placement add equal parts of the aggregate to mixed self-leveler by volume, mix until completely coated. To ensure proper bond, all aggregate and substrate must be completely coated with the underlayment mixture. Do not use sand. For further information, please contact your TEC® representative.

Clean-up

While material is still fresh, wash tools, hands, and equipment with warm soapy water.

Curing/protection

TEC® Fiber Reinforced Underlayment quickly dries to a walkable hardness in 2 to 4 hours. Permeable coverings can be applied in as little as 6 hours. Non-permeable coverings can be applied in 12-24 hours. TEC® Fiber Reinforced Underlayment is cement-based, and all general rules of concrete work should be observed to achieve maximum results. Never use forced air to accelerate the drying of TEC® self-leveling underlayments. For best results, always test performance of finished floor systems prior to installation.

6. AVAILABILITY

TEC® Premium Tile and Stone Installation Products are available nationwide. To locate TEC® products in your area, please contact:

Phone: 800-832-9002
Website: tecspecialty.com

7. LIMITED WARRANTY

The product(s) covered by this Product Data Sheet are sold subject to a Limited Warranty and related terms. **H.B. Fuller Construction Products disclaims the implied warranties of merchantability and fitness for a particular purpose and all incidental and consequential damages arising out of the sale, purchase or use of this product.** For Limited Warranty details visit tecspecialty.com. To obtain a hard copy of the Limited Warranty call H.B. Fuller Construction Products at 800-832-9023 or mail a written request to the address in Section 2 of this Product Data Sheet.

8. MAINTENANCE

Not applicable

9. TECHNICAL SERVICES

Technical and safety literature

To acquire technical and safety literature, please visit our website at tecspecialty.com.

10. FILING SYSTEM

Division 9

To learn more, visit TECspecialty.com

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