

# Tyfo® WS

## All-Purpose Epoxy

### DESCRIPTION

Tyfo® WS (thickened Tyfo® S Epoxy) is a two-component, hi-build, 100% solids, ICC-ES ESR-2103 listed product formulation developed for bonding applications. It can be used as a final protective coating or as a fill-and-level undercoat over which the Tyfo® Fibrwrap® System may be applied. This material may be used either as a surface coating or a primer material.

### USE

This material is suggested for use in application where irregular substrates exist and/or where protection of the Tyfo® System is necessary. This material may also be used for a primer layer under the Tyfo® System and is formulated to “stay-in-place” such as may be required on vertical walls or overhead beams. This material is also suitable for filling voids in concrete up to one half-inch depth. In some applications, sand may be added to fill larger voids and grout lines as required.

### COVERAGE

When used as a prime coat the coverage is highly dependent upon the existing surface.

### PACKAGING

TYFO® WS is available in two-part kits packaged to produce 4 gallons (15.1 liters) when mixed together. Both the “A” and “B” components are shipped in five (5) gallon UN/DOT-approved shipping containers.

### MIX RATIO

100.0 parts of component A to 42.0 parts of component B by volume. (100 parts of component A to 34.5 parts of component B by weight.)

### SHELF LIFE

One year in original, properly stored containers.

### STORAGE CONDITIONS

This material should be stored in a cool place 40° F to 90° F (4 to 32° C). Temporary storage should not be in areas of high temperatures, particularly the “A” component. The lids of both components should be kept tightly sealed. The “A” component should be used within 12 months.

### CERTIFICATE OF COMPLIANCE

- Will be supplied upon request, complete with state and federal packaging laws with copy of labels used.
- Material safety data sheets will be supplied upon request.
- Possesses 0% V.O.C. level.

### HOW TO USE THE TYFO® WS EPOXY

#### INSTALLATION

Tyfo® System to be installed by Fyfe Co. LLC trained and certified applicators. Installation shall be in strict compliance with the Fyfe Co. LLC Quality Control Manual.

#### SURFACE PREPARATION

The required surface preparation is largely dependent on the type of element. In general, the surface must be clean, and free of rust, scale, grease, oil, deposits and other contaminants. Fyfe Co. LLC may be consulted if further specifications are required.

**CONCRETE & MASONRY:** For maximum adhesion, surfaces may be prepared by waterblasting (pressure 3500 psi to 5000 psi), an acid etching/water cleansing method, sandblasting, or shotblasting.

**STEEL:** Grease, oil, and other contaminants may require removal with an approved solvent. Thereafter, the surface to receive the Tyfo® WS Epoxy Coating should be prepared by “near white blast cleaning.” Other alternatives such as high or ultrahigh pressure waterblasting or water/sand blasting may be used. The minimum surface profile for bonding is 2 mils.

**CURED COMPOSITE:** Surfaces may be prepared by roughening and then cleaning with water to remove any remaining residue. After cleaning, allow surface to dry thoroughly. Tyfo® WS Epoxy Coating can be applied to the composite at time of installation.

**WOOD:** Loose, deteriorated or rotted wood must be removed. The surface must be clean and free of all non-structural paints and/or coatings. A light hand sanding and cleaning is typical.

#### MIXING

Add the contents of the “B” pail to the “A” pail and mix thoroughly with a low shear mixer. One unit of “B” must be used with one unit of “A” material. Additional mixing time will be needed when working in cooler weather. If possible store the “A” component at a temperature above 70° F for a quicker mixing.

#### APPLICATION

Tyfo® System may be applied with a brush, roller or trowel. Tyfo® WS should be applied within 72 hours of the application of the outer layer of fabric in order to ensure a proper bond. Use care to apply an even coat over the entire surface.

#### LIMITATIONS

Application temperature of the epoxy is a minimum 40° F (4° C) and maximum of 100° F (38° C). **DO NOT THIN**, solvents will prevent proper cure.

### EPOXY COMPONENT PROPERTIES

Color	Component A is white Component B is clear
Viscosity	Component A at 77° F (25° C) is 7,000-10,000 cps ASTM D-2392-80. Component B at 77° F (25° C) is 11 cps ASTM D-2393-80.
Pot Life	3 to 6 hours at 68° F (20° C).
Viscosity of Mixed Product	Thick paste consistency

## EPOXY MATERIAL PROPERTIES

Curing Schedule 72 hours post cure at 140° F (60° C).

PROPERTY	ASTM METHOD	TYPICAL TEST VALUE*
T <sub>g</sub>	ASTM D-4065	180° F (82° C)
Tensile Strength <sup>1</sup> , psi	ASTM D-638 Type 1	10,500 psi (72.4 MPa)
Tensile Modulus, psi	ASTM D-638 Type 1	461,000 psi (3.18 GPa)
Elongation Percent	ASTM D-638 Type 1	5.0%
Flexural Strength, psi	ASTM D-790	17,900 psi (123.4 MPa)
Flexural Modulus, psi	ASTM D-790	452,000 psi (3.12 GPa)

<sup>1</sup> Testing temperature: 70° F (21° C) Crosshead speed: 0.5 in. (13mm)/min. Grips Instron 2716-0055 - 30 kips

\* Specification values can be provided upon request.

### CAUTION!

#### COMPONENT A - Irritant:

Prolonged contact to the skin may cause irritation. Avoid eye contact.

#### COMPONENT B - Irritant:

Corrosive. Contact with skin may cause severe burns. Avoid eye contact. Product is a strong sensitizer. Use of safety goggles and chemical resistant gloves recommended. Remove contaminated clothing. Avoid breathing vapors. Use adequate ventilation. Use of an organic vapor respirator recommended.

#### SAFETY PRECAUTIONS

Avoid breathing vapors. Avoid contact with eyes and skin. Use of an approved respirator with an organic absorption cartridge is recommended for possible vapors. Rubber gloves, rubber boots, and protective suits are recommended for handling and application of this material. Safety glasses or a face shield are recommended to prevent eye contact.

#### FIRST AID

In case of skin contact, wash thoroughly with soap and water. For eye contact, flush immediately with plenty of water; contact physician immediately. For respiratory problems, remove to fresh air. Wash clothing before reuse.

#### CLEANUP

Tools may be cleaned with the usual solvents (MEK, Acetone, etc.). Check with local authorities before using solvents. Once materials have hardened, removal may only be accomplished using mechanical methods.

#### SHIPPING LABELS CONTAIN

- State specification number with modifications, if applicable
- Component designation
- Type, if applicable
- Manufacturer's name
- Date of manufacture
- Batch name
- State lot number, if applicable
- Directions for use
- Warnings or precautions required by law

**KEEP CONTAINER TIGHTLY CLOSED.  
NOT FOR INTERNAL CONSUMPTION.  
CONSULT MATERIAL SAFETY DATA SHEET  
(MSDS) FOR MORE INFORMATION.  
KEEP OUT OF REACH OF CHILDREN.  
FOR INDUSTRIAL USE ONLY.**

## Fyfe Co. LLC

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