

# Tyfo® NSM Composite Laminate Strip System

## DESCRIPTION

The Tyfo® NSM Strip System is comprised of a high modulus, high tensile strength, pull-formed, epoxy-carbon composite adhered to the substrate with thickened Tyfo® S epoxy, Tyfo® TC epoxy, Tyfo® TC-1 epoxy or Tyfo® MB-3 adhesive.

## USE

For reinforcing of general building construction, industrial buildings, parking structures, bridges and other structures.

## ADVANTAGES

- Good high temperature properties
- Good low temperature properties
- Consistent material properties
- Ease of installation
- Pull-formed composites do not contain releasing agents that affect material properties
- High tensile modulus and strength
- 100% epoxy matrix

## COVERAGE

Surface area coverage for Tyfo® NSM Composite Laminate Strips is dependent on the width and length ordered (see "Available Widths and Thicknesses for Tyfo® NSM Composite Laminate Strips"). The coverage of Tyfo® Epoxy will depend on the size of grooves required. The existing condition of the surface as well as the temperatures of both the epoxy and application surface will significantly affect the coverage.

## PACKAGING

Tyfo® NSM Strips are available in any length. Standard rolls come in 100, 250 and 500 foot lengths. Strips are rolled to approximately 36" (914mm) inside diameter. Typically ships in 40" x 40" x 6" (1016mm x 1016mm x 152mm) boxes. See applicable data sheets for more information.

## MIX RATIO

See Tyfo® Epoxy data sheet for mix ratio information.

## SHELF LIFE

Epoxy - one year in original, unopened and properly stored containers.

Laminate - ten years in proper storage conditions.

## STORAGE CONDITIONS

Store laminate at 40° to 90° F (4° to 32° C) and epoxy at 40° to 90° F (4° to 32° C). Avoid freezing. Store rolls flat, not on ends, at temperatures below 100° F (38° C). Avoid moisture and water contamination.

## 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.

## HOW TO USE THE TYFO® NSM STRIP SYSTEM

## DESIGN

The Tyfo® System shall be designed to meet specific design criteria. The criteria for each project is dictated by the engineer of record and any relevant building codes and/or guidelines. The design should be based on the allowable strain for each type of application and the design modulus of the material. The Fyfe Co. LLC engineering staff will provide preliminary design at no obligation.

## INSTALLATION

Tyfo® NSM 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

Cut the required groove into the substrate using a diamond blade concrete saw or grinder. Clean the groove using a vacuum or compressed air.

## MIXING

See Tyfo® Epoxy data sheets for mix ratio and mixing instructions.

## APPLICATION

Fill slot with Tyfo® Epoxy, carefully avoiding air entrapment. Apply Tyfo® NSM strips as required.

TYPICAL DRY FIBER PROPERTIES	
Tensile Strength	711,000 psi (4.9 GPa)
Tensile Modulus	33.4 x 10 <sup>6</sup> psi (230 GPa)
Ultimate Elongation	2.1%
Density	0.065 lbs./in. <sup>3</sup> (1.81 g/cm <sup>3</sup> )
Volumetric Fiber Content	62%

COMPOSITE GROSS LAMINATE PROPERTIES			
PROPERTY	ASTM METHOD	TYPICAL TEST VALUE	DESIGN VALUE*
Ultimate tensile strength in primary fiber direction, psi	D-3039	405,000 psi (2.79 GPa)	364,500 psi (2.51 GPa)
Elongation at break	D-3039	1.8%	1.67%
Tensile Modulus, psi	D-3039	22.5 x 10 <sup>6</sup> psi (155 GPa)	20.25 x 10 <sup>6</sup> psi (139.6 GPa)
Layer Thickness		Varies	Varies

\* Design and specification values will vary based on individual project requirements and applicable safety factors. Contact Fyfe Co. LLC engineers to determine appropriate specification values.

## AVAILABLE WIDTHS AND THICKNESSES FOR TYFO® NSM STRIPS

Thickness: 0.079" (2.0mm) or 0.177" (4.5mm)\*  
Widths: 0.63" (16.0mm)\*

\* Other thicknesses and widths are available.

## DESIGNATIONS

Laminate strips are designated by the width then the thickness in mils. Example - 0.63" wide, 0.079" thick laminate would be designated as 63NSM79.

## 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.

## CAUTION!

### EPOXY PRECAUTIONS

**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.

### LAMINATE PRECAUTIONS

Use caution when uncoiling roll. Use of a Tyfo® Strip Dispenser is recommended when handling rolls. Use of an approved particle mask is recommended for possible airborne particles. Gloves are recommended when handling strips to avoid skin irritation. Safety glasses are recommended to prevent eye irritation.

## 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

Collect with absorbent material, flush with water. Dispose of in accordance with local disposal regulations. Uncured material can be removed with approved solvent. Cured materials can only be removed mechanically.

## 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

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

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