Picote Solutions
Fiber Bonded Mastic Resin

Version:
January 16, 2024

TECHNICAL INFORMATION GUIDE

Fiber Bonded Mastic Resin System

- Overview
- Technical Data Sheets
- Chemical Resistance Information
- ASTM Test Results
- SDS Sheets

TABLE OF CONTENTS

To watch practical demonstration videos, take a course, or to download an electronic copy of these Instructions, please visit www.picoteinstitute.com. Please note that videos and courses are not intended as a replacement or alternative to this operating and safety manual, but only as an additional learning tool.

GENERAL INFORMATION / PRODUCT OVERVIEW

PRODUCT DESCRIPTION:
Picote Fiber Bonded Mastic is a 100% solids epoxy mastic used to protect new infrastructure and to rehabilitate existing, damaged infrastructure. Typical applications include: manholes, wet wells, vaults & septic tanks, steel substrates, floor and wall penetrations/cracks, & simple spot repairs.

Key features include extreme bonding to nearly all substrates, fast curing, easy workability, 1/4" (250mil) build capability with no sag.

USES/BASIC METHODOLOGY:

- Extend the life span of manholes, wet wells, vaults, septic tanks, steel substrates and repair wall and floor penetrations/cracks*.
- Clean the surface well.
- Apply 1 or more layers (3.2-6.3mm / 125-250 mils per coat) of the Picote Fiber Bonded Mastic.
- Directly applied to substrate from Picote Smart Mixer via static mixing tip. Use trowel or putty knife to smooth material.

BENEFITS FOR CONTRACTORS & PROPERTY OWNERS:
Extend the life span of manholes, wet wells, vaults, septic tanks, steel substrates and repair wall and floor penetrations/cracks. The Picote Fiber Bonded Mastic is affordable, practical and easy to apply with disposable packaging and minimal waste.

HOW LONG WILL THE REPAIR AREA BE OUT OF SERVICE?:
Dry to touch in 2-3 hours with ambient cure.
Return to Light Service/Water Contact: 4 hours.
Final Hardness: 24 hours.

OPERATIONAL SETUP:
The Picote Brush Coating™ System and Xpress Resin is powered by the Picote Millers. Picote Millers can also be used for pipe preparation, drain cleaning and reinstatements on lateral connections. The system is practical and easy to keep clean.

**Ensure that materials are compatible and the surface is properly prepared.*

PICOTE FIBER BONDED MASTIC RESIN

Version:
January 16, 2024

TECHNICAL DATA SHEET

GENERAL DESCRIPTION	Fiber Bonded 100% Solids Trowelable Epoxy Resin Used to protect new infrastructure and to rehabilitate existing damaged infrastructure, including manholes, steel substrates, floor and wall penetrations/ cracks, wet wells, vaults & septic tanks. Extreme bonding to nearly all substrates. Fast curing & easy workability.
NUMBER OF COMPONENTS	2
MIX RATIO	2:1 mix ratio by volume in pre-packaged cartridges.
PACKAGE SIZES	900ml cartridges (case of 6 cartridges)
NET WEIGHT	2.5 lbs. usable material per cartridge, 15 lbs. per case (6 cartridges)
WORKING METHOD	Coating applied with trowel
COLOR USAGE	Single Color, White.
APPLICATION EQUIPMENT	Picote Smart Mixer with Static Mixing Tip, Trowel.
GAS EMISSIONS	No harmful VOCs released during mixing or after hardening (VOC free).
DRY CONTENT/SOLIDS	100% solids (no solvents).
FLASH POINT	N/A.
GLOSS	Gloss.
THINNER	Not used.
SHRINKAGE	100% Solids, does not shrink.
UV RESISTANCE	Direct sunlight can alter color of coating.
SURFACE PREPARATION	All surfaces to be coated must be dry and clean, free from oil, grease, debris and other contaminants. **Concrete:** Substrate surface must be Hydro Blasted at 3000 PSI, removing any loose concrete or other material. Must be free of grease and oil. **Steel:** Nace No. 1/SSPC SP-5 White Metal Blast cleaning is needed and is beyond the capability of Picote cleaning tools. White metal blast cleaning is to be used to clean unpainted or painted steel surfaces prior to applying high-performance protective coating or lining systems. SSPC-SP 5/NACE No. 1 removes all visible oil, grease, dust, dirt, mill scale, rust, coating, oxides, corrosion products, and any other foreign matter on the surface.
POT LIFE	Mixed resin about 10 min @70°F (21°C).
RATE OF COVERAGE	Square foot per case @125 mils thickness (3mm) = 18.29 ft² (1.7m²). Square foot per case @250 mils thickness (6mm) = 9.12 ft² (.84m²). ¼" build capability with no sag.
HARDENING/CURE TIME	Recoat: 1 hours @77°F (25°C) using Picote Heater. Restore flow: 4 hours (24 hours for potable water projects) @70°F (21°C). Final Cure: 24 hours @70°F (21°C).
RECOAT	Can be recoated within 24 hours without additional surface preparation. After 24 hours must be abraded with equivalent of 36 grit sandpaper.

TECHNICAL DATA SHEET

MECHANICAL TESTING:

ASTM Testing:

Tensile Strength	D638-14	4,000 PSI
Compression Strength	D695-15	9,650 PSI
Flexural Modulus	D790-15e2	437 KSI
Flexural Strength	D790-14e2	7,050 PSI
Adhesive Strength	D4541	
Adhesion Strength Metal:		>5 PSI
Adhesion Strength Concrete:		Substrate Failure
Adhesion Strength Brick:		Substrate Failure

SHELF-LIFE

Unopened: 24 months from date of manufacture when stored according to recommended conditions.
Opened: Dispose of an unused material per local, regional, or national guidelines.

STORAGE TEMPERATURE

60-85°F (15.5-29°C)

CLEAN UP

Clean trowel using acetone.
Dispose of an unused material per local, regional, or national guidelines.
REFER TO SAFETY DATA SHEET FOR SAFETY AND HEALTH INFORMATION.

INDUSTRIAL SAFETY

Ready-measured product must not be in contact with skin (it adheres)

SAFETY DATA SHEET (SDS)

Available via QR code on resin packaging as well as online at www.picoteinstitute.com in Picote Fiber Bonded Mastic Resin Technical Guide.

SHIPPING

The two part resin is packaged in sealed cartridges. Suggested storage at room temperature and in accordance with the guidelines in Technical Data Sheet.

TECHNICAL ENQUIRIES

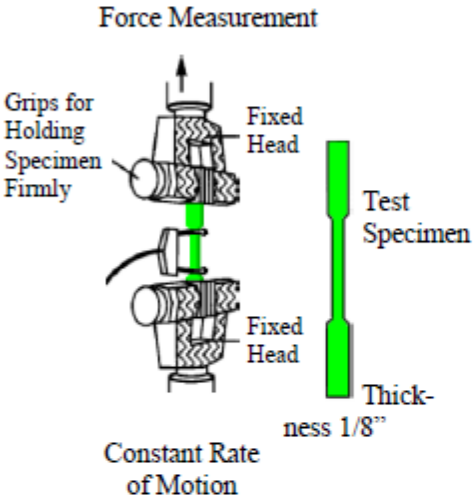
Ryan Boldan, Global Learning Solutions Dir. 1 (480) 622-8314
ryan@picotesolutions.com
Richard Swan, Director of Client Technical Services 44 (0) 782 722 3237
richard@picotesolutions.com

ASTM Testing on Fiber Bonded Epoxy Mastic

TESTED PRODUCT: Picote Fiber Bonded Mastic — TEST 1

A total of four tests were performed including:
1. Tensile Strength 2. Compression Strength 3. Flexural Modulus 4. Coating Pull Off Strength.

TEST 1: ASTM D638-14 "Tensile Strength"



A piece of finished product, with a maximum thickness of .125-inches, is machined into a dog-bone shape. Each end of the test specimen is placed in opposite facing clamps which then attempt to pull it apart.

The PSI that it takes to break the specimen is calculated as "**Tensile Strength at the Break**". The "**Tensile Elongation at the Break**" is an additional measurement that shows how much the product stretches during this test.The "**Tensile Modulus**" is a measure taken to test rigidity. All of these measurements make up the "Tensile Strength" test. The D638-14 test would simulate separating pipe joints and the effect that would have on the product in question.

TEST 1 RESULTS: Picote Fiber Bonded Mastic Tensile Test

Test Method:	ASTM D638-14
Test Conditions:	23±2°C, 50±10% R.H.
Conditioning:	40+ hours, 23±2°C, 50±10% R.H.
Preparation:	Machined from sample sent by client
Specimen:	Type I tensile bars (2-inch gage length)
Cross Head Speed:	0.2-inches per minute

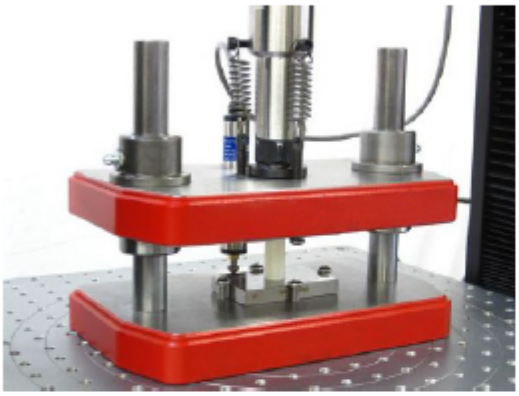
Sample	Replicate	Width (inches)	Thickness (inches)	Tensile Strength at Break (psi)	Tensile Elongation at Break (%)	Tensile Modulus at Young's (ksi)
P/N Picote Fiber Bonded Mastic						
		0.5090	0.3062	4000	0.66	644
Requirement				n/a	n/a	n/a

ASTM Testing on Fiber Bonded Epoxy Mastic

TESTED PRODUCT: Picote Fiber Bonded Mastic TEST 2

A total of four tests were performed including:
1. Tensile Strength 2. Compression Strength 3. Flexural Modulus 4. Coating Pull Off Strength.

TEST 2: D695-15 "Compression Strength"



A sample of the product at approximately .25-inches is laid flat and a machine pushes down on the specimen until it begins to compress. The PSI it requires to sheer the sample is its **"Compression Strength"**. The amount it swells when the pressure is applied is also measured.

This test will show how well the product can sustain loads. **Please note:** This test does not measure the Compression Strength of the cylinder that is created by the product inside the pipe.

TEST 2 RESULTS: Picote Fiber Bonded Mastic Compressive Test

Test Method:	ASTM D695-15
Test Conditions:	23±2°C, 50±10% R.H.
Conditioning:	40+ hours, 23±2°C, 50±10% R.H.
Preparation:	Machined from sample sent by client
Specimen:	Prism (1.0-inch length)
Cross Head Speed:	0.05 inches per minute

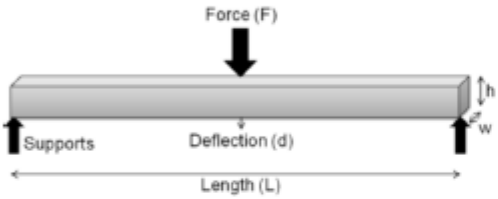
Sample	Replicate	Width (inches)	Thickness (inches)	Compressive Strength at Yield (PSI)
P/N Picote Fiber Bonded Mastic				
		0.5142	0.3068	9650
Requirement				n/a

ASTM Testing on Fiber Bonded Epoxy Mastic

TESTED PRODUCT: Picote Fiber Bonded Mastic — TEST 3

A total of four tests were performed including:
1. Tensile Strength 2. Compression Strength 3. Flexural Modulus 4. Coating Pull Off Strength.

TEST 3: D 790-15e2 "Flexural Modulus"



This test is used to measure the horizontal strength of the material. Supports are placed under the sample at each end, and then a piston drives down at the center. The force to drive down and the amount of deflection are measured to come up with the specimen's **"Flexural Modulus".**

This test would simulate areas in a coated pipe that are being subjected to uneven stress.

TEST 3 RESULTS: Picote Fiber Bonded Mastic Flexural Test

Test Method:	ASTM D790-15e2, Procedure A
Test Conditions:	23±2°C, 50±10% R.H.
Conditioning:	40+ hours, 23±2°C, 50±10% R.H.
Preparation:	Machined from sample sent by client
Support Span:	5.184 inches
Cross Head Speed:	0.150 inches per minute

Sample	Replicate	Width (inches)	Depth	Flexural Strength at Break (PSI)	Flexural Modulus (KSI)
P/N Picote Fiber Bonded Mastic					
	2	0.5172	0.2860	7050	437
Requirement				n/a	n/a

ASTM Testing on Fiber Bonded Epoxy Mastic

TESTED PRODUCT: Picote Fiber Bonded Mastic TEST 4

A total of four tests were performed including:
1. Tensile Strength 2. Compression Strength 3. Flexural Modulus 4. Coating Pull Off Strength.

TEST 4: D4541-09 "Coating Pull Off Strength"

In this test, a dolly is glued to the epoxy and allowed to cure. The sample is then cored using a hole saw. A device with a piston is attached that pulls away from the substrate until it breaks.

This test can look for two different outcomes depending upon the substrate used. When a brick or concrete substrate is used in a real-world application, it is testing whether or not that substrate breaks before the coating (product) does. If steel were to be used, however, the coating will always break before the substrate, so the PSI is also measured at the time of the break.

The D4541-09 test simulates a pipe (that has been coated with the product) breaking, failing, or becoming compromised in any way and how well the material would hold up and stay adhered under those circumstances.

TEST 4 RESULTS: Picote Fiber Bonded Mastic Pull-off Strength Test

Test Method:	ASTM D4541-09
Test Conditions:	23±5°C, 50±35% R.H.
Conditioning:	As sent by client
Preparation:	Coating as sent by client.
Specimen:	Loading fixture glued to coating
Instrument:	Fixed alignment test modified to use a tensile tester
Cross Head Speed:	0.2 inches per minute

TEST 4 RESULTS: Picote Fiber Bonded Mastic Pull-off Strength Test continued

Sample	Replicate	Loading Fixure Diameter (inches)	Pull-Off Strength (psi)	Failure Mode
P/N Picote Fiber Bonded Mastic – Brick Substrate				
		0.500	>502	Substrate
P/N Picote Fiber Bonded Mastic – Metal Substrate				
		0.500	>5	Coating
P/N Picote Fiber Bonded Mastic – Concrete Substrate				
		0.500	>384	.Substrate
Requirement			n/a	

SECTION 1 . INDENTIFICATION

Product Name: FIBER BONDED EPOXY MASTIC PART B Product Code: PICOTE MASTIC CATALYST

PICOTE SOLUTIONS
20810 SE 18TH PL
SAMMAMISH, WA 98075

PHONE 800-535-5053
EMERGENCY: INFOTRAC

SECTION 2. HAZARD(S) IDENTIFICATION

GHS Ratings:

Oral Toxicity	Acute Tox. 2	Oral>5+<=50mg/kg
Skin corrosive	2	Reversible adverse effects in dermal tissue, Draize score: >= 2.3 < 4.0 or persistent inflammation
Eye corrosive	1	Serious eye damage: Irreversible damage 21 days after exposure, Draize score: Corneal opacity >= 3, Iritis > 1.5
Skin sensitizer	1	Skin sensitizer
Reproductive toxin	2	Human or animal evidence possibly with other information

GHS Hazards

H300	Fatal if swallowed
H315	Causes skin irritation
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H361	Suspected of damaging fertility or the unborn child

GHS Precautions

P201	Obtain special instructions before use
P202	Do not handle until all safety precautions have been read and understood
P261	Avoid breathing dust/fume/gas/mist/vapours/spray
P264	Wash … thoroughly after handling
P270	Do not eat, drink or smoke when using this product
P272	Contaminated work clothing should not be allowed out of the workplace
P280	Wear protective gloves/protective clothing/eye protection/face protection
P281	Use personal protective equipment as required
P310	Immediately call a POISON CENTER or doctor/physician
P321	Specific treatment (see … on this label)
P330	Rinse mouth
P362	Take off contaminated clothing and wash before reuse
P363	Wash contaminated clothing before reuse
P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
P302+P352	IF ON SKIN: Wash with soap and water
P305+P351+P338	IF IN EYES: Rinse continuously with water for several minutes. Remove contact lenses if present and easy to do – continue rinsing
P308+P313	IF exposed or concerned: Get medical advice/attention
P332+P313	If skin irritation occurs: Get medical advice/attention
P333+P313	If skin irritation or a rash occurs: Get medical advice/attention
P405	Store locked up
P501	Dispose of contents/container to …

Signal Word: Danger

Avoid breathing vapors

Oral: N.D.A.
Dermal: N.D.A.
Inhalation: N.D.A.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS number	Weight Concentration %
Paratertiarybutylphenol	98-54-4	30.00% - 40.00%
Amine	1477-55-0	20.00% - 30.00%
1,5-Pentanediamine, 2 methyl	15520-10-2	20.00% - 30.00%
Silica	67762-90-7	10.00% - 20.00%
nonyl phenol	84852-15-3	1.00% - 5.00%

SECTION 4. FIRST AID MEASURES

If inhaled remove to fresh air. If breathing is difficult, give oxygen. Obtain medical advice if there are persistent symptons
Rinse immediately with plenty of water for at least 15 minutes. Ensure adequate flushing of the eyes by separating the eyelids with fingers. Remove contacts if present and easy to do. Continue Rinsing. Get medical attention, if irritation or symptoms of overexposure persists.
Immediately wash skin with soap and plenty of water.
If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Never give anything by mouth to an unconscious person

SECTION 5. FIRE FIGHTING MEASURES

Flash Point: 134 C (273 F)
LEL: UEL:
Not applicable
Foam, Carbon dioxide (CO2) or dry chemical or water spray (water stream may be ineffective).
No information available
Not available

Firefighters, and others exposed, wear self-contained breathing apparatus.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Stop leak. Dike or contain spill. Pump into slavage tanks and/or absorb with suitable material. Use sparkless shovel to remove material. Evacuate area and keep unnecessary and unprotected personnel from entering the spill area. Use appropriate containment and clean up immediately.
Corrosive. Avoid personal contact adn breathing vapor or mist. Stop leak, Dike and contain spill.Prevent spilled material from entering the ground, water and/or air by using appropriate containment methods.

SECTION 7. HANDLING and STORAGE

Avoid breathing vapor. Avoid contact with eyes, skin and clothing. Keep away from heat and flame. Keep container closed. Use with adequate ventilation. Wash thoroughly after handling.
Avoid exposure to heat, light, and air for prolonged periods of time. Store in a cool, dry well ventilated area away from sources of heat and incompatable materials. Eliminate all ignition materials and incompatible materials. Collect

spill with non spark tools.
No information available.

SECTION 8.EXPOSURE CONTROLS, PERSONAL PROTECTION

Chemical Name / CAS No.	OSHA Exposure Limits	ACGIH Exposure Limits	Other Exposure Limits
Paratertiarybutylphenol 98-54-4	Not Established	Not Established	Not Established
Amine 1477-55-0	Not Established	0.1 mg/m3 Ceiling	NIOSH: 0.1 mg/m3 Ceiling
1,5-Pentanediamine, 2 methyl 15520-10-2	Not Established	Not Established	Not Established
Silica 67762-90-7	Not Established	Not Established	Not Established
nonyl phenol 84852-15-3	Not Established	Not Established	Not Established

Use appropriate engineering control such as process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Good general ventilation should be sufficiant to control airborne levels. Where such systems are not effective wear suitable personal protective equipment, which preforms satisfactory and meets OSHA or other recgonized standards. Consult with local procedures for selection, training, and maintenance of the personal protective equipment
Always use adaquate ventilation that comply with local regulations.

Eye/face Protection: Wear appropriate protective glasses or splash goggles as described by 29 CFR 1910.133, OSHA eye and face rotection reulation, or the Europena standard EN 166

Skin Protection: Chemical-resistant gloves and chemical goggles, face-shield and synthetic apron or coveralls should be used to prevent contact with eyes, skin or clothing.

Respiratory Protection: A NIOSH air purifying respirator with an organic vapor cartridge or canister may be permissible under certain circumstances where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited. Use a positive presure air supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known or any other circumstance where air purifyig respirator may not provide adequate protection.

SECTION 9. PHYSICAL and CHEMICAL PROPERTIES

Boiling Point 247 °C	**Specific Gravity (SG)** 0.970
Lbs VOC/Gallon Less Water 0.00	**Lbs VOC/Gallon Less Exempt** 0.00

SECTION 10. STABILITY and REACTIVITY

Stable, Hazardous polymeraization will not occur. Will react with Epoxy Resins especially at elevated temperatures

STABLE

Epoxy Resins under uncontrolled conditions. Mineral acids. Organic acid, oxidixers, Reacts with metals until reacted with epoxy.

None known

Hazardous polymerization will not occur.

SECTION 11. TOXICOLOGICAL INFORMATION

Mixture Toxicity

Oral Toxicity LD50: 8mg/kg
Dermal Toxicity LD50: 3,216mg/kg
Inhalation Toxicity LC50: 2,901mg/L

Component Toxicity

98-54-4 Paratertiarybutylphenol

	Oral LD50: 3,250 µL/kg (Rat) Dermal LD50: 2,318 mg/kg (Rabbit)
1477-55-0	Amine Oral LD50: 660 mg/kg (Rat) Dermal LD50: 2 g/kg (Rabbit) Inhalation LC50: 700 ppm (Rat)
84852-15-3	nonyl phenol Oral LD50: 1,300 mg/kg (Rat) Dermal LD50: 2,031 mg/kg (Rabbit)

Eyes: Irritant to the eyes. Corrosive to Eyes
Skin: Irritant to the skin. Corrosive to Skin
Inhalation: Irritant to respiratory tract. Prolonged or excessive inhalation may cause respiratory tract irritation.
Sensitization: Skin sensitization in humans.

Eyes Kidneys Liver Skin Respiratory System

Effects of Overexposure

CAS Number	Description	% Weight	Carcinogen Rating

SECTION 12. ECOLOGICAL INFORMATION

No ecotoxicity data was found for the product

Component Ecotoxicity

Paratertiarybutylphenol	96 Hr LC50 Pimephales promelas: 4.71 - 5.62 mg/L [flow-through]; 96 Hr LC50 Cyprinus carpio: 6.9 mg/L [static] 48 Hr EC50 Daphnia magna: 3.9 mg/L; 48 Hr EC50 Daphnia magna: 3.4 - 4.5 mg/L [Static] 72 Hr EC50 Desmodesmus subspicatus: 11.2 mg/L
nonyl phenol	96 Hr LC50 Pimephales promelas: 0.135 mg/L [flow-through]; 96 Hr LC50 Lepomis macrochirus: 0.1351 mg/L [flow-through] 48 Hr EC50 Daphnia magna: 0.14 mg/L 96 Hr EC50 Pseudokirchneriella subcapitata: 0.36 - 0.48 mg/L [static]; 72 Hr EC50 Pseudokirchneriella subcapitata: 0.16 - 0.72 mg/L [static]; 72 Hr EC50 Desmodesmus subspicatus: 1.3 mg/L

SECTION 13. DISPOSAL INFORMATION

Dispose of in accordance with applicable local/municipal, state/provincial and federal regulations.

SECTION 14. TRANSPORT INFORMATION

UN2735 Amines, Liquid, corrosive, n.o.s. (Benzene-1,3-Dimethanamine,1,5-Pentanediamine, 2-Mthyl).
DOT Hazad Class 8
DOT Packaging Class II

Agency	Proper Shipping Name	UN Number	Packing Group	Hazard Class

SECTION 15. REGULATORY INFORMATION

OSHA:29 CFR 1910.1200 Haxardous Chemical "Irritant", Sensitizer
TSCA: Ingredients listed
SARA III: Sec311 & 312 Immediate Health Haxard; Sec313 Chemicals above de minimus level: None
CA PROP. 65 NOTICE WARNING:

CANADIAN REGULATORY INFORMATION
WHMIS; Hazard Classification: D2B Skin Sensitizer. Refer to SDS for specific warnings
WHMIS Symbols: Stylized T.
WHMIS Trade Secret Registry Numbers: None

Hazardous Products Act Informtion: This product SDS contains ingredients which are Controlled and/or on the Ingredient Disclosure List (HPA sections 13 and 14).

The following chemicals are classified under SARA 313 Toxic Release Invetnory (TRI):

84852-15-3 nonyl phenol 1 to 5 %

Country	Regulation	All Components Listed
	Toxic Substance Control Act (TSCA)	Yes

EU Risk Phrases

Safety Phrase

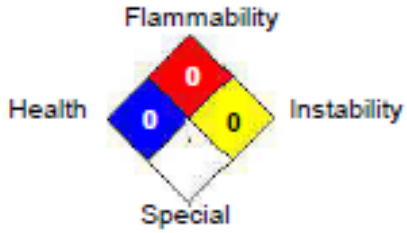
- None

SECTION 16. ADDITIONAL INFORMATION

Hazardous Material Information System (HMIS)

HMIS & NFPA Hazard Rating Legend
*** = Chronic Health Hazard**
0 = INSIGNIFICANT
1 = SLIGHT
2 = MODERATE
3 = HIGH

National Fire Protection Association (NFPA)



Date revised: 2017-01-31
Date Prepared: 1/31/2017

Reviewer Revision