

## TF Structural Concrete Repair Mortar

Two component structural repair mortar and overlay for use on concrete structures.

### Introduction

This Technical Data Sheet was created as a guide for using and installing TF Structural. While we attempted to address most major areas, this sheet cannot cover the entire scope of installation methods and techniques, and all the beneficial properties of TF Structural. Terrafuse Inc. encourages you to contact us directly for any clarifications or specific questions about using this product.

### Description

TF Structural is a two-component, matte finish, interior/exterior concrete coating and structural repair mortar. Typically installed as a stand-alone overlay for concrete substrates, it provides an economical solution that has excellent abrasion resistance properties and very good durability against mechanical damage. TF Structural is used for spall repairs, complete resurfacing, large structural rebuilds, or anywhere damaged concrete is in need of repair.

### Where to Use

- As a high build overlay.
- Used in garages, parkades, warehouse floors, loading docks, structural columns on any concrete structure.
- As a thin overlay to mimic concrete finishes.
- Large staircase rebuilding.
- Areas that require a fast return to service with minimal downtime.
- Large overlays where concrete cannot be used.
- Cold weather applications as low as -5°C with cold weather additive.
- Used to repair concrete in preparation for polymer coatings.
- Any concrete surface in need of re-sloping, rebuilding, re-leveling or re-surfacing.

### Advantages

TF Structural requires no primers, no scrub coats, no critical mixing ratios and no curing procedures. Its unique chemistry allows the worker up to 45 minutes of working time, while still generating strengths higher than concrete after 4 hours. This offers an extremely fast return to service, even in cold weather applications. It can be applied as thick or as thin as the user desires, while still maintaining its excellent mechanical properties. TF Structural is highly resistant to freeze thaw, salt scaling, abrasion, impact, UV, salts, oil, gas and many other damaging environmental effects. It has very low water absorption after cure and zero restrained plastic shrinkage during cure. TF Structural is a highly versatile product that can be used in an extremely wide range of applications.

### Features

- High early strength gains; stronger than concrete in 4 hours.
- Odourless.
- Zero VOC's
- Excellent long term wear resistance.
- Economical and easy to apply.
- Can be used in thick applications for structural rebuilding.
- No maximum or minimum thicknesses.
- Fast curing. Return to service in under 2 hours.
- Easy to mix, no critical mix ratio between powder and Part B activator.
- Superior bond strength.
- Set times can be adjusted with accelerators and retarders.
- Excellent for deep screeding and leveling projects.
- Can be used in vertical applications.

### Packaging

Part A – 22.68 kg (50 lbs) Bag

Part B - 5 gallon (19L) pail

One unit of Part A will require approximately 2.5L of Part B for a smooth spreadable consistency. It is not recommended to mix full bags at a time, unless the user is very comfortable with the product use. Please contact Terrafuse Inc. directly for further information.

### Yield

Approximately 0.45 cubic feet/bag. This will cover approx. 30 – 55 ft<sup>2</sup> between 1/8" – 1/4" of coverage. (These figures do not allow for surface porosity, profile or wastage)

### Shelf Life

Components A+B: 12 months in original unopened packaging. Store dry between 3°C - 30°C (50°F - 77°F). Protect from freezing. Avoid storing Part A in humid conditions.

### Mixing Ratio

Although no critical mix is required, it is recommended to add 2.2 – 2.7L of Part B to one full bag of Part A. Mixer can adjust ratios to get desired consistency for job site conditions. When doing deeper applications, it is recommended to use less Part B. When doing thinner overlays, it is recommended to use more Part B. Full bags do not have to be mixed at a time. The installer should only mix what they are comfortable working with in 10 – 15 minutes.

### Application Temperature

1°C (35°F) min. / 35°C (95°F) max.

With Low Temperature Accelerator: -5°C (23°F) min. / 15°C (59°F) max.

With High Temperature Retarder: 15°C (59°F) min. / 40°C (104°F) max.

### Properties at 23°C (73°F) and 50% R.H.

<b>Compressive Strength</b>	<b>ASTM C109</b>
4 Hours	3778 psi (26.1 MPa)
24 Hours	4778 psi (33.0MPa)
28 Days	7417 psi (51.2MPa)
<b>Tensile Strength</b>	<b>ASTM C307</b>
24 Hours	186 psi (1.3MPa)
28 Days	537 psi (3.7MPa)
<b>Slant Shear Bonding</b>	<b>ASTM C882</b>
4 Hours	1507 psi (10.4MPa)
<b>Salt Scaling</b>	<b>ASTM C672</b>
25 Cycles Loss	22.52 g/m <sup>2</sup> Very slight scaling
<b>Dry Shrinkage</b>	<b>ASTM C596</b>
28 Days	-0.072%
<b>Coefficient of Thermal Expansion</b>	<b>ASTM C531</b>
Expansion (per °C)	1.4183x10 <sup>-5</sup>
<b>Restrained Plastic Shrinkage (Detailed report available)</b>	
24 hours in drying chamber	zero cracking was observed
<b>Water Absorption</b>	<b>ASTM C642</b>
Modified for Alberta Transportation Specification B391, Section 3.5	
14 Days	2.31% 24 hour submersion

### Surface Preparation

Concrete surfaces must be clean and sound. Remove all dust, dirt, existing paint films, efflorescence, exudates, laitance, form oils, hydraulic or fuel oils, brake fluid, grease, fungus, mildew, biological residues or any other contaminants which may prohibit a good bond. Prepare the surface by any appropriate mechanical means, in order to achieve a clean, porous substrate. Diamond grinding, sand blasting, shot blasting, scarifying, etc. are all appropriate means of preparation.

Although TF Structural has been specially formulated to retain its moisture without the use of primers or bonding agents, some site conditions may require a saturated surface dry (SSD) treatment of the concrete prior to application. An SSD condition will give the user more working time, and the product will be easier to spread, especially when the application is thinner. When applying TF Structural onto highly absorbent concrete, it is recommended to bring the surface to an SSD state, preventing excessive moisture loss from the material.

### Mixing

Add desired amount of Part B to mix pail. Gradually add Part A (powder) and mix for at least 30 seconds, or until all powders are wetted out. Use a low speed mixing drill (300-450 rpm) and mixing paddle (recommended) suited to the size of mixing container. We recommend mixing in five gallon pails. Mixing beyond 1 minute is not necessary and no slaking period is required. The mix consistency can be adjusted according to job requirements, by adding more Part A or Part B at any time during the mixing. TF Structural will cure quicker in thicker applications. This product is designed to be installed as soon as mixing is finished. Once mixed, remove from pail and use as soon as practical. Do not mix more than can be applied within 10-15 minutes.

### Accelerators and Retarders

Terrafuse Inc. manufactures chemical accelerators and retarders to speed up and slow down the cure times of TF Structural. TF Heat will speed up the cure time and TF Ice is used to slow down the cure time. There are many factors that will influence when and how much additive to use, mainly temperature, but the user must select an amount based on site conditions. As a recommendation, 1 cup (250 ml) of additive can be used, for every full bag of mixed material. Once the first mix is made, the working time and cure time will let the user know how much more or less additive to use. TF Heat is used to speed up the cure when the weather is cold and the application is thinner. It can also be used when an immediate return to service is required. TF Ice is used for thicker applications and when the temperatures are higher. This will give the used longer working times with the material. Please contact Terrafuse Inc. for more clarification if required.

### Application

Apply one coat of TF Structural to the substrate using steel trowels or screeds. Push the mortar well into the surface, making sure the substrate is fully wetted and finish to the required thickness. Final troweling should be done as soon as practical. Apply broom finish for non-slip and to mimic concrete finish. Do not overwork the product once it begins to set. If product is to be applied in applications thicker than 1", it can be extended with clean pea gravel. Use less Part B when making thicker pours, so material is not flowable, but still workable. Too much Part B in deep applications will make it tougher to finish and may cause surface bleeding. This will not affect the mechanical properties, but may lead to a poor looking finish.

When installing TF Structural, it is important to maintain and honor all expansion and control joints. TF Structural is a very rigid material, and cannot be used to connect different slabs of concrete and is not intended to fix cracks. Ensure when installing TF Structural that you do not cover over any of these moving joints. Keep all materials as cool as possible on the job site if extended working time is desired. When installing on larger areas, the user must mix and install in a continuous manner. Join the new mixes with the old, as soon as practical, to avoid cold seams. Work from one end to the other, finishing as you go.

### Clean Up

Clean all tools and equipment with water while material is still wet. Wash soiled hands and skin thoroughly in hot soapy water. Once hardened, product can only be removed mechanically.

### Warranty

Terrafuse Inc. warrants that all products are free from manufacturing defects. As site methods and conditions are beyond the control of Terrafuse Inc., no guarantee, expressed or implied as to the results is given. This warranty is limited to replacement of any Terrafuse Inc. product proven defective.