

# MICtreat<sup>®</sup> FPS System

Complete Treatment System for Fire Protection Systems



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## Instruction Manual Small System

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BTIproductsLLC



## BEFORE YOU USE MICtreat® FPS CHEMICAL, READ THE FOLLOWING CAREFULLY

**NOTE:**

- 1 MICtreat® FPS Chemical is sold by BTI Products, LLC for use in treatment of fire protection sprinkler systems (FPS) to prevent occurrence or recurrence of microbiologically influenced corrosion (MIC).
- 2 MICtreat® FPS Chemical should only be used in FPS that have been properly tested and inspected to assess the extent and severity of deposition and corrosion.
- 3 It is the user's responsibility to discuss cleaning and treatment plans, including proper disposal of MICtreat® FPS Chemical, with their local authorities, water supplier, and all other appropriate authorities to gain their permission *prior to using or disposing* of MICtreat® FPS Chemical or water treated with MICtreat® FPS Chemical.
- 4 An assessment report and cleaning and treatment plan should have been developed by the client and provided to BTI Products for review. BTI Products' recommendation for type and amounts of cleaning and treatment agents and protocols should be reviewed prior to implementing any cleaning or treatment using MICtreat® FPS Chemical.
- 5 The FPS must have been repaired and cleaned to provide an FPS that is free of mechanical defects, dirt, oil, debris, corrosion, and other deposits before treatment of the FPS is implemented.
- 6 Appropriate monitoring of treated FPS is required to ensure that treatment is successful. Use test materials and follow directions provided in the MICtreat® FPS Monitor Kit. Report any failures of MICtreat® FPS Chemical to meet specifications to BTI Products *immediately* (970-884-4629).
- 7 Any use of MICtreat® FPS Chemical for any purpose other than treatment of FPS to prevent MIC, or which is not in compliance with the foregoing conditions, is done without the permission of BTI Products, and BTI Products shall not be held liable for such misuse of MICtreat® FPS Chemical.

ASSEMBLY & INSTALLATION INSTRUCTIONS

**1.0 Before Assembling Your MICtreat® FPS Delivery System**

**NOTE:** Installation and use of the MICtreat® FPS Delivery System will require you to provide the following: 1) flow switch for activation of MICtreat® FPS Delivery System pump, 2) fitting for attachment of injection check valve, 3) power receptacle in which pump and flow switch wiring will be joined and connected to power supply, 4) independent 115-volt, 15-amp power supply, and 5) manual activation switch for pump.

- 1.1 Read all instructions and manufacturer’s manuals. Should you have any questions about any aspect of installation or operation of the MICtreat® FPS Delivery System, call BTI Products at 970.884.4629 before proceeding.
- 1.2 Refer to LMI pump manufacturer’s Quick Start Guide for additional information.
- 1.3 Install a flow switch at a point just *upstream* of point where MICtreat® FPS Chemical is to be injected—this is typically just *downstream* of the valve allowing water into the fire protection system (FPS). **Use a flow switch that is activated at the lowest possible flow rate and set at zero retard.**
- 1.4 Flow switch should lead to power receptacle into which MICtreat® FPS Delivery System pump will be plugged.
- 1.5 Install a “shut-off valve assembly” to accommodate injection check valve on discharge-side tubing assembly leading from pump, as shown in Figure 1 (for vertical pipe installation) and Figure 2 (for horizontal pipe installation) (pages 3 and 4 of these instructions). Install this fitting at the point where chemical will be injected into the FPS. The fitting must allow discharge into the *top or side* of the pipe and allow discharge-side assembly injection check valve to be *vertical*.
- 1.6 Close shut-off valve on shut-off valve assembly.

**2.0 Assembling Your MICtreat® FPS Delivery System**

- 2.1 Remove all materials which comprise the MICtreat® FPS Delivery System from boxes.
- 2.2 Check the List of Contents on page 2 of these instructions to make sure all necessary materials are enclosed.
- 2.3 Using appropriate hardware, mount secondary

- 2.4 Use pump mounting hardware to mount pump to wall mounting bracket such that suction-side assembly hangs on right side of mounting bracket.
- 2.5 Remove yellow plug from top fitting of pump.
- 2.6 Top fitting should be wet. If it is not, place a few drops of water in fitting to lubricate. Failure to lubricate this fitting may result in improper pump functioning.
- 2.7 **NOTE: All fittings should be made hand-tight. DO NOT overtighten. DO NOT use pipe dope or tape on threads, except for connection of discharge-side assembly injection check valve to shut-off valve assembly. Carefully tool-tighten discharge-side assembly fittings.**
- 2.8 Mount three-way function valve on top of pump head.
- 2.10 Read and use appropriate precautions in accordance with MICtreat® FPS Chemical SDS (i.e., protection for eyes, skin, clothes, and surroundings).
- 2.9 Place one-gallon container of MICtreat® FPS Chemical in secondary containment unit. **To connect suction-side tubing assembly:** Place end of suction-side assembly with foot valve into the one-gallon container of MICtreat® FPS Chemical. Attach opposite end to bottom of pump head by screwing coupling nut onto pump head connection.
- 2.10 **To connect return line tubing:** Make sure return line tubing is securely attached to side of air bleed valve assembly. Place opposite end into the one-gallon container of MICtreat® FPS Chemical.
- 2.11 **To connect discharge-side tubing assembly:** Attach discharge-side assembly to top of three-way function valve by screwing coupling nut onto function valve connection. Install opposite end in shut-off valve assembly, as shown in Figures 1 and 2 (pages 3 and 4 of these instructions).

**3.0 Priming & Operating Your MICtreat® FPS Delivery System**

- 3.1 Connect power cord from pump to power receptacle so that pump can be switched on manually or through activation of flow switch.
- 3.2 Turn black by-pass knob on three-way function valve on pump counterclockwise until knob stays open.
- 3.3 Set pump speed knob (top knob) on front of pump to 100%.
- 3.4 Verify that pump stroke knob (bottom knob) on front

### 3.0 Priming & Operating Your MICtreat® FPS Delivery System (Cont'd)

of pump is set to 100%.

- 3.5 Manually turn power to pump “on.”
- 3.6 Watch return line tubing until there are no bubbles coming from pump and fluid is flowing from return line tubing into tank. The pump is now primed .
- 3.7 Turn power to pump “off.”
- 3.8 Close by-pass knob on three-way function valve.
- 3.9 Open shut-off valve on shut-off valve assembly.
- 3.10 Turn pump power “on” using manual switch.
- 3.11 Watch discharge-side tubing to make sure chemical is flowing through tubing and into shut-off valve assembly.
- 3.12 Inspect for leaks at all fittings. If leaks occur, hand-tighten fittings until leaks stop.
- 3.13 Place splash guard over face of pump.
- 3.14 Leave manual switch “on.” Using city pressure and a method best-suited to your configuration, adjust fill rate such that water flow is between **4 and 72 gallons per minute (gpm)**. Set speed knob on MICtreat® FPS Delivery System pump to appropriate setting, based on your water flow rate. Refer to Figure 3 (page 5 of these instructions).
- 3.15 Once FPS is filled, use MICtreat® FPS Monitor Kit to test water from far end of FPS (inspectors’ test valve or equivalent) to make sure desired concentration of 400 parts per million (ppm) MICtreat® FPS Chemical is achieved.
- 3.16 Turn manual switch to “off” position. Leave MICtreat® FPS Delivery System so that it is activated by flow switch.
- 3.17 Monitor FPS according to directions in MICtreat® FPS Monitor Kit, provided with MICtreat® FPS Delivery System.

*Note:* Consult pump manufacturer’s booklets, included in the MICtreat® FPS Delivery System Instruction Manual, for further details.

### SPARE PARTS LIST

- ♦ It is recommended that the MICtreat® FPS Delivery System pump be refurbished every one to two years, depending upon usage.
- ♦ The following pump parts should be replaced:
  - ♦ All four check valves
  - ♦ Diaphragm
  - ♦ Shaft seal
- ♦ Please contact BTI Products at 970.884.4629 for pricing and availability.

### LIST OF CONTENTS

1. 1 Electronic Metering Pump
2. 1 Secondary Containment Unit
3. 1 Wall Mounting Bracket
4. 1 Pump Mounting Hardware
5. 1 Discharge-Side Tubing Assembly
6. 1 Suction-Side Tubing Assembly
7. 1 Return Line Tubing
8. 1 Gallon MICtreat® FPS Chemical
9. 1 MICtreat® FPS Monitor Kit
10. 1 Instruction Manual (includes):
  - ♦ 1 MICtreat® FPS Delivery System Assembly/ Installation Instructions
  - ♦ Pump Manufacturer’s Quick Start Guide
  - ♦ MICtreat® FPS Chemical Technical Information and Registrations
  - ♦ MICtreat® FPS Monitor Kit Instructions
  - ♦ Material Safety Data Sheets (MSDS)

### WARRANTY

**BTI Products, LLC’s** products are warranted by **BTI Products, LLC** to perform as described in the technical literature supplied with each product, provided the products are used, stored, and maintained in accordance with the directions provided. They must also be used before the expiration date, if any. Adequate quality control must be done by the user of the products.

**BTI Products, LLC** disclaims any implied warranty of merchantability or fitness of its products for any other purpose than described in its technical literature, and in no event shall **BTI Products, LLC** be held liable for any consequential damages arising out of the aforesaid express warranty.

Warranty on electronics is two years. It is recommended that the MICtreat® FPS Delivery System pump be refurbished every one to two years, depending upon frequency of use. No express of implied warranty is made on non-mechanical parts.

Should you have questions about this product or any of the products and services we provide, please call or write:

**BTI Products, LLC**  
652 Silver Hills Road  
Bayfield, CO 81122  
970.884.4629  
products@bti-labs.com

*We welcome all comments and inquiries.*

**Need Help?**

**Call 970.884.4629**

Figure 1

**MICtreat® FPS DELIVERY SYSTEM**  
**Injection Tap Schematic: Vertical Pipe**



- |  |                            |
|--|----------------------------|
| 1. Discharge-side assembly injection check valve (included with MICtreat™ FPS Delivery System) | 6. 3/4" close nipple       |
| 2. 1/2" 90° bend   | 7. 3/4" valve              |
| 3. 1/2" close nipple   | 8. 1/2" to 3/4" bushing    |
| 4. 1/2" to 3/4" bushing  | 9. 1/2" close nipple       |
| 5. 3/4" check valve (250 psi maximum rating)   | 10. 1/2" NPT tap into pipe |
- \*All NPT

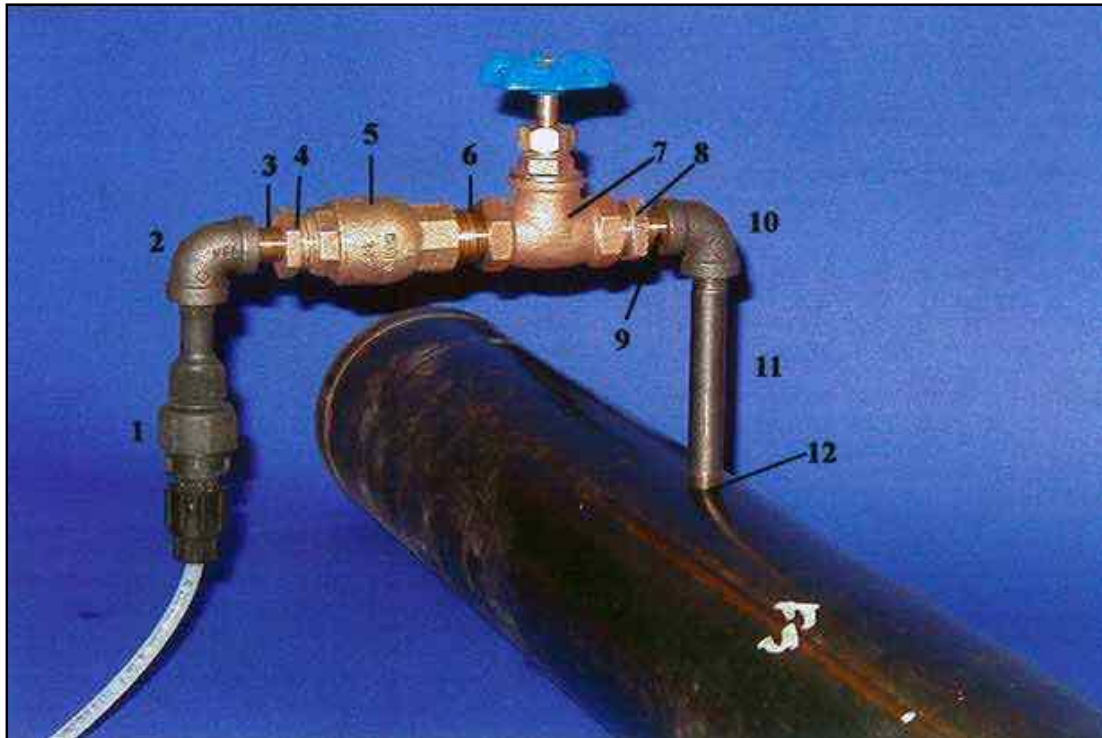
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Information presented is for example purposes only. Not to be taken as specifications.

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Figure 2

**MICtreat® FPS DELIVERY SYSTEM**  
**Injection Tap Schematic: Horizontal Pipe**



- |  |  |
|--|--|
| 1. Discharge-side assembly injection check valve (included with MICtreat™ FPS Delivery System) | 7. 3/4" valve                            |
| 2. 1/2" 90° bend   | 8. 1/2" to 3/4" bushing                  |
| 3. 1/2" close nipple   | 9. 1/2" close nipple                     |
| 4. 1/2" to 3/4" bushing  | 10. 1/2" 90° bend                        |
| 5. 3/4" check valve (250 psi maximum rating)   | 11. 1/2" x 4" nipple (can be any length) |
| 6. 3/4" close nipple   | 12. 1/2" NPT tap into pipe               |
- \*All NPT

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Information presented is for example purposes only. Not to be taken as specifications.

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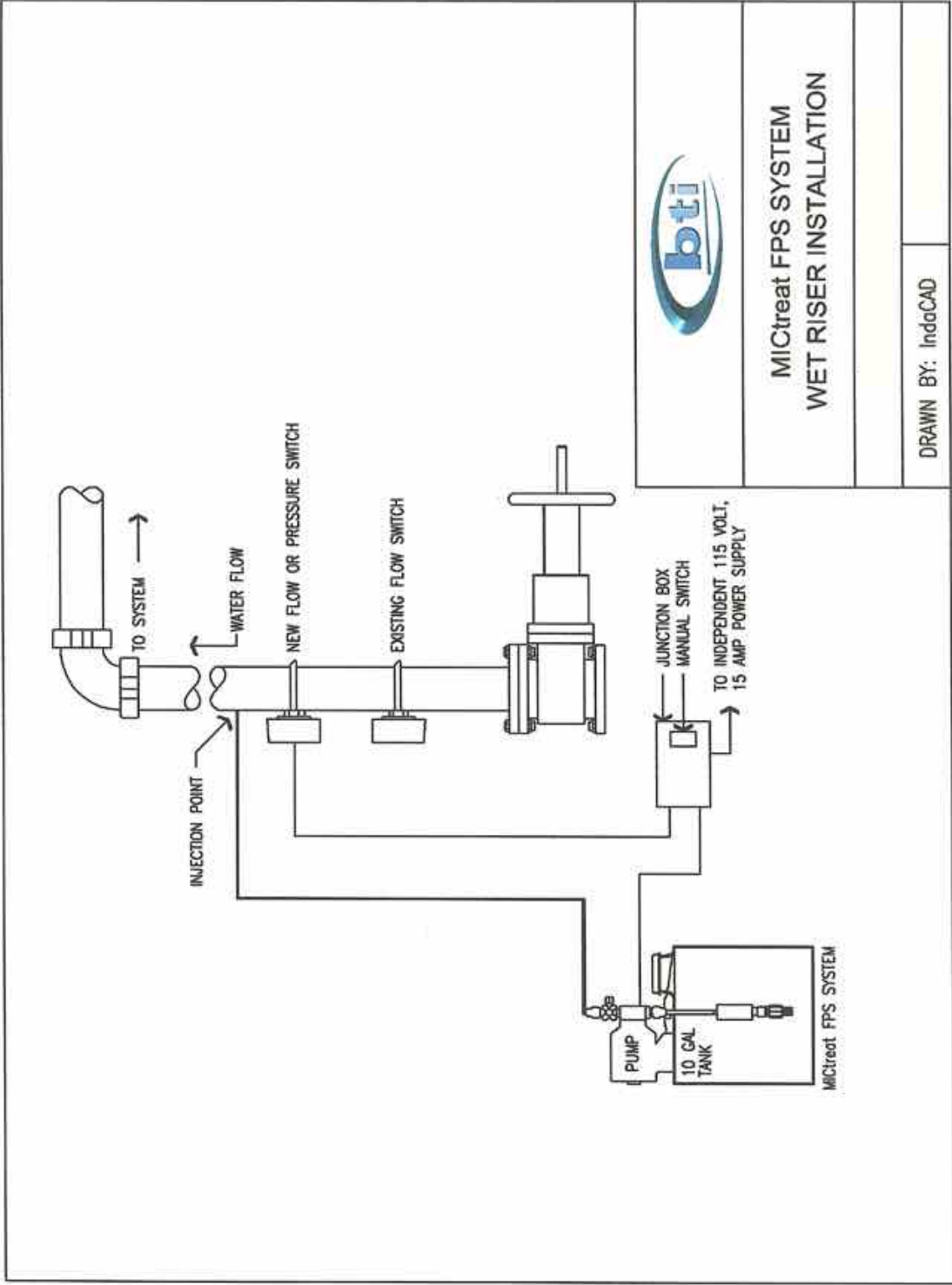
Figure 3

**MICtreat® FPS DELIVERY SYSTEM**  
**Small System Flow Rate Calibration**



<b>Pump Speed Setting</b>	<b>Gallons of Water Flow Which Can be Treated to 400 ppm MICtreat® FPS Chemical at This Speed Setting</b>	<b>Gallons of MICtreat® FPS Chemical Delivered per Minute</b>
0	0	0
10	4	0.0016
20	12	0.0048
30	21.25	0.0085
40	27.5	0.011
50	35	0.014
60	42.5	0.017
70	52.5	0.021
80	57.5	0.023
90	67.5	0.027
100	72.5	0.029

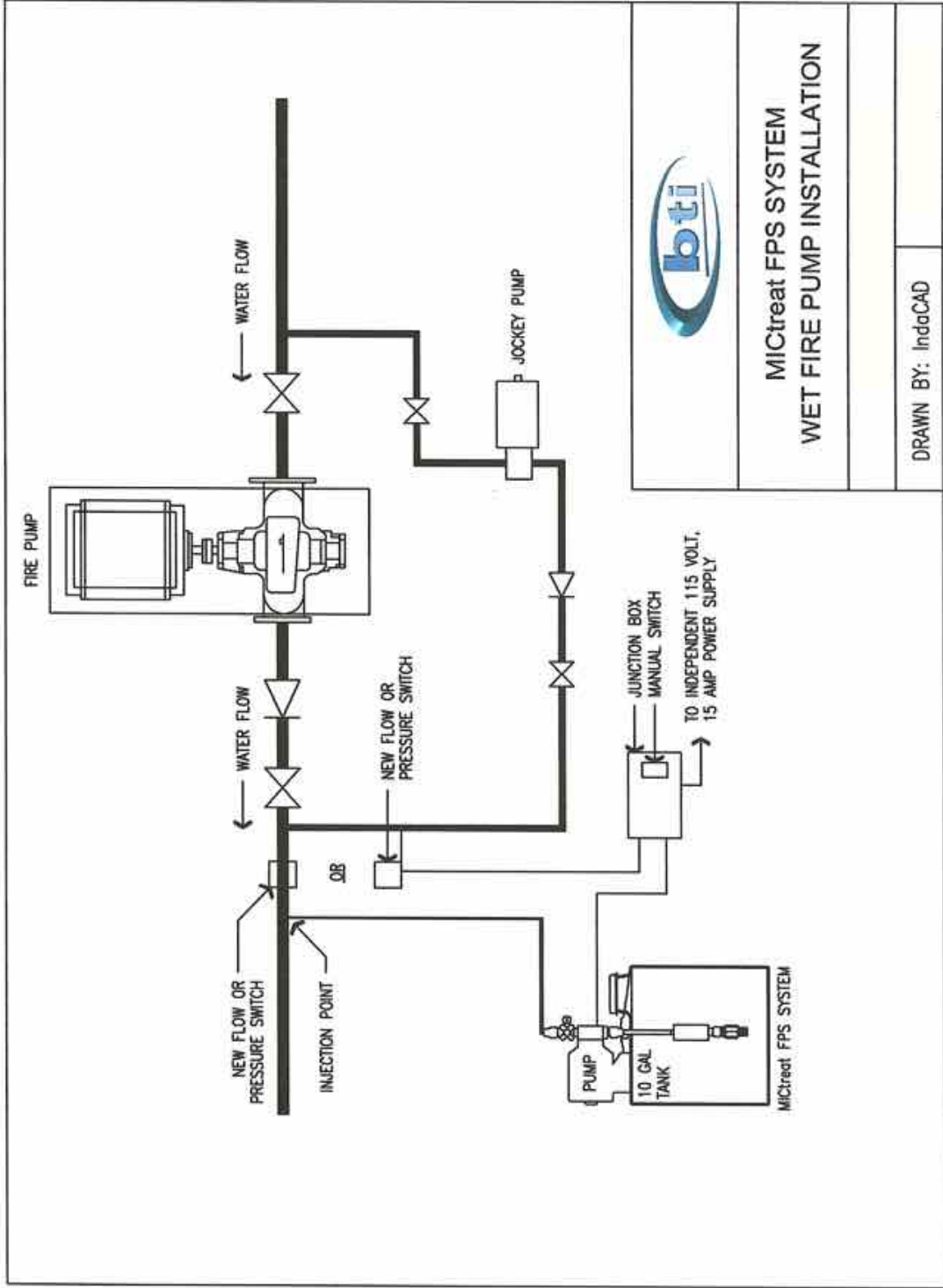
*Note:* All measurements done at 100% stroke setting.



**MICtreat FPS SYSTEM  
WET RISER INSTALLATION**

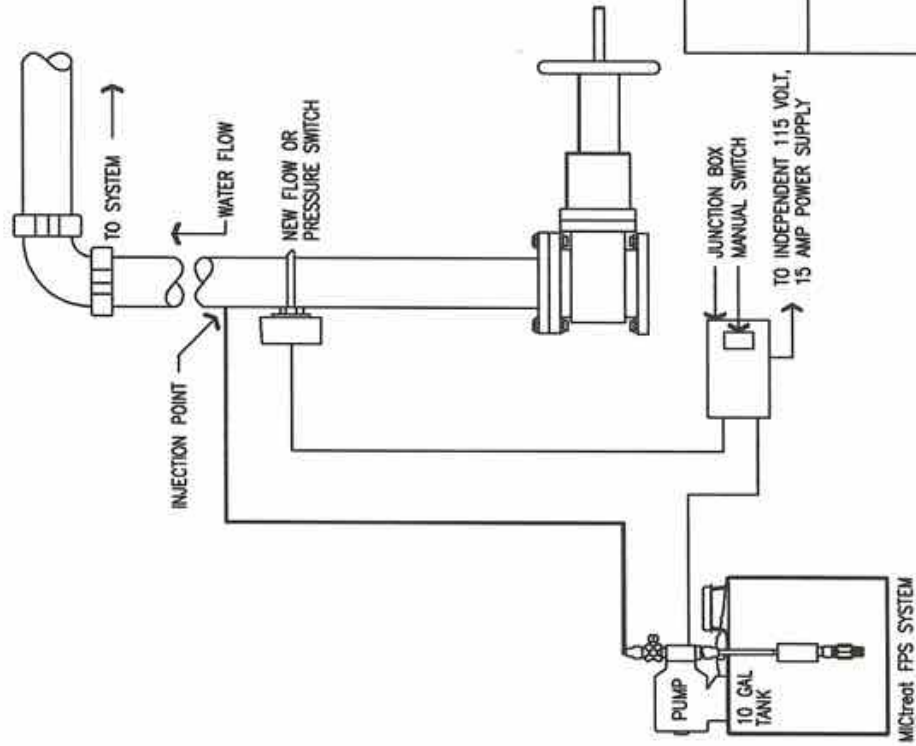
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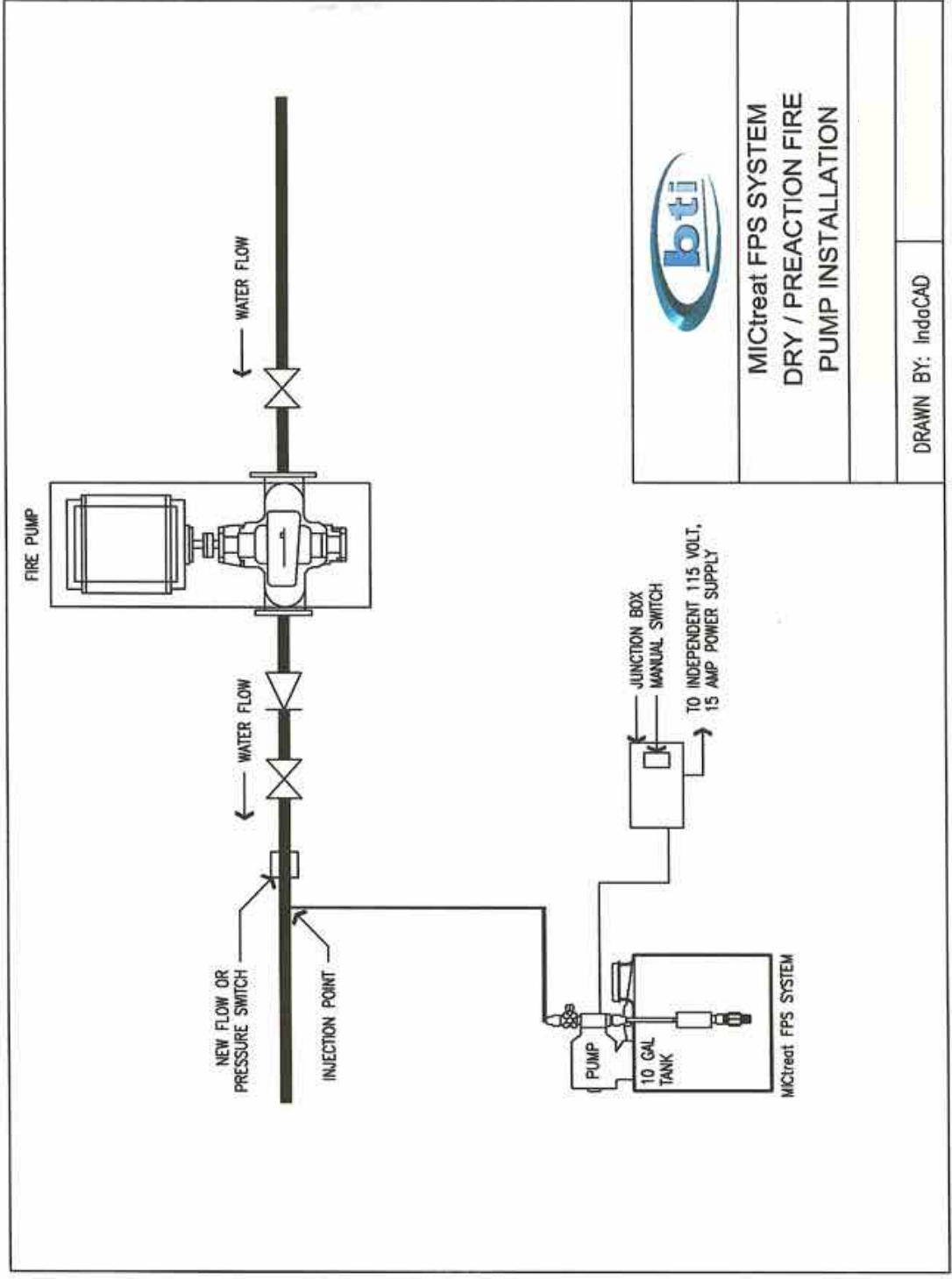
**MICreat FPS SYSTEM  
WET FIRE PUMP INSTALLATION**

DRAWN BY: IndaCAD



**MICreat FPS SYSTEM  
 DRY / PREACTION RISER  
 INSTALLATION**

DRAWN BY: IndoCAD



MICtreat FPS SYSTEM  
 DRY / PREACTION FIRE  
 PUMP INSTALLATION

DRAWN BY: IndaCAD

# Data Sheet

## Series C

### Configuration Data

Model **C92** **1** - **363SI**

### Electronic Metering Pumps

#### Control & Output Code with Standard Liquid End

##### Manual Control

Speed (stroking frequency) and stroke length manually adjustable.

C10	--	1.3 GPH (4.9 l/h)	...	300 psi (20.7 Bar)
C11	--	2.5 GPH (9.5 l/h)	...	150 psi (10.3 Bar)
C12	--	4.0 GPH (15.1 l/h)	...	100 psi (6.9 Bar)
C13	--	8.0 GPH (30 l/h)	.....	60 psi (4.1 Bar)
C14	--	20 GPH (76 l/h)	.....	25 psi (1.7 Bar)

##### Instrument Responsive/Manual Control

Manual adjustment features of C1 Series plus switch conversion to external control for automatic systems.

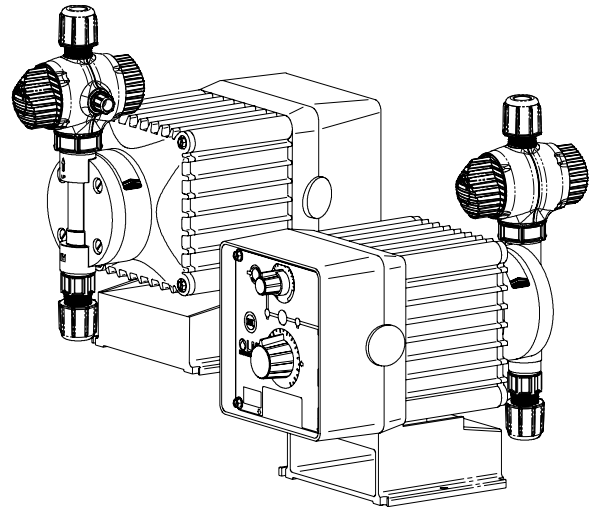
C70	--	1.3 GPH (4.9 l/h)	...	300 psi (20.7 Bar)
C71	--	2.5 GPH (9.5 l/h)	...	150 psi (10.3 Bar)
C72	--	4.0 GPH (15.1 l/h)	...	100 psi (6.9 Bar)
C73	--	8.0 GPH (30 l/h)	.....	60 psi (4.1 Bar)
C74	--	20 GPH (76 l/h)	.....	25 psi (1.7 Bar)
C76*	--	4.0 GPH (15.1 l/h)	...	175 psi (12.1 Bar)
C77*	--	10 GPH (38 l/h)	.....	80 psi (5.5 Bar)
C78*	--	25 GPH (95 l/h)	.....	30 psi (2.07 Bar)
C90	--	1.3 GPH (4.9 l/h)	...	300 psi (20.7 Bar)
C91	--	2.5 GPH (9.5 l/h)	...	150 psi (10.3 Bar)
C92	--	4.0 GPH (15.1 l/h)	...	100 psi (6.9 Bar)
C93	--	8.0 GPH (30 l/h)	.....	60 psi (4.1 Bar)
C94	--	20 GPH (76 l/h)	.....	25 psi (1.7 Bar)

#### Voltage Code

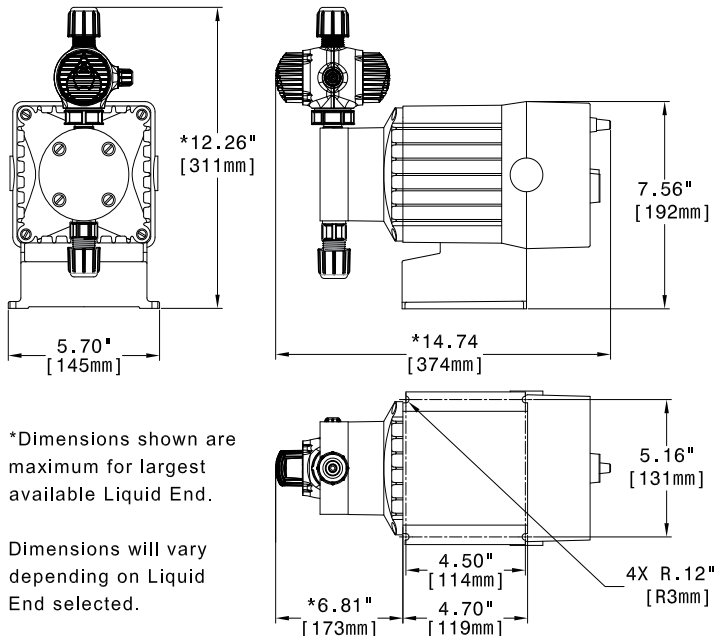
1	-----	120 VAC US Plug
2	-----	240 VAC US Plug
3	-----	220-240 VAC DIN Plug
5	-----	240-250 VAC, UK Plug
6	-----	240-250 VAC, AUST/NZ Plug
7	-----	220-240 VAC, SWISS Plug

#### Liquid End

See next page for complete liquid end specifications and selection.



### Dimensions



### Specifications

Series	Strokes Per Minute (Adjustable)		Stroke Length (Adjustable) Recommended Minimum	Average Input Power @ Max Speed	Shipping Weight
	Min	Max			
C10, C70, C90 C11, C71, C91 C12, C72, C92 C13, C73, C93 C14, C74, C94	1	100	10%	44 watts	20 lbs (9.1 kg)
C76** C77** C78**	1	100	10%	87 watts	28 lbs (12.7 kg)

\*\* Not UL or CUL Approved



201 Ivyland Road  
Ivyland, PA 18974 USA  
TEL: (215) 293-0401  
FAX: (215) 293-0445  
<http://www.lmipumps.com>

## Standard Liquid End Configuration Data & Materials of Construction

Drive Assembly	Liquid End No.	Size Code	Materials of Construction				Accessory	Tubing & Connections		
			Head & Fittings	Balls	Liquifram™	Check Valve		Discharge	Suction	
C90, C70 - C10 -	498SP	0.9	PVC	Ceramic	Fluorofilm™	PVDF/PTFE	4FV	Pipe 1/2" NPT M		
	297	0.9	316 S.S.	316 S.S.	Fluorofilm™	316 S.S.		Pipe 1/4" NPT M		
C92 - C91 - C72 - C71 - C12 - C11 -	468SI†	1.8	PVC/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .375" O.D.		
	460SI†	1.8	Acrylic/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .375" O.D.		
	469SI†	1.8	Acrylic/PVDF	PTFE	Fluorofilm™	PVDF/Polyprel®	4FV	PE .375" O.D.		
	368SI†	1.8	PVC/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .375" O.D.		
	362SI†	1.8	PVDF/PVDF	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .375" O.D.		
	363SI†	1.8	PVDF/PVDF	Ceramic	Fluorofilm™	PVDF/PTFE	4FV	PE .375" O.D.		
	465SI†	1.8	Polypropylene	Ceramic	Fluorofilm™	PVDF/PTFE	4FV	PE .375" O.D.		
	75HV	1.8	Polypropylene	316 S.S.	Fluorofilm™	PTFE		PE .5" O.D. Vinyl .938" O.D.		
	76HV	1.8	Acrylic/PP	316 S.S.	Fluorofilm™	Viton®		PE .5" O.D. Vinyl .938" O.D.		
	277	1.8	316 S.S.	316 S.S.	Fluorofilm™	316 S.S.		Pipe 1/4" NPT M		
	C93 - C73 - C13 -	312SI††	3.0	PVDF/PVDF	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .5" O.D.	
313SI††		3.0	PVDF/PVDF	Ceramic	Fluorofilm™	PVDF/PTFE	4FV	PE .5" O.D.		
318SI††		3.0	PVC/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .5" O.D.		
410SI††		3.0	Acrylic/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .5" O.D.		
415SI††		3.0	Polypropylene	Ceramic	Fluorofilm™	PVDF/PTFE	4FV	PE .5" O.D.		
418SI††		3.0	PVC/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .5" O.D.		
419SI††		3.0	Acrylic/PVDF	PTFE	Fluorofilm™	PVDF/Polyprel®	4FV	PE .5" O.D.		
20		3.0	Acrylic/PVC	Ceramic	Fluorofilm™	Viton®		PE .5" O.D.		
20HV		3.0	Acrylic/PP	316 S.S.	Fluorofilm™	Viton®		PE .5" O.D. Vinyl .938" O.D.		
20S		3.0	Acrylic/PVC	Ceramic	Fluorofilm™	Viton®	4FV	PE .5" O.D. Vinyl .5" O.D.		
24		3.0	PVC	Ceramic	Fluorofilm™	PTFE		Pipe 1/2" NPT M		
25HV		3.0	Polypropylene	316 S.S.	Fluorofilm™	PTFE		PE .5" O.D. Vinyl .938" O.D.		
26		3.0	PVC	Ceramic	Fluorofilm™	Viton®		PE .5" O.D.		
26S		3.0	PVC	Ceramic	Fluorofilm™	Viton®	4FV	PE .5" O.D.		
27		3.0	316 S.S.	316 S.S.	Fluorofilm™	PTFE		Pipe 1/2" NPT M		
29		3.0	UHMW PE	Ceramic	Fluorofilm™	Viton®		PE .5" O.D.		
30		6.0	Acrylic/PVC	Ceramic	Fluorofilm™	PTFE		PE .5" O.D. Vinyl .5" O.D.		
C94 - C78 - C74 - C14 -		34	6.0	PVC	Ceramic	Fluorofilm™	PTFE		Pipe 1/2" NPT M	
		35P	6.0	Polypropylene	Ceramic	Fluorofilm™	PTFE		Pipe 1/2" NPT M	
	35T	6.0	Polypropylene	Ceramic	Fluorofilm™	PTFE		PE .5" O.D.		
	36	6.0	PVC	Ceramic	Fluorofilm™	PTFE		PE .5" O.D.		
	37	6.0	316 S.S.	316 S.S.	Fluorofilm™	PTFE		Pipe 1/2" NPT M		
C76 -	468SP	1.8	PVC/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	Pipe 1/2" NPT M		
	74S	1.8	PVC	Ceramic	Fluorofilm™	PTFE	4FV	Pipe 1/4" NPT M		
	277	1.8	316 S.S.	316 S.S.	Fluorofilm™	316 S.S.		Pipe 1/4" NPT M		
C77 -	20	3.0	Acrylic/PVC	Ceramic	Fluorofilm™	Viton®		PE .5" O.D.		
	20HV	3.0	Acrylic/PP	316 S.S.	Fluorofilm™	Viton®		PE .5" O.D. Vinyl .938" O.D.		
	20S**	3.0	Acrylic/PVC	Ceramic	Fluorofilm™	Viton®	4FV	PE .5" O.D. Vinyl .5" O.D.		
	24	3.0	PVC	Ceramic	Fluorofilm™	PTFE		Pipe 1/2" NPT M		
	25HV	3.0	Polypropylene	316 S.S.	Fluorofilm™	PTFE		PE .5" O.D. Vinyl .938" O.D.		
	25P	3.0	Polypropylene	Ceramic	Fluorofilm™	PTFE		Pipe 1/2" NPT M		
	25T	3.0	Polypropylene	Ceramic	Fluorofilm™	PTFE		PE .5" O.D.		
	26S**	3.0	PVC	Ceramic	Fluorofilm™	Viton®	4FV	PE .5" O.D.		
	27	3.0	316 S.S.	316 S.S.	Fluorofilm™	PTFE		Pipe 1/2" NPT M		
	29	3.0	UHMW PE	Ceramic	Fluorofilm™	Viton®		PE .5" O.D.		

### Output Information with Standard Liquid End

Series	Gallons per Hour		Liters per Hour		mL/cc per Minute		mL/cc per Stroke		Maximum Injection Pressure
	Min	Max	Min	Max	Min	Max	Min	Max	
C10, C70*, C90*	0.001	1.3	0.005	4.9	0.08	82	0.08	0.82	300 psi (20.7 Bar)
C11, C71*, C91*	0.003	2.5	0.010	9.5	0.16	158	0.16	1.58	150 psi (10.3 Bar)
C12, C72*, C92*	0.004	4.0	0.015	15.1	0.25	252	0.25	2.52	100 psi (6.9 Bar)
C13, C73*, C93*	0.008	8.0	0.030	30.0	0.51	505	0.51	5.05	60 psi (4.1 Bar)
C14, C74*, C94*	0.020	20.0	0.076	76.0	1.26	1262	1.26	12.62	25 psi (1.7 Bar)
C76*	0.004	4.0	0.015	15.1	0.25	252	0.25	2.52	175 psi (12.1 Bar)
C77*	0.010	10.0	0.038	38.0	0.63	631	0.63	6.31	80psi (5.5 Bar)
C78*	0.025	25.0	0.095	95.0	1.58	1577	1.58	15.77	30 psi (2.07 Bar)

\*Minimum output is based on 1 stroke per minute and 10% stroke setting, minimum output can be reduced further in external mode. Series C9 pumps may be programmed for strokes per hour for lower outputs.

### AutoPrime™ Liquid End Configuration Data & Materials of Construction

Drive Assembly	Liquid End No.	Size Code	Head & Fittings	Balls	Liquifram™	Check Valve	Accessory	Tubing & Connections
C11, C71, C91	D60HI	1.8	Acrylic/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .375" O.D.
C12, C72, C92	D68HI	1.8	PVC/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .375" O.D.
C13, C73, C93	D10HI	3.0	Acrylic/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .5" O.D.
	D18HI	3.0	PVC/PVC	Ceramic	Fluorofilm™	PVDF/Polyprel®	4FV	PE .5" O.D.

### Output Information – AutoPrime™ Liquid Ends (Liquid end models beginning with "D")

Series	Maximum Output				Maximum Pressure	
	GPH	Liters/hr	mL/cc per minute	mL/cc per stroke	PSI	Bar
C11, C71, C91	2.3	8.7	145.1	1.45	150 psi	10.3
C12, C72, C92	3.8	14.4	239.8	2.40	100 psi	6.9
C13, C73, C93	7.8	29.5	492.2	4.92	60 psi	4.1

AutoPrime™ liquid ends have 3 check valves: suction on the bottom; discharge on the front; and autoprime bleed on the top. By design, a repeatable portion of the process fluid continuously bleeds through the top check valve to be returned to the chemical supply. The result is the assurance that any gas in the head is automatically relieved thus eliminating air-binding. The maximum output per the tables above is reduced to account for the continuous bleed.

See front page for voltage code specifications.

Plastic heads with tubing connection include 1/2" NPT and 1/2" BSP.

\*\*These Liquid Ends are available without a 4FV, simply drop the 'S' at the end of the Liquid End number to order the model without a 4FV.

#These liquid ends use 3/8" diameter balls. Pump output may be reduced in some applications.

† To specify 1/4" NPT male, change 'I' to 'P'.

To specify black, UV resistant tubing, change 'I' to 'U'.

To specify 3FV, change 'S' to 'T'.

**3FV** indicates that the pump is equipped with an LMI Three Function Valve (pressure relief, priming aid, line drain).

**4FV** indicates that the pump is equipped with an LMI Four Function Valve. This diaphragm type, anti-syphon/pressure relief valve is installed on the pump head. It provides anti-syphon protection and aids priming, even under pressure.

Fluorofilm™ is a copolymer of PTFE and PFA.

Polyprel® is an elastomeric PTFE copolymer.

Polyprel is a registered trademark of Milton Roy, LLC.

Fluorofilm and Liquifram are trademarks of Milton Roy, LLC. Viton® is a registered trademark of DuPont.

# Liquid End Sheet



## LE-4X0SX, 4X8SX

When pumping solutions, make certain that all tubing is securely attached to the fittings. It is recommended that tubing or pipe lines be shielded to prevent possible injury in case of rupture or accidental damage. Always wear protective clothing and face shield when working on or near your metering pump.

*Note: See parts list for materials of construction*

### A. INSTALLING INJECTION CHECK VALVE (FIGURE 1)

1. The Injection Check Valve prevents backflow from a treated line. Install the injection check valve at the location where chemical is being injected into the system.
2. Any size Female NPT fitting or pipe tee with a reducing bushing to 1/2" Female NPT will accept the injection check valve. PTFE tape should only be used on threads that are connected with pipes.
3. When installing the Injection Check Valve, be sure to position it so that the valve enters the bottom of your pipe in a vertical position. Variations 40° left and right are acceptable.

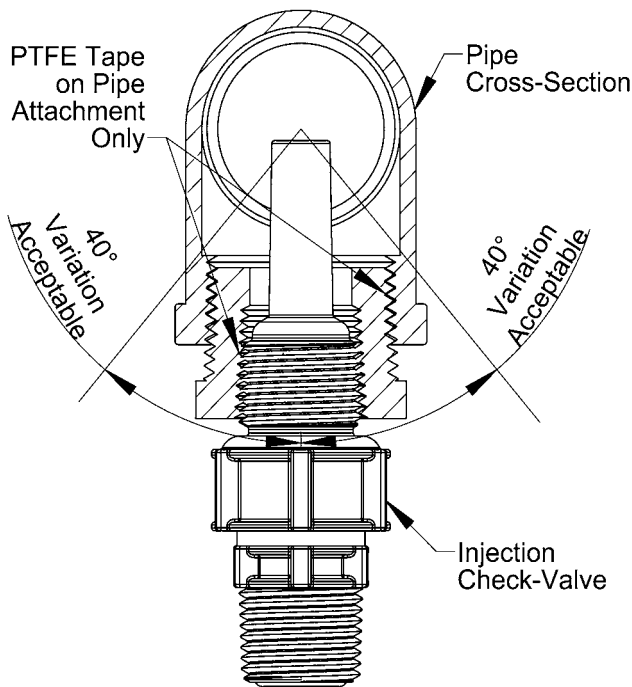


FIGURE 1

### B. CONNECTING DISCHARGE TUBING (FIGURE 2)

**Note:** Cut tubing to length needed for discharge line.

1. Route tubing from the injection check valve to the metering pump, making sure it does not touch hot or sharp surfaces, or is bent so sharply that it kinks.
2. Put coupling nut over tubing.

3. Position female Ferrule about one inch (25 mm) from end of tubing.
4. For 1/4" or 6 mm OD tubing, cut tubing so that 1/4" to 3/8" (5-10 mm) protrudes from the female Ferrule. For all other tubing push the tube to the bottom of the groove in the male Ferrule. Then slide the female Ferrule down into the male Ferrule.
5. Firmly hand tighten the coupling nut onto the fitting.

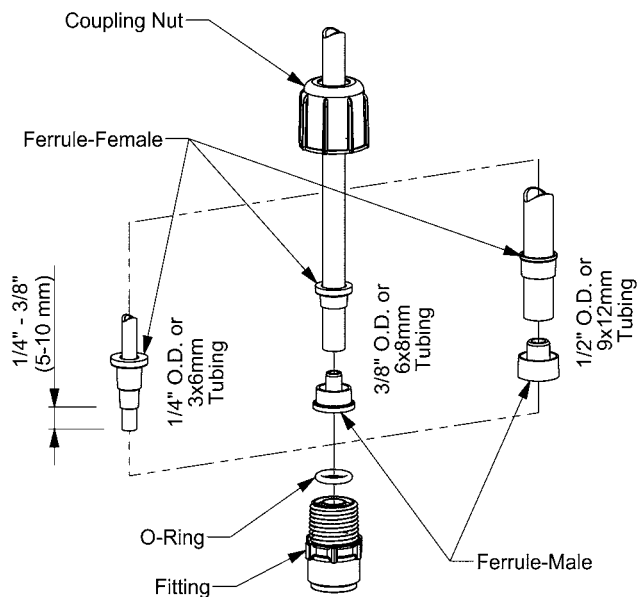


FIGURE 2

**DO NOT USE CLEAR VINYL TUBING ON THE DISCHARGE SIDE OF THE PUMP. The pressure created by the pump can rupture vinyl tubing, which is only for suction connections on certain liquid ends.**

**DO NOT USE PLIERS OR PIPE WRENCH ON COUPLING NUTS OR FITTINGS. USE ONLY LMI TUBING—ALWAYS use LMI supplied tubing with your pump, as the tubing is specifically designed for use with the pump fittings.**

### C. CONNECTING SUCTION TUBING

1. Cut suction tubing to a length so that the foot valve hangs just above the bottom of the solution container. Maximum recommended vertical suction lift is 5 ft (1.5m).
2. Follow same procedure in connecting suction tubing to suction valve and foot valve (*see B. Connecting Discharge Tubing*).



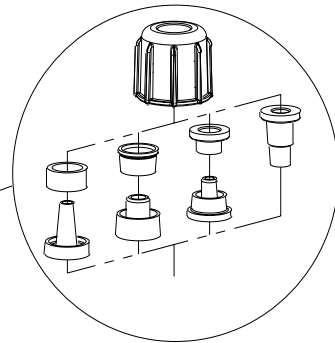
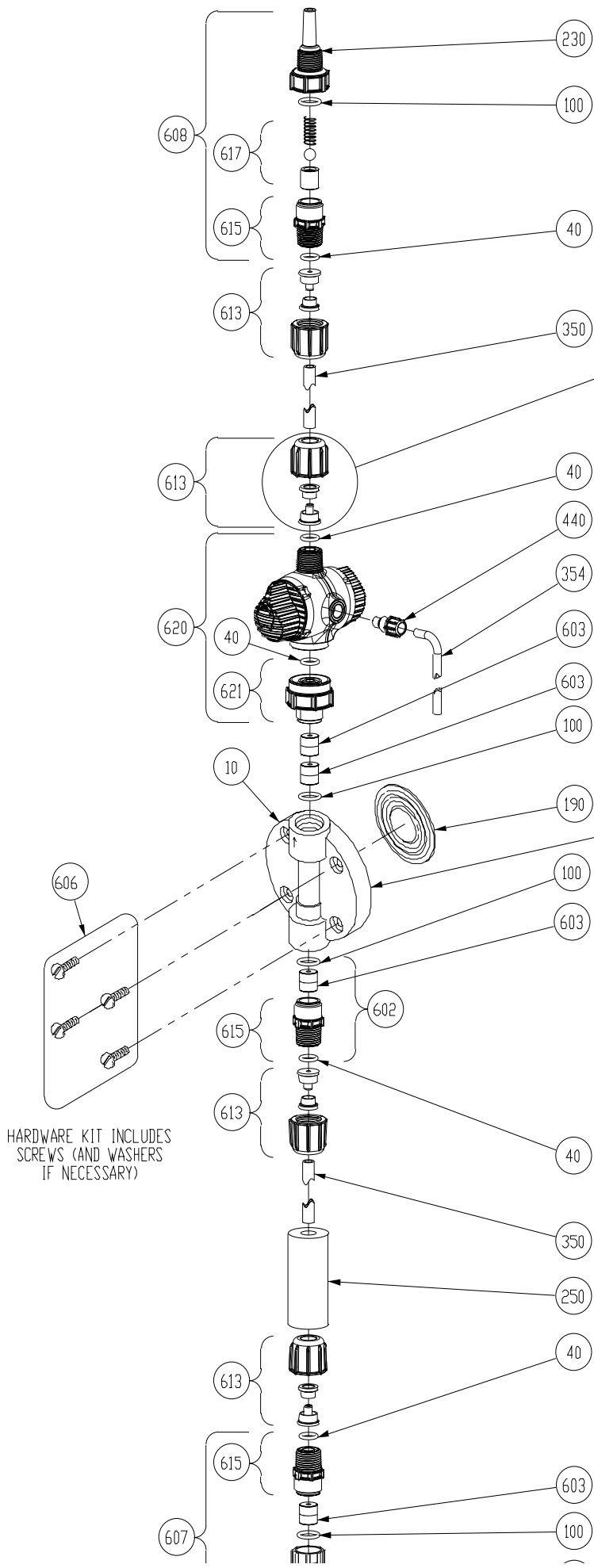
201 Ivyland Road  
Ivyland, PA 18974 USA  
TEL: (215) 293-0401  
FAX: (215) 293-0445  
<http://www.lmipumps.com>

# LE-4X0SX, 4X8SX

Key Number	Description	Part Number	QUANTITY				QUANTITY			
			410SX	450SX	460SX	490SX	418SX	458SX	468SX	498SX
10	Pump Head	38578		1						
		38579					1			
		38561				1				
		38562							1	
		38595			1					
		38596							1	
		36159	1							
		37745					1			
40	O-Ring	48349	5	5	5	5	5	5	5	
100	O-Ring	36103	4	4	4	4	4	4	4	
190	Liquifram™	30916		1				1		
		30917				1			1	
		31420			1				1	
		31419	1				1			
230	Injection Valve Body	48617	1	1	1	1	1	1	1	
250	Ceramic Weight	10322	1	1	1	1	1	1	1	
260	Foot Valve Coupling	36204	1	1	1	1	1	1	1	
270	Foot Valve Strainer	10123	1	1	1	1	1	1	1	
350	Tubing, Suction & Discharge <b>4XXSI ONLY</b>	25636-16		1				1		
		10342-16			1	1			1	
		10142-16	1				1			
	Tubing, Suction & Discharge <b>4XXSU ONLY</b>	28636-16		1				1		
		27342-16			1	1			1	
27142-16	1				1					
354	Tubing, 4FV	25636-06	1	1	1	1	1	1	1	
440	Bleed Nut	48622	1	1	1	1	1	1	1	
602	Suction Check Valve	49087		1				1		
		49088	1		1	1	1		1	
603	Cartridge Valve	37335		4				4		
		37338	4		4	4	4		4	
606	Liquid End Hardware	49109		1	1	1		1	1	
		49110	1				1			
607	Foot Valve	49099		1				1		
		49100	1		1	1	1		1	
608	Injection Valve	48728	1	1	1	1	1	1	1	
613	Tubing Connection Kit <b>4XXSI and 4XXSU</b>	77382		4				4		
		77383			4	4			4	
		77384	4				4			
	Tubing Connection Kit <b>4XXSM ONLY</b>	77378		4				4		
		77379			4	4			4	
77380	4				4					
615	Check Valve Fitting	48787	3	3	3	3	3	3	3	
617	Injection Valve Cartridge	48795	1	1	1	1	1	1	1	
620	4FV Assembly	48798		1				1		
		48753	1		1	1	1		1*	
621	4FV Fitting Assembly	49254	1	1	1	1	1	1	1	

\*For 468SP and 498SP liquid ends, use 48798 4FV assembly.

# LE-4X0SX, 4X8SX



DEPENDENT ON TUBING SIZE,  
THE FERRULE GEOMETRY WILL BE DIFFERENT.

THE HEAD SHOWN HERE IS REPRESENTATIVE  
OF ALL MACHINED AND MOLDED HEADS;  
APPEARANCE MAY DIFFER

HARDWARE KIT INCLUDES  
SCREWS (AND WASHERS  
IF NECESSARY)



## D. PRIMING WITH 4-FUNCTION VALVE

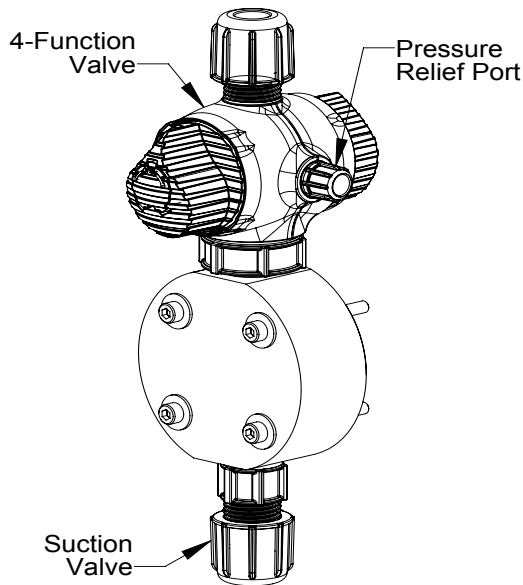
1. Connect pressure relief tubing to the pressure relief port (**FIGURE 3**). Route tubing to the solution tank. This tubing must not be submerged in the solution.

When all precautionary steps have been taken, the pump is mounted, and the tubing is securely attached, you may now start priming the pump.

2. Turn black knob about  $\frac{1}{8}$  turn CCW to stop point to open bypass port.
3. Set pump at 100% speed and 100% stroke length. Start pump. When fluid has been flowing through the bypass port tubing for 10-20 seconds, the pump is primed.
4. Stop pump and return black knob to normal position.

**Note:** The pumps are normally self priming if suction lift is less than 5 feet (1.5 meters), check valves are wet (there is usually water in the pump head when shipped from the factory), and the steps above are followed. If the pump does not self prime, you can choose one of 2 ways to help prime:

1. Remove the 4-function valve and cartridges and slowly pour water or solution into the pump head until it is filled. Replace cartridges and 4-function valve and repeat steps above.
2. Temporarily improve suction conditions by pumping from a container closer to or above pump.



**FIGURE 3**

**Note:** The head drawing is for reference only; actual appearance may differ.

**REFER TO YOUR ELECTRONIC METERING PUMP INSTRUCTION MANUAL FOR ADDITIONAL INSTRUCTIONS AND PRECAUTIONS.** You may contact your local LMI Distributor for additional information or visit LMI on the web at [www.lmipumps.com](http://www.lmipumps.com)

## E. DEPRESSURIZING THE DISCHARGE LINE

**ALWAYS wear protective clothing, face shield, safety glasses and gloves when performing any maintenance or replacement on your pump.**

When preparing to maintain the pump or any component in the discharge line, the 4-function valve is used to depressurize the line. Be sure an injection check valve is properly installed and is operating, and that all tubing connections on the 4-function valve are secure.

**Be sure your relief tubing is connected to your pressure relief port on the 4-function valve and runs back to your solution drum or tank.**

1. Turn off the pump.
2. If any valves have been installed downstream of the pump, close them.
3. If the supply tank for the pump is higher than the pump head, fluid will flow through unless a suction line valve is closed.
4. Turn the black knob on the 4-function valve about  $\frac{1}{8}$  turn CCW to its open position. This relieves pressure between the pump and the 4-function valve.
5. To release line pressure, while the black knob is in the open position, turn the yellow knob and hold open until fluid flow through the bypass port stops.



**When tubing connections are loosened, chemical will drain from the line. Use appropriate safety precautions to avoid contact with chemical.**

# Specification Sheet

## Series C

### GENERAL

Chemical metering pumps shall be positive displacement, Liquifram™ type pumps that are UL and CUL approved. Output volume shall be adjustable while pumps are in operation from zero to maximum capacity of:

C10, C70, C90	- 1.3 GPH (4.9 liters per hour)
C11, C71, C91	- 2.5 GPH (9.5 liters per hour)
C12, C72, C92	- 4.0 GPH (15.1 liters per hour)
C13, C73, C93	- 8.0 GPH (30.0 liters per hour)
C14, C74, C94	- 20.0 GPH (75.7 liters per hour)
C76*	- 4.0 GPH (15.1 liters per hour)
C77*	- 10.0 GPH (38.0 liters per hour)
C78*	- 25.0 GPH (95.0 liters per hour)

Chemical metering pumps shall be capable, without a hydraulically backed diaphragm, of injecting solutions against pressures up to:

C10, C70, C90	- 300 psig (20.7 bar)
C11, C71, C91	- 150 psig (10.3 bar)
C12, C72, C92	- 100 psig (6.9 bar)
C13, C73, C93	- 60 psig (4.1 bar)
C14, C74, C94	- 25 psig (1.7 bar)
C76*	- 175 psig (12.1 bar)
C77*	- 80 psig (5.5 bar)
C78*	- 30 psig (2.1 bar)

### TYPE C1

Adjustment shall be by means of readily accessible dial knobs, one for changing stroke length and the other for changing stroke frequency (speed). Both knobs are to be located opposite the liquid handling end.

### TYPE C7

Control of Series C7 metering pumps shall be selectable between internal and external pulsing by means of a 3-position center-off switch. Stroke length shall be adjustable by means of readily accessible dial knob. When in external pulsed mode, Series C7 units shall accept signals without the use of electrical timer or internal timer. Pressure capacity shall be adjustable to reduce noise, vibration and wear.

### TYPE C9

Series C9 metering pumps shall have a clear liquid crystal display. Control shall be selectable between internal and external pulsing by means of a

tactile keypad. Internal stroke frequency shall be adjustable from 1 stroke per hour to 100 strokes per minute. Pressure capacity shall be keypad adjustable to reduce noise, vibration and wear. Metering pump shall be capable of dividing or multiplying pulse inputs from 1 to 999 or responding directly or inversely to a 4-20mA input signal.

### DRIVE

The pump drive shall be totally enclosed with no exposed moving parts. Solid state electronic pulser shall be encapsulated and supplied with quick connect terminals at least 3/16" (4.75 mm) wide. Electronics shall be housed in chemical resistant enclosure at the rear of the pump for maximum protection against chemical spillage. Electrical power consumption shall not exceed 87 watts under full speed and maximum pressure conditions. Pump weight shall not exceed 28 lbs (12.7 kg).

### AUTOMATIC PRESSURE RELIEF

To eliminate need for pressure relief valve, Liquifram™ shall automatically stop pulsating when discharge pressure exceeds pump pressure rating by not more than 35%.

### MATERIAL

Chemical metering pump housing shall be of chemically resistant glass fiber reinforced thermoplastic with a glass fiber reinforced polypropylene EPU carrier<sup>1</sup>. All exposed fasteners shall be stainless steel. Chemical metering pump valves shall be ball type, with ceramic balls<sup>2</sup>. Valve seat and seal ring shall be renewable by replacing the combination seat-seal ring<sup>3</sup> or cartridge valve assembly. Pump head shall be of transparent acrylic<sup>4</sup> material capable of resisting the pumped chemical. Fittings and connections at pump head shall be PVC<sup>5</sup>.

### CHECK VALVES AND TUBING

A total of 16 ft (4.8 m) of polyethylene tubing<sup>6</sup> shall be provided per pump complete with compression connections. A foot valve with integral one piece strainer shall be provided for the suction line, and an injection check/back pressure valve with 1/2" NPT male connection for the injection point. The injection check valve shall incorporate a dilating orifice which prohibits scale formation and accumulation of crystalline deposits.

(\* - Not UL or CUL Approved)

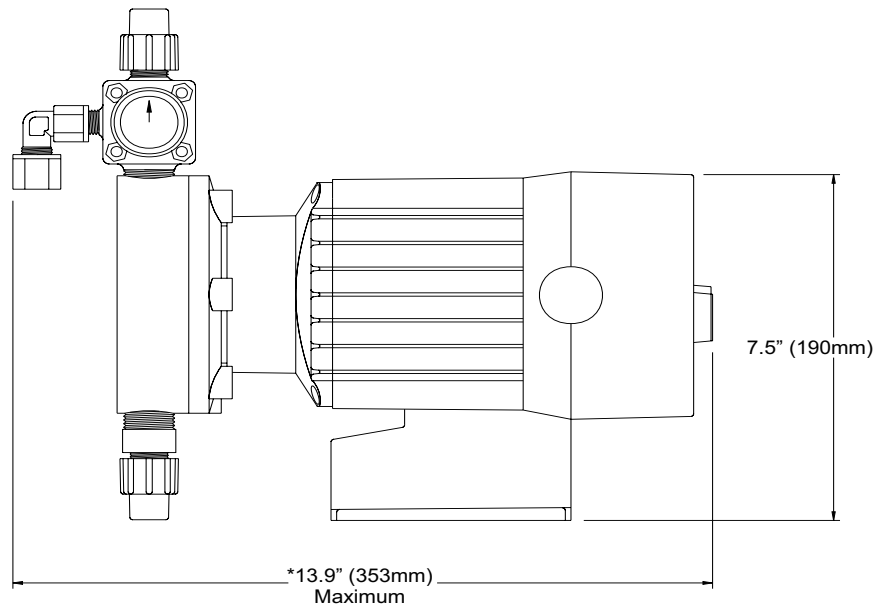
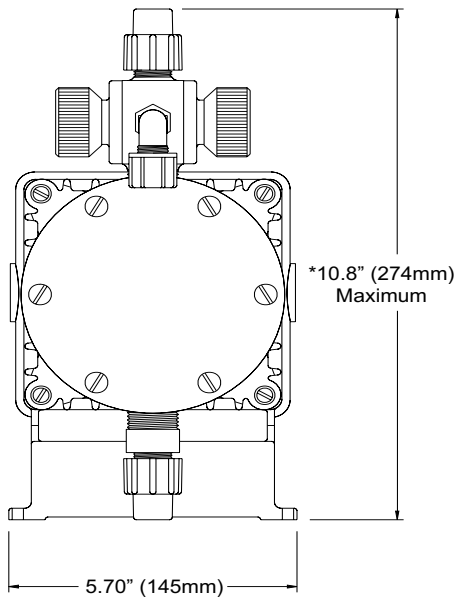
### Notes:

1. With plastic coated cast iron EPU carrier for Series C 76, C77 and C78.
2. Type 316 stainless steel or PTFE may be specified.
3. Hypalon®, PTFE, Viton® or Polyprel® may be specified.
4. PVC, Polypropylene, PDVF or Type 316 stainless steel may be specified.
5. PVDF, Polypropylene, or Type 316 stainless steel may be specified.
6. 6 ft. (1.8 m) of vinyl suction tubing may be specified in place of polyethylene for the suction side only. 1/4" or 1/2" male pipe thread may be specified.

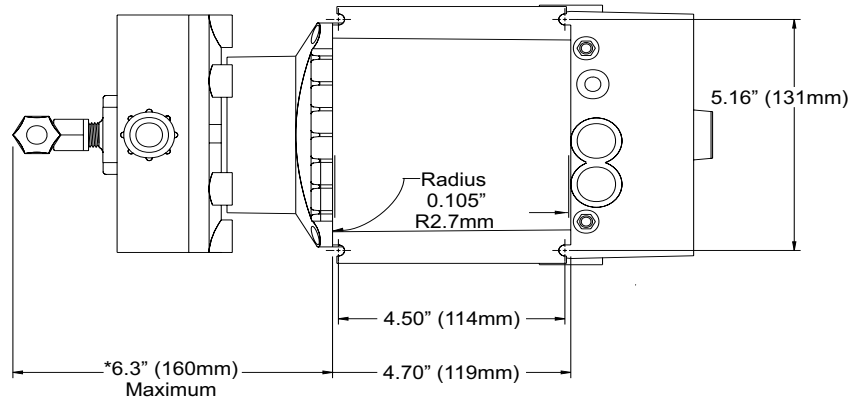


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Replaces same of Rev. F 11/06  
1619. G 6/09



\*Dimensions shown are maximum for largest liquid end available. These dimensions vary depending on the liquid end selected.



# MICtreat® FPS Chemical

Industrial Antimicrobial for Fire Protection Systems



## key features

- \*Rapid kill of microbes, including MIC-related bacteria & SRB
- \*Reduces free oxygen in FPS, controlling all corrosion
- \*Non-flammable
- \*Compatible with FPS system components & waters
- \*Economical
- \*Unusually good (low) toxicity profile
- \*Good environmental profile/readily biodegradable
- \*Easy to apply & test
- \*Simple & inexpensive to deactivate
- \*Registered with the Environmental Protection Agency

Sold exclusively by:



BTIproductsLLC

# MICtreat® FPS Chemical

Industrial Antimicrobial for Fire Protection Systems

features & benefits

## BTI PRODUCTS, LLC PROVIDES SOLUTIONS TO YOUR MICROBIAL & CORROSION PROBLEMS

BTI Products, LLC has been providing industrial systems with testing, consulting, and treatment solutions to microbiologically influenced corrosion (MIC) and other microbial and corrosion problems for over 35 years. The company approaches diagnosis and treatment of such problems based on scientific analysis of data from actual facilities. To help their clients properly diagnose and treat microbial and corrosion problems, BTI Products provides on-site test kits, patented treatment devices, and treatment chemicals for a variety of industries.

In order to better serve the specific needs of the fire protection industry, BTI Products has developed a line of testing and treatment products specifically for FPS: MICKit® FPS and MIPkit® FPS test kits, MICtreat® FPS Chemical, and the patented MICtreat® FPS System chemical delivery devices.

MICtreat® FPS Chemical is a new generation antimicrobial agent offering outstanding performance and a good environmental profile.

## FEATURES & BENEFITS

MICTREAT FPS CHEMICAL FEATURES	BENEFITS
Rapid control of MIC-related bacteria: -Aerobic & anaerobic bacteria (AERO & ANA) -Slime-formers (LNB) & iron-depositing bacteria (IRB) -Acid-producing bacteria (APB) -Sulfate-reducing bacteria (SRB)	Controls bacteria, fouling, corrosion, & hydrogen sulfide production
Reduces free oxygen	Reduces an important nutrient for MIC-related bacteria & a reactant in many forms of severe corrosion, rusting, & severe pitting
System compatibility; Non-flammable	Safe to use in FPS
Cost of treatment is \$465.00* per 2,500 gallons of water	Economical treatment; only new water needs additional treatment
Compatible with many water treatment chemicals (e.g., surfactants)	Treatment can be done right after cleaning
Biodegradable; Simple & inexpensive to deactivate in waters removed from FPS	Reduced risk to environment & added safety to maintenance personnel
Good environmental profile	Low environmental impact
Unusually good (low) toxicity profile	Ease of handling & added safety to maintenance personnel
Simple & quantitative field test for active ingredient	Easy, on-site monitoring & control of treatment levels
Simple test for treatment effectiveness using MICKit® technology	Accurate & easy on-site monitoring of treatment success
Registered with EPA for use in FPS	EPA-registered specifically for FPS
Manufactured to ISO 9002	Quality assurance

# MICtreat® FPS Chemical

Industrial Antimicrobial for Fire Protection Systems

mechanism & test results

## MECHANISM

THPS, the active ingredient in MICtreat® FPS Chemical, disrupts bacterial cells and inhibits enzymes and energy production in microbes, including those causing MIC. THPS also reacts with oxygen (forming a non-toxic oxide), thus reducing an important nutrient for MIC-related bacteria and a very important reactant in many severe corrosion reactions. Results of treating steel FPS pipes with MICtreat® FPS Chemical are shown in the following pictures and table.



Untreated Steel FPS Pipe



New Steel FPS Pipe Treated with MICtreat® FPS Chemical

## MICTREAT® FPS CHEMICAL CHALLENGE TEST RESULTS

SAMPLE	PIPE CLEANED BEFORE TEST	TREATMENT	COLOR OF WATER/PIPE	DISSOLVED OXYGEN (PPM)	RESIDUAL CHLORINE (PPM)	RESIDUAL THPS (PPM)	LOW NUTRIENT BACTERIA (PER ML)	IRON-RELATED BACTERIA (PER ML)	ACID-PRODUCING BACTERIA (PER ML)	SULFATE-REDUCING BACTERIA (PER ML)
TEST WATER	N/A	None	Clear	5	0	0	>100,000	>100,000	>100,000	>100,000
PIPE 1	No	None	Black/Black	2	0	0	>100,000	100	>100,000	10,000
PIPE 2	No	50 ppm Chlorine	Black/Black	5	0	0	>100,000	0	>100,000	10
PIPE 3	Yes	50 ppm Chlorine	Black/Black	5	0	0	0	0	>100,000	0
PIPE 4	No	450 ppm MICtreat	Clear/Clean	0	0	400	0	0	0	0
PIPE 5	Yes	50 ppm MICtreat	Clear/Clean	0	0	50	0	0	0	0

These results demonstrate that:

1. MICtreat® FPS Chemical kills all types of MIC-related bacteria, even in some uncleaned pipes.
2. MICtreat® FPS Chemical can be used at low concentrations to kill all types of MIC-related bacteria in cleaned pipes.
3. MICtreat® FPS Chemical consumes oxygen, thus preventing microbial growth, tubercule formation, MIC, and other forms of corrosion.
4. MICtreat® FPS Chemical residuals are maintained in FPS pipes, thus maintaining control over long periods of time.
5. MICtreat® FPS Chemical aids in removing oil and dirt from FPS pipes allowing access of biocide to microbes.

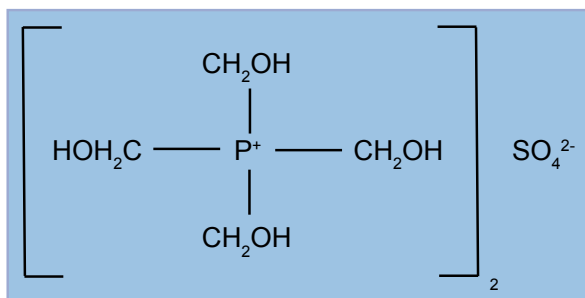
# MICtreat® FPS Chemical

Industrial Antimicrobial for Fire Protection Systems

chemical & physical attributes

## CHEMICAL ATTRIBUTES

MICtreat® FPS Chemical contains the active ingredient tetrakis(hydroxymethyl) phosphonium sulfate (THPS), shown in the chemical formula below:



MICtreat® FPS Chemical kills MIC-related bacteria & consumes oxygen, thus preventing microbial growth, tubercule formation, MIC, & other forms of corrosion.



MICtreat® FPS Chemical starts out clear and ends up clear. Shown here: water from FPS pipe treated with MICtreat® FPS Chemical.

## PHYSICAL ATTRIBUTES

	Chemical Concentrate	Use Concentrations
<b>Active Content</b>	750,000 ppm	100 to 400 ppm
<b>Appearance</b>	Clear, colorless to pale yellow	Clear
<b>Specific gravity (25° C)</b>	Typically 1.38	Typically 1.0
<b>pH</b>	Typically 4.0	Depends on pH of water to which it's added; Has minor effect on pH
<b>Flash point</b>	Non-flammable	
<b>Solubility</b>	Miscible in all proportions with fresh water & sea water	
<b>Stability</b>	Long-term stability under normal handling & storage conditions	Stable in FPS long enough to kill MIC-related microbes & reduce oxygen levels
<b>Compatibility</b>	Compatible with many water treatment chemicals. Avoid: strong bases, strong acids, strong oxidizing agents, strong reducing agents	

# MICtreat® FPS Chemical

Industrial Antimicrobial for Fire Protection Systems

**MICtreat® FPS Chemical is compatible with all types systems, waters, & other treatment chemicals**

## ENVIRONMENTAL PROFILE

A key advantage of treating with MICtreat® FPS Chemical is its good environmental profile. It is readily biodegradable and can be simply and inexpensively deactivated under controlled conditions, resulting in reduced risk to the environment.

Detailed information can be found in the Safety Data Sheet that accompanies this manual.



MICtreat® FPS Chemical has a good environmental profile, which makes it an excellent treatment choice.

## COMPATIBILITY PROFILE

MICtreat® FPS Chemical is compatible with FPS system components and is non-flammable, making it an excellent choice for use in FPS.

MICtreat® FPS Chemical is miscible in all proportions with every type of water and is compatible with a wide range of water treatment additives, allowing for greater treatment flexibility.

**MICtreat® FPS Chemical offers outstanding performance & good environmental & toxicity profiles**

## HEALTH/SAFETY PROFILE

The active ingredient in MICtreat® FPS Chemical has been extensively tested and has a very good (low) toxicity profile. The added benefit of easy and inexpensive deactivation results in safer handling for maintenance personnel.

For more detailed information, please refer to the Safety Data Sheet that accompanies this manual.

compatibility, environmental & health profiles



## USE LEVELS

- Initial treatment of all parts of FPS should be done using water containing 400 parts per million (ppm) MICtreat® FPS Chemical to ensure adequate initial treatment.
- All waters subsequently added to the FPS should also be treated with MICtreat® FPS Chemical.

## COST

- Cost of treatment with MICtreat® FPS Chemical is \$465.00\* per 2,500 gallons of water.

## OTHER CONSIDERATIONS

- Because MICtreat® FPS Chemical is a registered biocide, you should check with authorities having jurisdiction about the use and disposal of chemicals in your facility before ordering or using MICtreat® FPS Chemical. Please contact BTI Products if you require assistance.

## APPLICATION

- BTI Products' patented MICtreat® FPS System automatically delivers the proper amount of MICtreat® FPS Chemical to all waters entering the FPS.

## FIELD ANALYTICAL METHOD

- Concentrations of the active ingredient in MICtreat® FPS Chemical is accurately and simply determined by site personnel in minutes using a self-contained field test kit.

## FURTHER INFORMATION

The following support documents are available upon request:

- SDS

\*Price subject to change without notice.

Every effort has been made to ensure that the information provided herein is reliable, however, BTI Products cannot assume liability for any loss, injury, or damage, consequential or otherwise, which may result from its use.

Rev 5/2/19



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

JAN 29 2010

OFFICE OF  
PREVENTION, PESTICIDES AND  
TOXIC SUBSTANCES

Dear Distributor:

The Office of Pesticides Programs acknowledges receipt of the Supplemental Registration of Distributor Application.

Attached is a copy of the EPA pin punched form for your records.

Should you need to contact the agency, use the following address:

Document Processing Desk (DIST)  
Office of Pesticide Programs -7504P  
U.S. Environmental Protection Agency  
Ariel Rios Building  
1200 Pennsylvania Avenue, N.W.  
Washington, DC 20460

If you have any questions concerning the processing of the application, please contact the Front End Unit at (703) 305-5780.

Sincerely,

*Barbara Purnell*

Front End Processing Staff  
Information Services Branch  
Information Technology & Resources Management Division



United States  
**Environmental Protection Agency**  
 Office of Pesticide Programs (7506C)  
 Washington, DC 20460

**Notice of Supplemental Distribution of a Registered Pesticide Product**

**Instructions**

After a registrant has obtained final registration for the basic product, the registrant may then supplementally distribute his/her product. One form must be submitted for each distributor product and must be signed by the distributor involved. The basic registration number and the distributor company number must be shown.

If a registrant has a potential distributor who does not have a company number assigned, she/he should have the distributor apply, on letterhead stationery, to the Registration Division to have a number assigned prior to submitting this form to the agency.

This Notice of Supplemental Distribution must be submitted by the basic registrant. The completed form must have the concurrence and signature of both the registrant and the distributor.

EPA Registration Number of Product  
4564-20-80739

Distributor Company Number  
080739

**Note: Do not submit distributor product labels**

Name of Registered Product (basic product name accepted by EPA)  
TOLCIDE PS70A

Distributor Product Name  
MICTREAT FPS CHEMICAL

Name and Address of Distributor (Type; include ZIP code)

BTI PRODUCTS, LLC  
652 SILVER HILLS RD  
BAYFIELD, COLORADO 81122

**Read All Conditions Before Signing**

1. The distributor product must have the same composition as the basic product.
2. The distributor product must be manufactured and packaged by the same person who manufactures and packages the registered basic product.
3. The labeling for the distributor product must bear the same claims as the basic product, provided, however, that specific claims may be deleted if by doing so, no other changes to the label are necessary.
4. The product must remain in the manufacturer's unbroken container.
5. The label must bear the EPA registration number of the basic product, followed by a hyphen and the distributor's company number.
6. Distributor product labels must bear the name and address of the distributor qualified by such terms as "packed for...", "distributed by..."; or "sold by..." to show that the name is not that of the manufacturer.
7. All conditions of the basic registration apply equally to distributor products. It is the responsibility of the basic registrant to see that all distributor labeling is kept in compliance with requirements placed on the basic product.

**Distributor**

We intend to market our product under the Distributor Product Name specified above, subject to the conditions specified on this Notice.

Signature and Title of Distributor

PRESIDENT

*Elizabeth M. Lovell*

Date

*Dec. 2, 2009*

**Registrant**

I agree that the distributor named above may distribute and sell the Distributor Product specified above, subject to the conditions specified on this Notice.

Signature and Title of Registrant

*S. A. A.*

*Product Stewardship Manager*

Date

*1/19/2010*



BTIproductsLLC

## Safety Data Sheet

**Section 1: Identification**

Product Name: MICtreat® FPS Monitor Kit  
Product Code: MICtreat® FPS Monitor Kit

Manufacturer: BTI Products, LLC.  
652 Silver Hills Road  
Bayfield, Colorado 81122  
USA

Telephone: (970) 884-4629  
Website: [www.bti-labs.com](http://www.bti-labs.com)  
Email: [products@bti-labs.com](mailto:products@bti-labs.com)

Emergency Phone: (800) 262-8200 CHEMTREC

Recommended Use: Microbiological testing for active corrosion

Restrictions on Use: Use only as directed on instructions

**Section 2: Hazardous Component Identification**

United States (US)  
According to OSHA 1910.1200

**Components: (see following individual SDS for detailed information)**

- Dissolved Oxygen Ampoule

**Section 3: Composition/Information on Ingredients**

See following individual SDS for detailed information

**Section 4: First-Aid Measures**

See following individual SDS for detailed information

**Section 5: Fire-Fighting Measures**

See following individual SDS for detailed information

**Section 6: Accidental Release Measures**

See following individual SDS for detailed information

**Section 7: Handling and Storage**

See following individual SDS for detailed information

**Section 8: Exposure Controls/ Personal Protection**

See following individual SDS for detailed information

**Section 9: Physical and Chemical Properties**

See following individual SDS for detailed information

**Section 10: Stability and Reactivity**

See following individual SDS for detailed information

**Section 11: Toxicological Information**

See following individual SDS for detailed information

**Section 12: Ecological Information**

See following individual SDS for detailed information

**Section 13: Disposal Considerations**

See following individual SDS for detailed information

**Section 14: Transport Information**

See following individual SDS for detailed information

**Section 15: Regulatory Information**

See following individual SDS for detailed information

**Section 16: Other Information**

MICtreat® FPS Monitor Kit

Date of Last Revision: May 2, 2019

Preparation Date: May 2, 2019

Disclaimer: BTI Products, LLC. Disclaims any expressed or implied warranty of merchantability or fitness of its products for any other purpose than described in its technical literature and in no event shall BTI Products, LLC. be liable for any consequential damages arising from use of this product.



## Cover Page for Safety Data Sheet

Thank you for choosing CHEMetrics, Inc. We appreciate your business. In order to best serve your needs for accurate and complete Safety Data, we offer the following information as supplemental to the attached SDS.

**SDS No.:** K7503

**Version No.:** 2.3

**Product Name:** Dissolved Oxygen Vacu-vials® Ampoules & CHEMets® Refill

**Part Nos.:** K-7503 Ampoules, R-7512, K-7513 Ampoules

### Product Descriptions:

*Vacu-vials Ampoules:* Sealed glass ampoules, 13 mm OD, for instrumental colorimetric water analysis. Each Vacu-vial™ ampoule contains approximately 2 mL of liquid reagent sealed under vacuum. Test kits contain 30 ampoules.

*CHEMets Refills:* Sealed glass ampoules, 7 mm OD, for visual colorimetric water analysis. Each CHEMet™ ampoule contains approximately 0.5 mL of liquid reagent sealed under vacuum. Refills contain 30 ampoules, test kits contain 1 refill.

### Addendum to Section 14 Transport Information:

Shipping container markings and labels for this product, as received, may vary from the contents of section 14 of the SDS for one or both of the following reasons:

- CHEMetrics has packaged this product as Dangerous Goods in Excepted Quantities according to IATA, US DOT, and IMDG regulations.
- CHEMetrics has packaged this product as part of a test kit or reagent set composed of various chemical reagents and elected to ship as UN 3316 Chemical Kit, Hazard Class 9, Packing Group II or III.

In case of reshipment, it is the responsibility of the shipper to determine appropriate labels and markings in accordance with applicable transportation regulations.

### Additional Information:

- "Print Date" = Revision Date (expressed as DD/MM/YYYY)
- Test kits and reagents sets may contain additional chemical reagents. See separate SDS(s).

*CHEMets®, VACUettes®, Vacu-vials®, and Titrets® are registered trademarks of CHEMetrics Inc.*



## Dissolved Oxygen Vacu-vials Ampoules & CHEMets Refill

CHEMetrics, Inc.

Chemwatch: 9-87558  
SDS No: K7503  
Version No: 2.3  
Safety Data Sheet according to OSHA HazCom Standard (2012) requirements

Chemwatch Hazard Alert Code: 2

Issue Date: 18/11/2014  
Print Date: 12/03/2015  
Initial Date: 21/11/2014  
S.GHS.USA.EN

### SECTION 1 IDENTIFICATION OF THE SUBSTANCE / MIXTURE AND OF THE COMPANY / UNDERTAKING

#### Product Identifier

Product name	Dissolved Oxygen Vacu-vials Ampoules & CHEMets Refill
Synonyms	Part Nos.: K-7503 Ampoules, R-7512, K-7513 Ampoules
Proper shipping name	Not Applicable
Chemical formula	Not Applicable
Other means of identification	Not Available
CAS number	Not Applicable

#### Relevant identified uses of the substance or mixture and uses advised against

Relevant identified uses	Component of water analysis test kits K-7503, K-7512, K-7513
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#### Details of the manufacturer/importer

Registered company name	CHEMetrics, Inc.
Address	4295 Catlett Road, Midland, VA. 22728 United States
Telephone	1-540-788-9026
Fax	1-540-788-4856
Website	www.chemetrics.com
Email	technical@chemetrics.com

#### Emergency telephone number

Association / Organisation	ChemTel Inc.
Emergency telephone numbers	1-800-255-3924
Other emergency telephone numbers	+01-813-248-0585

### SECTION 2 HAZARDS IDENTIFICATION

#### Classification of the substance or mixture

GHS Classification	Acute Toxicity (Oral) Category 4, Acute Toxicity (Dermal) Category 4, Acute Toxicity (Inhalation) Category 4, Germ Cell Mutagen Category 2
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#### Label elements

GHS label elements	
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SIGNAL WORD	<b>WARNING</b>
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#### Hazard statement(s)

H302	Harmful if swallowed
H312	Harmful in contact with skin
H332	Harmful if inhaled
H341	Suspected of causing genetic defects

#### Precautionary statement(s) Prevention

Continued...



## Dissolved Oxygen Vacu-vials Ampoules & CHEMets Refill

P101	If medical advice is needed, have product container or label at hand.
P102	Keep out of reach of children.
P103	Read label before use.
P201	Obtain special instructions before use.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P270	Do not eat, drink or smoke when using this product.

### Precautionary statement(s) Response

P308+P313	IF exposed or concerned: Get medical advice/attention.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physician/first aider/if you feel unwell.
P302+P352	IF ON SKIN: Wash with plenty of water and soap
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P330	Rinse mouth.

### Precautionary statement(s) Storage

P405	Store locked up.
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### Precautionary statement(s) Disposal

P501	Dispose of contents/container to authorised chemical landfill or if organic to high temperature incineration
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## SECTION 3 COMPOSITION / INFORMATION ON INGREDIENTS

### Substances

See section below for composition of Mixtures

### Mixtures

CAS No	%[weight]	Name
7732-18-5	>76	<a href="#">water</a>
111-46-6	22	<a href="#">diethylene glycol</a>
877-24-7	1	<a href="#">potassium hydrogen phthalate</a>
Not Available	0.1	Proprietary Ingredient
7647-01-0	0.1	<a href="#">hydrochloric acid</a>
6381-92-6	0.1	<a href="#">EDTA disodium salt dihydrate</a>
Not Available	<0.1	Proprietary ingredient
860-22-0	0.1	<a href="#">C.I. Acid Blue 74</a>

## SECTION 4 FIRST AID MEASURES

### Description of first aid measures

<b>Eye Contact</b>	<p>If this product comes in contact with the eyes:</p> <ul style="list-style-type: none"> <li>▶ Wash out immediately with fresh running water.</li> <li>▶ Ensure complete irrigation of the eye by keeping eyelids apart and away from eye and moving the eyelids by occasionally lifting the upper and lower lids.</li> <li>▶ Seek medical attention without delay; if pain persists or recurs seek medical attention.</li> <li>▶ Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.</li> </ul>
<b>Skin Contact</b>	<p>If skin contact occurs:</p> <ul style="list-style-type: none"> <li>▶ Immediately remove all contaminated clothing, including footwear.</li> <li>▶ Flush skin and hair with running water (and soap if available).</li> <li>▶ Seek medical attention in event of irritation.</li> </ul> <p>For thermal burns:</p> <ul style="list-style-type: none"> <li>▶ Decontaminate area around burn.</li> <li>▶ Consider the use of cold packs and topical antibiotics.</li> </ul> <p>For first-degree burns (affecting top layer of skin)</p> <ul style="list-style-type: none"> <li>▶ Hold burned skin under cool (not cold) running water or immerse in cool water until pain subsides.</li> <li>▶ Use compresses if running water is not available.</li> <li>▶ Cover with sterile non-adhesive bandage or clean cloth.</li> <li>▶ Do NOT apply butter or ointments; this may cause infection.</li> <li>▶ Give over-the counter pain relievers if pain increases or swelling, redness, fever occur.</li> </ul> <p>For second-degree burns (affecting top two layers of skin)</p> <ul style="list-style-type: none"> <li>▶ Cool the burn by immerse in cold running water for 10-15 minutes.</li> <li>▶ Use compresses if running water is not available.</li> <li>▶ Do NOT apply ice as this may lower body temperature and cause further damage.</li> <li>▶ Do NOT break blisters or apply butter or ointments; this may cause infection.</li> <li>▶ Protect burn by cover loosely with sterile, nonstick bandage and secure in place with gauze or tape.</li> </ul> <p>To prevent shock: (unless the person has a head, neck, or leg injury, or it would cause discomfort):</p> <ul style="list-style-type: none"> <li>▶ Lay the person flat.</li> <li>▶ Elevate feet about 12 inches.</li> <li>▶ Elevate burn area above heart level, if possible.</li> <li>▶ Cover the person with coat or blanket.</li> </ul>

Continued...

## Dissolved Oxygen Vacu-vials Ampoules & CHEMets Refill

	<ul style="list-style-type: none"> <li>▶ Seek medical assistance.</li> </ul> <p>For third-degree burns Seek immediate medical or emergency assistance. In the mean time:</p> <ul style="list-style-type: none"> <li>▶ Protect burn area cover loosely with sterile, nonstick bandage or, for large areas, a sheet or other material that will not leave lint in wound.</li> <li>▶ Separate burned toes and fingers with dry, sterile dressings.</li> <li>▶ Do not soak burn in water or apply ointments or butter; this may cause infection.</li> <li>▶ To prevent shock see above.</li> <li>▶ For an airway burn, do not place pillow under the person's head when the person is lying down. This can close the airway.</li> <li>▶ Have a person with a facial burn sit up.</li> <li>▶ Check pulse and breathing to monitor for shock until emergency help arrives.</li> </ul>
<b>Inhalation</b>	<ul style="list-style-type: none"> <li>▶ If fumes or combustion products are inhaled remove from contaminated area.</li> <li>▶ Lay patient down. Keep warm and rested.</li> <li>▶ Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.</li> <li>▶ Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.</li> <li>▶ Transport to hospital, or doctor.</li> </ul>
<b>Ingestion</b>	<ul style="list-style-type: none"> <li>▶ <b>IF SWALLOWED, REFER FOR MEDICAL ATTENTION, WHERE POSSIBLE, WITHOUT DELAY.</b></li> <li>▶ For advice, contact a Poisons Information Centre or a doctor.</li> <li>▶ Urgent hospital treatment is likely to be needed.</li> <li>▶ In the mean time, qualified first-aid personnel should treat the patient following observation and employing supportive measures as indicated by the patient's condition.</li> <li>▶ If the services of a medical officer or medical doctor are readily available, the patient should be placed in his/her care and a copy of the MSDS should be provided. Further action will be the responsibility of the medical specialist.</li> <li>▶ If medical attention is not available on the worksite or surroundings send the patient to a hospital together with a copy of the MSDS.</li> </ul> <p><b>Where medical attention is not immediately available or where the patient is more than 15 minutes from a hospital or unless instructed otherwise:</b></p> <ul style="list-style-type: none"> <li>▶ <b>INDUCE</b> vomiting with fingers down the back of the throat, <b>ONLY IF CONSCIOUS</b>. Lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.</li> </ul> <p><b>NOTE:</b> Wear a protective glove when inducing vomiting by mechanical means.</p>

### Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

- ▶ Polyethylene glycols are generally poorly absorbed orally and are mostly unchanged by the kidney.
- ▶ Dermal absorption can occur across damaged skin (e.g. through burns) leading to increased osmolality, anion gap metabolic acidosis, elevated calcium, low ionised calcium, CNS depression and renal failure.
- ▶ Treatment consists of supportive care.

[Ellenhorn and Barceloux: Medical Toxicology]

## SECTION 5 FIREFIGHTING MEASURES

### Extinguishing media

	<p>The product contains a substantial proportion of water, therefore there are no restrictions on the type of extinguishing media which may be used. Choice of extinguishing media should take into account surrounding areas.</p> <p>Though the material is non-combustible, evaporation of water from the mixture, caused by the heat of nearby fire, may produce floating layers of combustible substances.</p> <p>In such an event consider:</p> <ul style="list-style-type: none"> <li>▶ foam.</li> <li>▶ dry chemical powder.</li> </ul>
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### Special hazards arising from the substrate or mixture

<b>Fire Incompatibility</b>	None known.
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### Advice for firefighters

<b>Fire Fighting</b>	<ul style="list-style-type: none"> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear breathing apparatus plus protective gloves in the event of a fire.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water courses.</li> <li>▶ Use fire fighting procedures suitable for surrounding area.</li> <li>▶ <b>DO NOT</b> approach containers suspected to be hot.</li> </ul>
<b>Fire/Explosion Hazard</b>	<ul style="list-style-type: none"> <li>▶ The material is not readily combustible under normal conditions.</li> <li>▶ However, it will break down under fire conditions and the organic component may burn.</li> <li>▶ Not considered to be a significant fire risk.</li> <li>▶ Heat may cause expansion or decomposition with violent rupture of containers.</li> <li>▶ Decomposes on heating and may produce toxic fumes of carbon monoxide (CO).</li> </ul>

## SECTION 6 ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

<b>Minor Spills</b>	<ul style="list-style-type: none"> <li>▶ Clean up all spills immediately.</li> <li>▶ Avoid breathing vapours and contact with skin and eyes.</li> <li>▶ Control personal contact with the substance, by using protective equipment.</li> <li>▶ Contain and absorb spill with sand, earth, inert material or vermiculite.</li> <li>▶ Wipe up.</li> </ul>
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## Dissolved Oxygen Vacu-vials Ampoules &amp; CHEMets Refill

<b>Major Spills</b>	<p>Moderate hazard.</p> <ul style="list-style-type: none"> <li>▶ Clear area of personnel and move upwind.</li> <li>▶ Alert Fire Brigade and tell them location and nature of hazard.</li> <li>▶ Wear breathing apparatus plus protective gloves.</li> <li>▶ Prevent, by any means available, spillage from entering drains or water course.</li> </ul>
	Personal Protective Equipment advice is contained in Section 8 of the MSDS.

## SECTION 7 HANDLING AND STORAGE

## Precautions for safe handling

<b>Safe handling</b>	<ul style="list-style-type: none"> <li>▶ Avoid all personal contact, including inhalation.</li> <li>▶ Wear protective clothing when risk of exposure occurs.</li> <li>▶ Use in a well-ventilated area.</li> <li>▶ Prevent concentration in hollows and sumps.</li> <li>▶ <b>DO NOT enter confined spaces until atmosphere has been checked.</b></li> </ul> <p><b>Wear impact- and splash-resistant eyewear. Break the ampoule tip only when it is completely immersed in sample. Breaking the tip in air may cause the glass ampoule to shatter.</b></p>
<b>Other information</b>	<b>For optimum analytical performance, store in the dark and at room temperature.</b>

## Conditions for safe storage, including any incompatibilities

<b>Suitable container</b>	<ul style="list-style-type: none"> <li>▶ Polyethylene or polypropylene container.</li> <li>▶ Packing as recommended by manufacturer.</li> <li>▶ Check all containers are clearly labelled and free from leaks.</li> </ul>
<b>Storage incompatibility</b>	<ul style="list-style-type: none"> <li>▶ Glycols and their ethers undergo violent decomposition in contact with 70% perchloric acid. This seems likely to involve formation of the glycol perchlorate esters (after scission of ethers) which are explosive, those of ethylene glycol and 3-chloro-1,2-propanediol being more powerful than glyceryl nitrate, and the former so sensitive that it explodes on addition of water.</li> </ul> <p>Hydrogen chloride:</p> <ul style="list-style-type: none"> <li>▶ reacts strongly with strong oxidisers (releasing chlorine gas), acetic anhydride, caesium cyanotridecahydrodecaborate(2-), ethylidene difluoride, hexalithium disilicide, metal acetylides, sodium, silicon dioxide, tetraselenium tetranitride, and many organic materials</li> <li>▶ is incompatible with alkaline materials, acetic anhydride, acetylides, aliphatic amines, alkanolamines, alkylene oxides, aluminium, aluminium-titanium alloys, aromatic amines, amines, amides, 2-aminoethanol, ammonia, ammonium hydroxide, borides, calcium phosphide, carbides, carbonates, cyanides, chlorosulfonic acid, ethylenediamine, ethyleneimine, epichlorohydrin, formaldehyde, isocyanates, metals, metal oxides, metal hydroxides, metal acetylides, metal carbides, oleum, organic anhydrides, potassium permanganate, perchloric acid, phosphides, 3-propiolactone, silicides, sulfides, sulfites, sulfuric acid, uranium phosphide, vinyl acetate, vinylidene fluoride</li> <li>▶ attacks most metals forming flammable hydrogen gas, and some plastics, rubbers and coatings</li> <li>▶ reacts with zinc, brass, galvanised iron, aluminium, copper and copper alloys</li> </ul> <p>Alcohols</p> <ul style="list-style-type: none"> <li>▶ are incompatible with strong acids, acid chlorides, acid anhydrides, oxidising and reducing agents.</li> <li>▶ reacts, possibly violently, with alkaline metals and alkaline earth metals to produce hydrogen</li> <li>▶ react with strong acids, strong caustics, aliphatic amines, isocyanates, acetaldehyde, benzoyl peroxide, chromic acid, chromium oxide, dialkylzincs, dichlorine oxide, ethylene oxide, hypochlorous acid, isopropyl chlorocarbonate, lithium tetrahydroaluminate, nitrogen dioxide, pentafluoroguanidine, phosphorus halides, phosphorus pentasulfide, tangerine oil, triethylaluminium, triisobutylaluminium</li> <li>▶ should not be heated above 49 deg. C. when in contact with aluminium equipment</li> <li>▶ Avoid strong acids, bases.</li> </ul>

## PACKAGE MATERIAL INCOMPATIBILITIES

Not Available

## SECTION 8 EXPOSURE CONTROLS / PERSONAL PROTECTION

## Control parameters

## OCCUPATIONAL EXPOSURE LIMITS (OEL)

## INGREDIENT DATA

Source	Ingredient	Material name	TWA	STEL	Peak	Notes
US OSHA Permissible Exposure Levels (PELs) - Table Z1	hydrochloric acid	Hydrogen chloride	Not Available	Not Available	7 mg/m3 / 5 ppm	Not Available
US ACGIH Threshold Limit Values (TLV)	hydrochloric acid	Hydrogen chloride	Not Available	Not Available	2 ppm	TLV® Basis: URT irr
US NIOSH Recommended Exposure Limits (RELs)	hydrochloric acid	Anhydrous hydrogen chloride; Aqueous hydrogen chloride (i.e., Hydrochloric acid, Muriatic acid) [Note: Often used in an aqueous solution.]	Not Available	Not Available	7 mg/m3 / 5 ppm	Not Available

## EMERGENCY LIMITS

Ingredient	Material name	TEEL-1	TEEL-2	TEEL-3
diethylene glycol	Diethylene glycol	6.9155 ppm	80 ppm	250 ppm
potassium hydrogen phthalate	Hydrogen potassium phthalate; (Phthalic acid, monopotassium salt; Potassium acid phthalate; Potassium biphthalate)	9.6 mg/m3	110 mg/m3	630 mg/m3
hydrochloric acid	Hydrogen chloride; (Hydrochloric acid)	Not Available	Not Available	Not Available
hydrochloric acid	Deuteriochloric acid; (Deuterium chloride)	1.8 ppm	22 ppm	100 ppm
EDTA disodium salt dihydrate	Ethylenediaminetetraacetic acid, disodium salt	11 mg/m3	120 mg/m3	400 mg/m3


Continued...

## Dissolved Oxygen Vacu-vials Ampoules &amp; CHEMets Refill

EDTA disodium salt dihydrate	Ethylenediaminetetraacetic acid, disodium salt, dihydrate	30 mg/m3	330 mg/m3	2000 mg/m3
C.I. Acid Blue 74	Indigo carmine; (FD&C blue No 2)	0.23 mg/m3	2.6 mg/m3	37 mg/m3

Ingredient	Original IDLH	Revised IDLH
water	Not Available	Not Available
diethylene glycol	Not Available	Not Available
potassium hydrogen phthalate	Not Available	Not Available
Proprietary Ingredient	Not Available	Not Available
hydrochloric acid	100 ppm	50 ppm
EDTA disodium salt dihydrate	Not Available	Not Available
Proprietary ingredient	Not Available	Not Available
C.I. Acid Blue 74	Not Available	Not Available

## Exposure controls

<b>Appropriate engineering controls</b>	<p>Engineering controls are used to remove a hazard or place a barrier between the worker and the hazard. Well-designed engineering controls can be highly effective in protecting workers and will typically be independent of worker interactions to provide this high level of protection.</p> <p>The basic types of engineering controls are:</p> <p>Process controls which involve changing the way a job activity or process is done to reduce the risk.</p> <p>Enclosure and/or isolation of emission source which keeps a selected hazard "physically" away from the worker and ventilation that strategically "adds" and "removes" air in the work environment. Ventilation can remove or dilute an air contaminant if designed properly.</p>
<b>Personal protection</b>	
<b>Eye and face protection</b>	<ul style="list-style-type: none"> <li>▶ Safety glasses with side shields</li> <li>▶ Chemical goggles.</li> <li>▶ Contact lenses may pose a special hazard; soft contact lenses may absorb and concentrate irritants. A written policy document, describing the wearing of lenses or restrictions on use, should be created for each workplace or task. This should include a review of lens absorption and adsorption for the class of chemicals in use and an account of injury experience. Medical and first-aid personnel should be trained in their removal and suitable equipment should be readily available.</li> </ul>
<b>Skin protection</b>	See Hand protection below
<b>Hands/feet protection</b>	<ul style="list-style-type: none"> <li>▶ Wear chemical protective gloves, e.g. PVC.</li> <li>▶ Wear safety footwear or safety gumboots, e.g. Rubber</li> </ul> <p>The selection of suitable gloves does not only depend on the material, but also on further marks of quality which vary from manufacturer to manufacturer. Where the chemical is a preparation of several substances, the resistance of the glove material can not be calculated in advance and has therefore to be checked prior to the application.</p> <p>The exact break through time for substances has to be obtained from the manufacturer of the protective gloves and has to be observed when making a final choice.</p> <p>Suitability and durability of glove type is dependent on usage.</p>
<b>Body protection</b>	See Other protection below
<b>Other protection</b>	<ul style="list-style-type: none"> <li>▶ Overalls.</li> <li>▶ P.V.C. apron.</li> <li>▶ Barrier cream.</li> <li>▶ Skin cleansing cream.</li> </ul>
<b>Thermal hazards</b>	Not Available

## Recommended material(s)

## GLOVE SELECTION INDEX

Glove selection is based on a modified presentation of the: "Forsberg Clothing Performance Index".

The effect(s) of the following substance(s) are taken into account in the **computer-generated** selection:

Dissolved Oxygen Vacu-vials Ampoules & CHEMets Refill

Material	CPI
BUTYL	A
BUTYL/NEOPRENE	C
HYPALON	C
NAT+NEOPR+NITRILE	C
NATURAL RUBBER	C
NATURAL+NEOPRENE	C
NEOPRENE	C
NEOPRENE/NATURAL	C
NITRILE	C
NITRILE+PVC	C
PE/EVAL/PE	C
PVA	C
PVC	C

## Respiratory protection

Type BAX-P Filter of sufficient capacity. (AS/NZS 1716 & 1715, EN 143:2000 & 149:2001, ANSI Z88 or national equivalent)

Where the concentration of gas/particulates in the breathing zone, approaches or exceeds the "Exposure Standard" (or ES), respiratory protection is required.

Degree of protection varies with both face-piece and Class of filter; the nature of protection varies with Type of filter.

Required Minimum Protection Factor	Half-Face Respirator	Full-Face Respirator	Powered Air Respirator
up to 10 x ES	BAX-AUS P2	-	BAX-PAPR-AUS / Class 1 P2
up to 50 x ES	-	BAX-AUS / Class 1 P2	-
up to 100 x ES	-	BAX-2 P2	BAX-PAPR-2 P2 ^

^ - Full-face

A(All classes) = Organic vapours, B AUS or B1 = Acid gasses, B2 = Acid gas or hydrogen cyanide(HCN), B3 = Acid gas or hydrogen cyanide(HCN), E = Sulfur dioxide(SO2), G = Agricultural chemicals, K = Ammonia(NH3), Hg = Mercury, NO = Oxides of nitrogen, MB = Methyl bromide, AX = Low boiling point organic compounds(below 65 degC)

## Dissolved Oxygen Vacu-vials Ampoules & CHEMets Refill

SARANEX-23	C
VITON	C
VITON/NEOPRENE	C

\* CPI - Chemwatch Performance Index

A: Best Selection

B: Satisfactory; may degrade after 4 hours continuous immersion

C: Poor to Dangerous Choice for other than short term immersion

**NOTE:** As a series of factors will influence the actual performance of the glove, a final selection must be based on detailed observation. -

\* Where the glove is to be used on a short term, casual or infrequent basis, factors such as "feel" or convenience (e.g. disposability), may dictate a choice of gloves which might otherwise be unsuitable following long-term or frequent use. A qualified practitioner should be consulted.

### SECTION 9 PHYSICAL AND CHEMICAL PROPERTIES

#### Information on basic physical and chemical properties

<b>Appearance</b>	Yellow to pale green		
<b>Physical state</b>	Liquid	<b>Relative density (Water = 1)</b>	1.01
<b>Odour</b>	Odourless	<b>Partition coefficient n-octanol / water</b>	Not Available
<b>Odour threshold</b>	Not Available	<b>Auto-ignition temperature (°C)</b>	Not Available
<b>pH (as supplied)</b>	3.5	<b>Decomposition temperature</b>	Not Available
<b>Melting point / freezing point (°C)</b>	-1	<b>Viscosity (cSt)</b>	Not Available
<b>Initial boiling point and boiling range (°C)</b>	110	<b>Molecular weight (g/mol)</b>	Not Available
<b>Flash point (°C)</b>	Not Applicable	<b>Taste</b>	Not Available
<b>Evaporation rate</b>	Not Available	<b>Explosive properties</b>	Not Available
<b>Flammability</b>	Not Applicable	<b>Oxidising properties</b>	Not Available
<b>Upper Explosive Limit (%)</b>	Not Available	<b>Surface Tension (dyn/cm or mN/m)</b>	Not Available
<b>Lower Explosive Limit (%)</b>	Not Available	<b>Volatile Component (%vol)</b>	Not Available
<b>Vapour pressure (kPa)</b>	Not Available	<b>Gas group</b>	Not Available
<b>Solubility in water (g/L)</b>	Miscible	<b>pH as a solution</b>	Not Available
<b>Vapour density (Air = 1)</b>	Not Available	<b>VOC g/L</b>	Not Available

### SECTION 10 STABILITY AND REACTIVITY

<b>Reactivity</b>	See section 7
<b>Chemical stability</b>	<ul style="list-style-type: none"> <li>▶ Unstable in the presence of incompatible materials.</li> <li>▶ Product is considered stable.</li> <li>▶ Hazardous polymerisation will not occur.</li> </ul>
<b>Possibility of hazardous reactions</b>	See section 7
<b>Conditions to avoid</b>	See section 7
<b>Incompatible materials</b>	See section 7
<b>Hazardous decomposition products</b>	See section 5

### SECTION 11 TOXICOLOGICAL INFORMATION

#### Information on toxicological effects

<b>Inhaled</b>	Inhalation of vapours or aerosols (mists, fumes), generated by the material during the course of normal handling, may be harmful. The material is not thought to produce respiratory irritation (as classified by EC Directives using animal models). Nevertheless inhalation of vapours, fumes or aerosols, especially for prolonged periods, may produce respiratory discomfort and occasionally, distress. Aliphatic alcohols with more than 3-carbons cause headache, dizziness, drowsiness, muscle weakness and delirium, central depression, coma, seizures and behavioural changes. Secondary respiratory depression and failure, as well as low blood pressure and irregular heart rhythms, may follow.
<b>Ingestion</b>	Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. If swallowed, the toxic effects of glycols (dihydric alcohols) are similar to those of alcohol, with depression of the central nervous system, nausea, vomiting, and degenerative changes in the liver and kidney. Overexposure to non-ring alcohols causes nervous system symptoms. These include headache, muscle weakness and inco-ordination, giddiness, confusion, delirium and coma.
<b>Skin Contact</b>	Skin contact with the material may be harmful; systemic effects may result following absorption. The material is not thought to be a skin irritant (as classified by EC Directives using animal models). Temporary discomfort, however, may result from prolonged dermal exposures. Most liquid alcohols appear to act as primary skin irritants in humans. Significant percutaneous absorption occurs in rabbits but not apparently in man.

Continued...

## Dissolved Oxygen Vacu-vials Ampoules &amp; CHEMets Refill

<b>Eye</b>	Although the liquid is not thought to be an irritant (as classified by EC Directives), direct contact with the eye may produce transient discomfort characterised by tearing or conjunctival redness (as with windburn).
<b>Chronic</b>	Strong evidence exists that this substance may cause irreversible mutations (though not lethal) even following a single exposure. Laboratory (in vitro) and animal studies show, exposure to the material may result in a possible risk of irreversible effects, with the possibility of producing mutation. Substance accumulation, in the human body, may occur and may cause some concern following repeated or long-term occupational exposure. Chronic minor exposure to hydrogen chloride (HCl) vapour or fume may cause discolouration or erosion of the teeth, bleeding of the nose and gums; and ulceration of the nasal mucous membranes. Repeated exposures of animals to concentrations of about 34 ppm HCl produced no immediate toxic effects.

<b>Dissolved Oxygen Vacu-vials Ampoules &amp; CHEMets Refill</b>	<b>TOXICITY</b>	<b>IRRITATION</b>
<b>Dissolved Oxygen Vacu-vials Ampoules &amp; CHEMets Refill</b>	<b>TOXICITY</b>	<b>IRRITATION</b>

<b>DIETHYLENE GLYCOL</b>	The material may cause skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, the production of vesicles, scaling and thickening of the skin.
<b>Dissolved Oxygen Vacu-vials Ampoules &amp; CHEMets Refill, WATER</b>	No significant acute toxicological data identified in literature search.
<b>POTASSIUM HYDROGEN PHTHALATE, HYDROCHLORIC ACID</b>	Asthma-like symptoms may continue for months or even years after exposure to the material ceases. This may be due to a non-allergenic condition known as reactive airways dysfunction syndrome (RADS) which can occur following exposure to high levels of highly irritating compound. Key criteria for the diagnosis of RADS include the absence of preceding respiratory disease, in a non-atopic individual, with abrupt onset of persistent asthma-like symptoms within minutes to hours of a documented exposure to the irritant. A reversible airflow pattern, on spirometry, with the presence of moderate to severe bronchial hyperreactivity on methacholine challenge testing and the lack of minimal lymphocytic inflammation, without eosinophilia, have also been included in the criteria for diagnosis of RADS. RADS (or asthma) following an irritating inhalation is an infrequent disorder with rates related to the concentration of and duration of exposure to the irritating substance.
<b>EDTA DISODIUM SALT DIHYDRATE, C.I. ACID BLUE 74</b>	The following information refers to contact allergens as a group and may not be specific to this product. Contact allergies quickly manifest themselves as contact eczema, more rarely as urticaria or Quincke's oedema. The pathogenesis of contact eczema involves a cell-mediated (T lymphocytes) immune reaction of the delayed type. Other allergic skin reactions, e.g. contact urticaria, involve antibody-mediated immune reactions. The significance of the contact allergen is not simply determined by its sensitisation potential: the distribution of the substance and the opportunities for contact with it are equally important.

<b>Acute Toxicity</b>	✓	<b>Carcinogenicity</b>	⊘
<b>Skin Irritation/Corrosion</b>	⊘	<b>Reproductivity</b>	⊘
<b>Serious Eye Damage/Irritation</b>	⊘	<b>STOT - Single Exposure</b>	⊘
<b>Respiratory or Skin sensitisation</b>	⊘	<b>STOT - Repeated Exposure</b>	⊘
<b>Mutagenicity</b>	✓	<b>Aspiration Hazard</b>	⊘

**Legend:** ✓ – Data required to make classification available  
 ✗ – Data available but does not fill the criteria for classification  
 ⊘ – Data Not Available to make classification

## CMR STATUS

<b>EYE</b>	hydrochloric acid	US - California OEHHA/ARB - Acute Reference Exposure Levels and Target Organs (RELS) - Eye	HYDROCHLORIC ACID (Hydrogen chloride)X
<b>RESPIRATORY</b>	hydrochloric acid	US - California OEHHA/ARB - Acute Reference Exposure Levels and Target Organs (RELS) - Respiratory/US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELS) - Respiratory	X

## SECTION 12 ECOLOGICAL INFORMATION

## Toxicity

**DO NOT** discharge into sewer or waterways.

## Persistence and degradability

Ingredient	Persistence: Water/Soil	Persistence: Air
water	LOW	LOW
diethylene glycol	LOW	LOW
hydrochloric acid	LOW	LOW
EDTA disodium salt dihydrate	LOW	LOW
Proprietary ingredient	LOW	LOW
C.I. Acid Blue 74	HIGH	HIGH

Continued...

## Dissolved Oxygen Vacu-vials Ampoules &amp; CHEMets Refill

## Bioaccumulative potential

Ingredient	Bioaccumulation
water	LOW (LogKOW = -1.38)
diethylene glycol	LOW (BCF = 180)
hydrochloric acid	LOW (LogKOW = 0.5392)
EDTA disodium salt dihydrate	LOW (LogKOW = -3.8573)
Proprietary ingredient	LOW (LogKOW = -1.8799)
C.I. Acid Blue 74	LOW (LogKOW = -0.9914)

## Mobility in soil

Ingredient	Mobility
water	LOW (KOC = 14.3)
diethylene glycol	HIGH (KOC = 1)
hydrochloric acid	LOW (KOC = 14.3)
EDTA disodium salt dihydrate	LOW (KOC = 1046)
Proprietary ingredient	LOW (KOC = 10)
C.I. Acid Blue 74	LOW (KOC = 99.07)

## SECTION 13 DISPOSAL CONSIDERATIONS

## Waste treatment methods

Product / Packaging disposal	Dispose of according to federal, state, and local regulations.

## SECTION 14 TRANSPORT INFORMATION

## Labels Required

Marine Pollutant	NO

Land transport (DOT): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Air transport (ICAO-IATA / DGR): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Sea transport (IMDG-Code / GGVSee): NOT REGULATED FOR TRANSPORT OF DANGEROUS GOODS

Transport in bulk according to Annex II of MARPOL 73 / 78 and the IBC code

Source	Ingredient	Pollution Category
IMO MARPOL 73/78 (Annex II) - List of Noxious Liquid Substances Carried in Bulk	hydrochloric acid	Z

## SECTION 15 REGULATORY INFORMATION

## Safety, health and environmental regulations / legislation specific for the substance or mixture

water(7732-18-5) is found on the following regulatory lists	"US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"
diethylene glycol(111-46-6) is found on the following regulatory lists	"US AIHA Workplace Environmental Exposure Levels (WEELs)", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"
potassium hydrogen phthalate(877-24-7) is found on the following regulatory lists	"US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"
Proprietary Ingredient() is found on the following regulatory lists	"Not Applicable"
hydrochloric acid(7647-01-0) is found on the following regulatory lists	"US - Tennessee Occupational Exposure Limits - Limits For Air Contaminants", "US - Idaho - Limits for Air Contaminants", "US - Hawaii Air Contaminant Limits", "US - California Permissible Exposure Limits for Chemical Contaminants", "US ACGIH Threshold Limit Values (TLV) - Carcinogens", "US - Vermont Permissible Exposure Limits Table Z-1-A Final Rule Limits for Air Contaminants", "US - Oregon Permissible Exposure Limits (Z-1)", "US - Michigan Exposure Limits for Air Contaminants", "International Agency for Research on Cancer (IARC) - Agents Classified by the IARC Monographs", "US - Washington Toxic air pollutants and their ASIL, SQER and de minimis emission values", "US - California OEHHA/ARB - Acute Reference Exposure Levels and Target Organs (RELs)", "US NIOSH Recommended Exposure Limits (RELs)", "US - Alaska Limits for Air Contaminants", "US - Washington Permissible exposure limits of air contaminants", "US Spacecraft Maximum Allowable Concentrations (SMACs) for Airborne Contaminants", "US - Minnesota Permissible Exposure Limits (PELs)", "US - California OEHHA/ARB - Chronic Reference Exposure Levels and Target Organs (CRELs)", "US ACGIH Threshold Limit Values (TLV)", "US - Vermont Permissible Exposure Limits Table Z-1-A Transitional Limits for Air Contaminants", "US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory", "US - Wyoming Toxic and Hazardous Substances Table Z1 Limits for Air Contaminants", "US OSHA Permissible Exposure Levels (PELs) - Table Z1"

## Dissolved Oxygen Vacu-vials Ampoules &amp; CHEMets Refill

EDTA disodium salt dihydrate(6381-92-6) is found on the following regulatory lists	"US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"
Proprietary ingredient() is found on the following regulatory lists	"Not Applicable"
C.I. Acid Blue 74(860-22-0) is found on the following regulatory lists	"US Toxic Substances Control Act (TSCA) - Chemical Substance Inventory"

## SECTION 16 OTHER INFORMATION

## Other information

## Ingredients with multiple cas numbers

Name	CAS No
Not Available	Not Available

Classification of the preparation and its individual components has drawn on official and authoritative sources as well as independent review by the Chemwatch Classification committee using available literature references.

A list of reference resources used to assist the committee may be found at:

[www.chemwatch.net/references](http://www.chemwatch.net/references)

The (M)SDS is a Hazard Communication tool and should be used to assist in the Risk Assessment. Many factors determine whether the reported Hazards are Risks in the workplace or other settings. Risks may be determined by reference to Exposures Scenarios. Scale of use, frequency of use and current or available engineering controls must be considered.

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BTIproductsLLC

Safety Data Sheet

**Section 1: Identification**

Product Name: MICtreat® FPS Chemical  
Product Code: MICtreat® FPS Chemical

Manufacturer: BTI Products, LLC.  
652 Silver Hills Road  
Bayfield, Colorado 81122  
USA

Telephone: (970) 884-4629  
Website: [www.bti-labs.com](http://www.bti-labs.com)  
Email: [products@bti-labs.com](mailto:products@bti-labs.com)

Emergency Phone: (800) 262-8200 CHEMTREC

Recommended Use: For use in Microbiological Corrosion Prevention and Treatment

Restrictions on Use: Use only as directed on instructions

**Section 2: Hazardous Component Identification**

United States (US)  
According to OSHA 1910.1200

**Components: (see following individual SDS for detailed information)**

<u>Chemical Ingredients:</u>	<u>Percentage:</u>
➤ Tolcide PS70 AF	100%

**Section 3: Composition/Information on Ingredients**

See following individual SDS for detailed information

**Section 4: First-Aid Measures**

See following individual SDS for detailed information

**Section 5: Fire-Fighting Measures**

See following individual SDS for detailed information

**Section 6: Accidental Release Measures**

See following individual SDS for detailed information

**Section 7: Handling and Storage**

See following individual SDS for detailed information

**Section 8: Exposure Controls/ Personal Protection**

See following individual SDS for detailed information

**Section 9: Physical and Chemical Properties**

See following individual SDS for detailed information

**Section 10: Stability and Reactivity**

See following individual SDS for detailed information

**Section 11: Toxicological Information**

See following individual SDS for detailed information

**Section 12: Ecological Information**

See following individual SDS for detailed information

**Section 13: Disposal Considerations**

See following individual SDS for detailed information

**Section 14: Transport Information**

See following individual SDS for detailed information

**Section 15: Regulatory Information**

MICtreat® FPS Chemical

See following individual SDS for detailed information

<b>Section 16: Other Information</b>
--------------------------------------

Date of Last Revision: May 2, 2019

Preparation Date: April 15, 2016

Disclaimer: BTI Products, LLC. Disclaims any expressed or implied warranty of merchantability or fitness of its products for any other purpose than described in its technical literature and in no event shall BTI Products, LLC. be liable for any consequential damages arising from use of this product.

## SAFETY DATA SHEET

**TOLCIDE PS70AF**

Revision: 1.00 US ( EN )

Issuing date: 02/24/2015

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifier**

Trade name : TOLCIDE PS70AF

FIFRA Registration number : 4564-19

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Uses of the Substance / Mixture : Specific use(s): FIFRA regulated use only., Biocidal product

**1.3 Details of the supplier of the safety data sheet**

Company : Solvay USA Inc.,  
NOVECARE  
8 Cedar Brook Drive  
Cranbury, NJ, 08512-7500, US  
Telephone number: 800-973-7873

**1.4 Emergency telephone**

FOR EMERGENCIES INVOLVING A SPILL, LEAK, FIRE, EXPOSURE OR ACCIDENT CONTACT: CHEMTREC 800-424-9300 within the United States and Canada, or 703-527-3887 for international collect calls.

**SECTION 2: Hazards identification**

Although OSHA has not adopted the environmental portion of the GHS regulations, this document may include information on environmental effects.

**2.1 Classification of the substance or mixture****HCS 2012 (29 CFR 1910.1200)**

Acute toxicity, Category 4

Acute toxicity, Category 3

Serious eye damage, Category 1

Skin sensitization, Category 1

Reproductive toxicity, Category 2

H302: Harmful if swallowed.

H331: Toxic if inhaled.

H318: Causes serious eye damage.

H317: May cause an allergic skin reaction.

H361: Suspected of damaging fertility or the unborn child.

**2.2 Label elements****HCS 2012 (29 CFR 1910.1200)**

Pictogram



## SAFETY DATA SHEET



## TOLCIDE PS70AF

Revision: 1.00 US ( EN )

Issuing date: 02/24/2015

Signal Word : Danger

**Hazard Statements:**

H302 Harmful if swallowed.  
 H317 May cause an allergic skin reaction.  
 H318 Causes serious eye damage.  
 H331 Toxic if inhaled.  
 H361 Suspected of damaging fertility or the unborn child.

**Precautionary Statements:**

## Prevention

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/ vapors/ spray.  
 P264 Wash skin thoroughly after handling.  
 P270 Do not eat, drink or smoke when using this product.  
 P271 Use only outdoors or in a well-ventilated area.  
 P272 Contaminated work clothing must not be allowed out of the workplace.  
 P280 Wear eye protection/ face protection.  
 P280 Wear protective gloves.  
 P281 Use personal protective equipment as required.

## Response

P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/ physician if you feel unwell.  
 P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
 P304 + P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.  
 P305 + P351 + P338 IF IN EYES: Rinse cautiously 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.  
 P310 Immediately call a POISON CENTER or doctor/ physician.  
 P330 Rinse mouth.  
 P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
 P363 Wash contaminated clothing before reuse.

## Storage

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
 P405 Store locked up.


## Disposal

P501 Dispose of contents/ container to an approved waste disposal plant.

**2.3 Other hazards which do not result in classification**

H400: Very toxic to aquatic life.  
 H411: Toxic to aquatic life with long lasting effects.

Possible damage to liver following repeated or prolonged exposure by ingestion.

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### SECTION 3: Composition/information on ingredients

#### 3.1 Substance

Not applicable, this product is a mixture.

#### 3.2 Mixture

Chemical nature : Aqueous solution

#### Hazardous Ingredients and Impurities


Chemical Name	Identification number CAS-No.	Concentration [%]
Tetrakis(Hydroxymethyl) Phosphonium Sulfate	55566-30-8	70
Co-Polymer Containing Phosphonic, Sulphonic And Carboxylic Acid Groups	397256-50-7	< 5

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

### SECTION 4: First aid measures

#### 4.1 Description of first-aid measures

- General advice : Show this material safety data sheet to the doctor in attendance.  
First responder needs to protect himself.  
Place affected apparel in a sealed bag for subsequent decontamination.  
Plan first aid action before beginning work with this product.  
In the case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- If inhaled : Move to fresh air.  
Keep at rest.  
Consult a physician.
- Skin contact : Take off contaminated clothing and shoes immediately.  
Wash off with plenty of water.  
Wash immediately and thoroughly for a prolonged period (at least 15 minutes).  
Get medical attention if irritation develops and persists.
- Eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Get immediate medical advice/ attention.
- Ingestion : Do not induce vomiting without medical advice.  
If victim is conscious:  
Rinse mouth with water.  
Keep at rest.  
Never give anything by mouth to an unconscious person.  
Do not leave the victim unattended.  
Vomiting may occur spontaneously  
Risk of product entering the lungs on vomiting after ingestion.

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Lay victim on side.  
Consult a physician if necessary.

#### **4.2 Most important symptoms and effects, both acute and delayed**

- Symptoms : Lachrymation  
Ingestion may provoke the following symptoms:  
Nausea  
Liver disorders
- Risks : Skin contact may aggravate existing skin disease

#### **4.3 Indication of any immediate medical attention and special treatment needed**

- Notes to physician : All treatments should be based on observed signs and symptoms of distress in the patient. Consideration should be given to the possibility that overexposure to materials other than this product may have occurred.
- Treat symptomatically.  
There is no specific antidote available.

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#### **SECTION 5: Firefighting measures**


- Flash point : Not applicable (aqueous liquid).
- Autoignition temperature : no data available
- Flammability / Explosive limit : no data available

#### **5.1 Extinguishing media**

- Suitable extinguishing media : In case of fire, use water/water spray/water jet/carbon dioxide/sand/foam/alcohol resistant foam/chemical powder for extinction.
- Unsuitable extinguishing media : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

#### **5.2 Special hazards arising from the substance or mixture**

- Specific hazards during fire fighting : Under fire conditions:  
Will burn  
(following evaporation of water)  
Harmful or toxic vapors are released.  
Do not allow run-off from fire fighting to enter drains or water courses.  
Hazardous decomposition products  
Phosphorus trihydride (phosphine)  
Oxides of phosphorus  
Sulfur oxides  
Carbon oxides

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### **5.3 Advice for firefighters**

- Special protective equipment for fire-fighters : In the event of fire, wear self-contained breathing apparatus. Personal protective equipment comprising: suitable protective gloves, safety goggles and protective clothing  
Firefighters should wear NIOSH/MSHA approved self-contained breathing apparatus and full protective clothing.
- Specific fire fighting methods : Standard procedure for chemical fires.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains.  
Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations.

---

## **SECTION 6: Accidental release measures**


### **6.1 Personal precautions, protective equipment and emergency procedures**

- Personal precautions, protective equipment and emergency procedures : Do not breathe spray.  
Avoid contact with the skin and the eyes.  
Use personal protective equipment.  
Ensure adequate ventilation.  
Evacuate personnel to safe areas.

### **6.2 Environmental precautions**

- Environmental precautions : Do not allow uncontrolled discharge of product into the environment.  
Contain the spilled material by diking.  
Do not flush into surface water or sanitary sewer system.  
Do not let product enter drains.  
Spills may be reportable to the National Response Center (800-424-8802) and to state and/or local agencies



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### **6.3 Methods and materials for containment and cleaning up**

- Recovery : Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13).  
Keep in suitable, closed containers for disposal.
- : Never return spills in original containers for re-use.
- Decontamination / cleaning : Wash nonrecoverable remainder with large amounts of water.  
Recover the cleaning water for subsequent disposal.
- : Decontaminate tools, equipment and personal protective equipment in a segregated area.
- Disposal : Dispose of contents/ container to an approved waste disposal plant.  
Dispose of in accordance with local regulations.

### **6.4 Reference to other sections**


- Reference to other sections : For personal protection see section 8.

---

## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

- Technical measures : Provide adequate ventilation.
- Advice on safe handling and usage : Avoid exposure - obtain special instructions before use.  
This product must only be handled by skilled operators.  
Reduce the duration of exposure to the minimum required.
- Avoid formation of aerosol.  
Avoid the formation or spread of mists in the atmosphere.  
Handle in accordance with good industrial hygiene and safety practice.  
Use only with adequate ventilation/personal protection.
- Do NOT handle without gloves.
- Hygiene measures : Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this materials:  
1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.  
2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.  
3) Wash exposed skin promptly to remove accidental splashes or contact with material.

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### **7.2 Conditions for safe storage, including any incompatibilities**

Technical Measures for storage : Prevent unauthorized access.  
 Keep container tightly closed in a dry and well-ventilated place.  
 Containers which are opened must be carefully resealed and kept upright to prevent leakage.  
 Take all necessary measures to avoid accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems.

### **Storage conditions**

Recommended : Keep in a dry, cool and well-ventilated place.  
 Keep container tightly closed.

To be avoided : Keep away from open flames, hot surfaces and sources of ignition.  
 Keep away from incompatible materials to be indicated by the manufacturer

Incompatible products : Do not mix with incompatible materials (See list, section 10).

### **Packaging Measures**

Packaging Measures : Polyethylene or polypropylene drums., Stainless steel

Packaging materials—Recommended : Plastic materials (polyethylene).

Packaging materials—To be avoided : Ordinary steel.

### **Storage stability**

Storage temperature : no data available

Other data : No decomposition if stored and applied as directed.

### **7.3 Specific end use(s)**

no data available

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## **SECTION 8: Exposure controls/personal protection**

Introductory Remarks: These recommendations provide general guidance for handling this product. Because specific work environments and material handling practices vary, safety procedures should be developed for each intended application. Assistance with selection, use and maintenance of worker protection equipment is generally available from equipment manufacturers.

### **8.1 Control parameters**

#### **Ingredients with workplace control parameters**

Ingredients	Value type	Value	Basis
Tetrakis(Hydroxymethyl) Phosphonium Sulfate	TWA	2 mg/m3	ACGIH
Central nervous system, 2014 Adoption, Not classifiable as a human carcinogen			

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## 8.2 Exposure controls

### Control measures

Engineering measures : Where engineering controls are indicated by use conditions or a potential for excessive exposure exists, the following traditional exposure control techniques may be used to effectively minimize employee exposures :

Avoid splashes.  
 Effective exhaust ventilation system  
 Facilities and equipment easily cleanable.  
 Separate rooms are required for washing, showering and changing clothes.

### Personal protective equipment

Respiratory protection : When respirators are required, select NIOSH/MSHA approved equipment based on actual or potential airborne concentrations and in accordance with the appropriate regulatory standards and/or industrial recommendations.

Use a respirator with an approved filter if a risk assessment indicates this is necessary.

Hand protection : Glove material: Polyvinyl alcohol or nitrile- butyl-rubber gloves  
 Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time.

Gloves must be inspected prior to use.  
 Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection : Eye and face protection requirements will vary dependent upon work environment conditions and material handling practices. Appropriate ANSI Z87 approved equipment should be selected for the particular use intended for this material.

Eye contact should be prevented through the use of:

Safety glasses with side-shields  
 In case of contact through splashing:  
 Wear face-shield and protective suit.

Skin and body protection : Wear suitable protective clothing, gloves and eye/face protection.

Choose body protection according to the amount and concentration of the dangerous substance at the work place.  
 Remove and wash contaminated apparel.

Hygiene measures : Personal hygiene is an important work practice exposure control measure and the following general measures should be taken when working with or handling this materials:

1) Do not store, use, and/or consume foods, beverages, tobacco products, or cosmetics in areas where this material is stored.

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- 2) Wash hands and face carefully before eating, drinking, using tobacco, applying cosmetics, or using the toilet.  
 3) Wash exposed skin promptly to remove accidental splashes or contact with material.

## Protective measures

- : Always have on hand a first-aid kit, together with proper instructions. Ensure that eyewash stations and safety showers are close to the workstation location.  
 The protective equipment must be selected in accordance with current local standards and in cooperation with the supplier of the protective equipment. Selection of appropriate personal protective equipment should be based on an evaluation of the performance characteristics of the protective equipment relative to the task(s) to be performed, conditions present, duration of use, and the potential hazards, and/or risks that may occur during use.

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**SECTION 9: Physical and chemical properties**

Physical and Chemical properties here represent typical properties of this product. Contact the business area using the Product information phone number in Section 1 for its exact specifications.

**9.1 Information on basic physical and chemical properties**

Appearance	: Physical state: liquid Color: pale yellow to pale pink
Odor	: characteristic
Odor Threshold	: no data available
pH	: 3.0 - 6.0
Freezing point	: < 5 °F (< -15 °C)
Flash point	: Not applicable (aqueous liquid).
Evaporation rate (Butylacetate = 1)	: no data available
Flammability (solid, gas)	: no data available
Flammability (liquids)	: no data available
Flammability / Explosive limit	: no data available
Autoignition temperature	: no data available
Vapor pressure	: no data available
Vapor density	: no data available
Density	: 1.34 - 1.4 g/cm <sup>3</sup> ( 68 °F (20 °C)) Relative density : 1.37 ( 77 °F (25 °C))

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Solubility	:	<u>Water solubility</u> : completely miscible  <u>Solubility in other solvents</u> : not determined
Partition coefficient: n-octanol/water	:	log Pow: -9.8 Structure-activity relationship (SAR), estimated
Thermal decomposition	:	> 320 °F (160 °C)
Viscosity	:	Viscosity, kinematic : 4 mm <sup>2</sup> /s ( 73 °F (23 °C))
Explosive properties	:	no data available
Oxidizing properties	:	no data available

**9.2 Other information**

Molecular weight : 406.3 g/mol

**SECTION 10: Stability and reactivity****10.1 Reactivity**

Reactivity : Stable at normal ambient temperature and pressure.

**10.2 Chemical stability**

Chemical stability : Stable under recommended storage conditions.

**10.3 Possibility of hazardous reactions**

No decomposition if stored and applied as directed.

Polymerization : Hazardous polymerization does not occur.

**10.4 Conditions to avoid**

Conditions to avoid : No dangerous reaction known under conditions of normal use.

**10.5 Incompatible materials**Materials to avoid : Strong acids  
Strong bases  
Strong oxidizing agents  
Strong reducing agents.

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**10.6 Hazardous decomposition products**

Decomposition products : Oxides of phosphorus  
Sulfur oxides  
Hydrogen  
Carbon monoxide, carbon dioxide and unburned hydrocarbons (smoke).  
PHOSPHINE

**SECTION 11: Toxicological information****11.1 Information on toxicological effects****Acute toxicity**

Acute oral toxicity : The product itself has not been tested.  
According to the data on the components  
According to the classification criteria for mixtures.  
Harmful if swallowed.

LD50 : 575 mg/kg - Rat , for males and females  
THPS 75%  
Unpublished internal reports

LD50 : > 2,000 mg/kg - Rat  
Polymer  
Unpublished internal reports

Acute inhalation toxicity : The product itself has not been tested.  
Data available only for some components.  
According to the classification criteria for mixtures.  
Toxic if inhaled.

LC50 - 4 h ( dust/mist ) : 0.59 mg/l - Rat , for males and females  
THPS 75%  
Published data

Acute dermal toxicity : The product itself has not been tested.  
Data available only for some components.  
According to the classification criteria for mixtures.  
Not classified as harmful by contact with skin

LD50 : > 2,000 mg/kg - Rat , for males and females  
THPS 75%  
Unpublished internal reports

Acute toxicity (other routes of administration) : no data available

**Skin corrosion/irritation**

## Skin irritation

- : The product itself has not been tested.  
According to the data on the components  
According to the classification criteria for mixtures.  
Not classified as irritating to skin

Rabbit  
No skin irritation  
Method: OECD Test Guideline 404  
THPS 75%  
Unpublished internal reports

Rabbit  
Method: OECD Test Guideline 404  
Not classified as irritating to skin  
Polymer  
Unpublished internal reports

**Serious eye damage/eye irritation**

## Eye irritation

- : The product itself has not been tested.  
According to the data on the components  
According to the classification criteria for mixtures.  
Risk of serious damage to eyes.

Rabbit  
Risk of serious damage to eyes.  
Method: OECD Test Guideline 405  
THPS 75%  
Unpublished internal reports

Rabbit  
Method: OECD Test Guideline 405  
Polymer  
Not classified as irritating to eyes  
Unpublished internal reports

**Respiratory or skin sensitization**

## Sensitization

- : Magnusson and Kligman method - Guinea pig  
May cause sensitization by skin contact.  
THPS 75%  
Unpublished internal reports

Magnusson and Kligman method - Guinea pig  
Polymer  
not sensitizing  
Unpublished internal reports

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**Mutagenicity**

Genotoxicity in vitro

: According to the data on the components

Mutagenicity (Salmonella typhimurium - reverse mutation assay)  
with and without metabolic activation  
negative  
THPS 75%  
Unpublished internal reports

Mutagenicity (in vitro mammalian cytogenetic test)  
Strain: CHO  
with and without metabolic activation  
positive  
THPS 75%  
Unpublished internal reports

UDS test  
Strain: Hepatocyte (primary culture)  
negative  
THPS 75%  
Unpublished internal reports

Mouse lymphoma test / TK  
with and without metabolic activation  
positive  
THPS 75%  
Unpublished internal reports

Mutagenicity (Escherichia coli - reverse mutation assay)  
with and without metabolic activation  
negative  
Polymer  
Unpublished internal reports

Genotoxicity in vivo

: Data available only for some components.  
Product is not considered to be genotoxic

Rodent dominant Lethal test - Rat  
negative  
THPS 75%  
Unpublished internal reports

In vivo micronucleus test - Mouse  
negative  
THPS 75%  
Unpublished internal reports



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**Carcinogenicity**

Carcinogenicity

: Data available only for some components.

Rat Oral exposure

THPS 75%

Animal testing did not show any carcinogenic effects.

Published data

Mouse Oral exposure

THPS 75%

Animal testing did not show any carcinogenic effects.

Published data

This product does not contain any ingredient designated as probable or suspected human carcinogens by:

NTP

IARC

OSHA

ACGIH

**Toxicity for reproduction and development**

Toxicity to reproduction / fertility

: Data available only for some components.

Fertility study 2 generations - Rat

Oral exposure

THPS 75%

no impairment of fertility has been observed

Unpublished internal reports

Developmental Toxicity/Teratogenicity

: Data available only for some components.

Rat

Oral exposure

NOEL teratogenicity: 60 mg/kg

NOEL maternal: 15 mg/kg

THPS 75%

Unpublished internal reports

Rabbit

Oral exposure

NOEL teratogenicity: 18 mg/kg

NOEL maternal: 18 mg/kg

THPS 75%

Effects on development were observed

Unpublished internal reports

**STOT**

STOT-single exposure

: Toxicology Assessment:

The substance or mixture is not classified as specific target organ toxicant, single exposure.

STOT-repeated exposure

: Toxicology Assessment:

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The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Data available only for some components.

Oral exposure 90 Days - Rat , for males and females

NOEL: 1 mg/kg

THPS 75%

Liver toxicity

Unpublished internal reports

**Neurological effects**

Neurological effects : THPS 75%, The product does not induce inhibition, Screening biochemistry test kit for cholinesterase activity inhibition

**Experience with human exposure**

Experience with human exposure : Inhalation : Not classified as irritating to respiratory system.

**Carcinogenicity**

Tetrakis(Hydroxymethyl) Phosphonium Sulfate : The product is not considered to be carcinogenic.

**Teratogenicity**

Tetrakis(Hydroxymethyl) Phosphonium Sulfate : Suspected human reproductive toxicant

**Aspiration toxicity**

Aspiration toxicity : no data available

**SECTION 12: Ecological information****12.1 Toxicity****Aquatic Compartment**

Acute toxicity to fish : LC50 - 96 h : 95 mg/l - Oncorhynchus mykiss (rainbow trout)  
THPS 75%

Unpublished internal reports

LC50 - 96 h : 87 mg/l - Pleuronectes platessa (European Plaice)

THPS 75%

Unpublished internal reports

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- Acute toxicity to daphnia and other aquatic invertebrates. :
- EC50 - 48 h : 15.1 mg/l - Daphnia magna (Water flea)  
THPS 75%  
Unpublished internal reports
  - EC50 - 48 h : 17 mg/l - Daphnia magna (Water flea)  
Polymer  
Harmful to aquatic organisms.  
Test results are based on the dry product.  
Unpublished internal reports
  - EC50 - 48 h : 0.4 mg/l - Crustacean: Acartia tonsa  
THPS 75%  
Unpublished internal reports
  - EC50 - 96 h : 1,000 mg/l - Crustacean: Americamysis bahia  
Polymer  
Unpublished internal reports
- Toxicity to aquatic plants :
- EC50 - 96 h : 0.66 mg/l - Pseudokirchneriella subcapitata (microalgae)  
THPS 75%  
Unpublished internal reports
  - EC50 - 96 h : 0.16 mg/l - Skeletonema costatum (marine diatom)  
THPS 75%  
Unpublished internal reports
  - NOEC - 96 h : 0.059 mg/l - Skeletonema costatum (marine diatom)  
THPS 75%  
Unpublished internal reports
- Toxicity to microorganisms :
- EC50 - 3 h : 24 mg/l - activated sludge  
THPS 75%  
Unpublished internal reports
  - EC50 - 3 h : 2,200 mg/l - activated sludge  
Polymer  
Test results are based on the dry product.  
Unpublished internal reports
- Chronic toxicity to fish :
- NOEC: 1.1 mg/l - 32 d - Pimephales promelas (fathead minnow)  
THPS 75%  
Unpublished internal reports
- Chronic toxicity to daphnia and other aquatic invertebrates. :
- NOEC: 0.032 mg/l - 21 d - Daphnia magna (Water flea)  
Method: OECD Test Guideline 202  
THPS 75%  
Unpublished internal reports

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**Sediment compartment**

Toxicity to benthic organisms

Tetrakis(Hydroxymethyl) Phosphonium Sulfate : EC50: 619 Exposure duration: 5 Days  
Unpublished internal reports

**Terrestrial Compartment**

Toxicity to soil dwelling organisms

Tetrakis(Hydroxymethyl) Phosphonium Sulfate : LC50: 960 mg/kg - 14 Days - Eisenia fetida (earthworms)  
Method: OECD Test Guideline 207

Toxicity to terrestrial plants

Tetrakis(Hydroxymethyl) Phosphonium Sulfate : EC50: 102 mg/kg - 14 Days  
Method: OECD Test Guideline 208

**Ecotoxicity assessment**

Acute aquatic toxicity : According to the classification criteria for mixtures.  
Very toxic to aquatic life.

Chronic aquatic toxicity : Toxic to aquatic life with long lasting effects.

**M-Factor**

Tetrakis(Hydroxymethyl) Phosphonium Sulfate : Acute aquatic toxicity = 1  
( according to the Globally Harmonized System (GHS) )

**12.2 Persistence and degradability****Biodegradability**

Biodegradability : Ultimate aerobic biodegradability  
Method: Simulation study  
70 % - 21 d  
Readily biodegradable.  
THPS 75%  
US EPA FIFRA, Subdivision N, § 162-4  
Unpublished internal reports

anaerobic  
Method: Simulation study  
60 % - 30 d  
THPS 75%  
US EPA FIFRA, Subdivision N, § 162-3  
Unpublished internal reports

Ultimate aerobic biodegradability  
Not readily biodegradable.  
Polymer  
Unpublished internal reports

Product is not persistent.

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**Stability**

## Stability in water

- Tetrakis(Hydroxymethyl) Phosphonium Sulfate : DT50: Half-life value: 131 Days (77 °F (25 °C))  
pH: 5.0  
Method: according to a standardized method  
Unpublished internal reports
- DT50: Half-life value: 72 Days (77 °F (25 °C))  
pH: 7.0  
Method: according to a standardized method  
Unpublished internal reports
- DT50: Half-life value: 7 Days (77 °F (25 °C))  
pH: 9.0  
Method: according to a standardized method  
Unpublished internal reports

## Photodegradation

- Tetrakis(Hydroxymethyl) Phosphonium Sulfate : Sensitizer: OH  
Concentration sensitizer in molecule/cm<sup>3</sup>: 1,500,000 1/cm<sup>3</sup>  
Rate constant in cm<sup>3</sup> / molecule\*s: 2.7E-11 cm<sup>3</sup>/s  
Half-life indirect photolysis: 0.4 Days  
Structure-activity relationship (SAR)  
Published data

- Other Physicochemical reactions : THPS 75%  
Product is easily oxidizable in aqueous media in dilute solutions

**Degradability assessment**

## Degradability assessment

- Tetrakis(Hydroxymethyl) Phosphonium Sulfate : The product is considered to be rapidly degradable in the environment


**12.3 Bioaccumulative potential**

- Partition coefficient: n-octanol/water : According to the data on the components  
Not potentially bioaccumulable  
Structure-activity relationship (SAR)

**12.4 Mobility in soil**

- Adsorption potential (Koc) : Log Koc: 2.2  
Data available only for some components.  
THPS 75%  
Moderately mobile in soils  
Unpublished internal reports

- Known distribution to environmental compartments : Ultimate destination of the product: Water

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### **12.5 Results of PBT and vPvB assessment**

Results of PBT and vPvB assessment : This mixture contains no substance considered to be persistent, bioaccumulating, and toxic (PBT)., This mixture contains no substance considered to be very persistent and very bioaccumulating (vPvB).

### **12.6 Other adverse effects**

Environment assessment : According to the classification criteria for mixtures.  
Very toxic to aquatic life.  
Toxic to aquatic life with long lasting effects.

---

## **SECTION 13: Disposal considerations**

### **13.1 Waste treatment methods**

#### **Product Disposal**

Advice on Disposal : Chemical additions, processing or otherwise altering this material may make the waste management information presented in this MSDS incomplete, inaccurate or otherwise inappropriate. Please be advised that state and local requirements for waste disposal may be more restrictive or otherwise different from federal laws and regulations. Consult state and local regulations regarding the proper disposal of this material.

Waste Code : EPA:  
Hazardous Waste – NO

#### **Advice on cleaning and disposal of packaging**

Advice : Take preliminary precautions based on the dangerous properties of the product.  
Empty the packaging completely prior to disposal.  
Empty containers should be taken to an approved waste handling site for recycling or disposal.  
The user's attention is drawn to the possible existence of local regulations regarding disposal.

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## **SECTION 14: Transport information**

Transportation status: IMPORTANT! Statements below provide additional data on listed transport classification. The listed Transportation Classification does not address regulatory variations due to changes in package size, mode of shipment or other regulatory descriptors.

### **DOT**

**14.1 UN number** UN 2810

**14.2 Dangerous Good Description** UN 2810 TOXIC, LIQUIDS, ORGANIC, N.O.S. (tetrakis(hydroxymethyl) phosphonium sulphate), 6.1, III

**14.3 Transport hazard class** 6.1

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**14.4 Packing group**

Packing group III  
 Label(s) 6.1  
 ERG No 153

**14.5 Environmental hazards**

**Marine pollutant** YES  
 Marine Pollutant (tetrakis(hydroxymethyl) phosphonium sulphate)

**TDG****14.1 UN number**

UN 2810

**14.2 Dangerous Good Description**

UN 2810 TOXIC LIQUID, ORGANIC, N.O.S. (tetrakis(hydroxymethyl) phosphonium sulphate), 6.1, III

**14.3 Transport hazard class**

6.1

**14.4 Packing group**

Packing group III  
 Label(s) 6.1  
 ERG No 153

**14.5 Environmental hazards**

**Marine pollutant** YES  
 Marine Pollutant (tetrakis(hydroxymethyl) phosphonium sulphate)

**IMDG****14.1 UN number**

UN 2810

**14.2 Dangerous Good Description**

UN 2810 TOXIC LIQUID, ORGANIC, N.O.S. (tetrakis(hydroxymethyl) phosphonium sulphate), 6.1, III

**14.3 Transport hazard class**

6.1

**14.4 Packing group**

Packing group III  
 Label(s) 6.1  
 EmS F-A , S-A

**14.5 Environmental hazards**

**Marine pollutant** YES

**14.6 Special precautions for user**

For personal protection see section 8.

**IATA****14.1 UN number**

UN 2810

**14.2 Dangerous Good Description**

UN 2810 TOXIC LIQUID, ORGANIC, N.O.S. (tetrakis(hydroxymethyl) phosphonium sulphate), 6.1, III

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<b>14.3 Transport hazard class</b>	6.1
<b>14.4 Packing group</b>	III
Packing group	III
Label(s):	6.1
Packing instruction (cargo aircraft)	663
Max net qty / pkg	220.00 L
Packing instruction (passenger aircraft)	655
Max net qty / pkg	60.00 L
<b>14.5 Environmental hazards</b>	YES
<b>Marine pollutant</b>	
<b>14.6 Special precautions for user</b>	
For personal protection see section 8.	


Note: The above regulatory prescriptions are those valid on the date of publication of this sheet. Given the possible evolution of transportation regulations for hazardous materials, it would be advisable to check their validity with your sales office.

**SECTION 15: Regulatory information****15.1 Notification status**

United States TSCA Inventory	: e (special case) This product is regulated under the United States Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).
Canadian Domestic Substances List (DSL)	: YES (positive listing) All components of this product are on the Canadian DSL.
Australia Inventory of Chemical Substances (AICS)	: YES (positive listing) On the inventory, or in compliance with the inventory
Japan. CSCL - Inventory of Existing and New Chemical Substances	: n (Negative listing) Not in compliance with the inventory
Korea. Korean Existing Chemicals Inventory (KECI)	: n (Negative listing) Not in compliance with the inventory
China. Inventory of Existing Chemical Substances in China (IECSC)	: n (Negative listing) Not in compliance with the inventory

**15.2 Federal Regulations**



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#### SARA 311/312 Hazards

Fire Hazard	no
Reactivity Hazard	no
Sudden Release of Pressure Hazard	no
Acute Health Hazard	yes
Chronic Health Hazard	yes

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

**SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

#### EPCRA - Emergency Planning and Community Right-to-Know

##### CERCLA Reportable Quantity

Ingredients	CAS-No.	Reportable quantity
Formaldehyde	50-00-0	100 lb
Acrylic Acid	79-10-7	5000 lb

##### SARA 304 Reportable Quantity

Ingredients	CAS-No.	Reportable quantity
Formaldehyde	50-00-0	100 lb

##### SARA 302 Reportable Quantity

Ingredients	CAS-No.	Reportable quantity
Formaldehyde	50-00-0	100 lb

#### 15.3 State Regulations


**California Prop 65** : WARNING! This product contains a chemical known in the State of California to cause cancer.  
Formaldehyde

No Significant Risk Levels (NSRLs) have been established for the following:  
Formaldehyde  
Value : 40 micrograms per day

#### SECTION 16: Other information

##### NFPA (National Fire Protection Association) - Classification

Health : 2 moderate  
Flammability : 0 minimal  
Instability or Reactivity : 1 slight

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**HMIS (Hazardous Materials Identification System (Paint & Coating)) - Classification**

Health : 2 moderate  
 Flammability : 0 minimal  
 Reactivity : 1 slight

**Further information**

Date Prepared : 02/24/2015  
 Further information : Product classified under the US GHS format.

**Key or legend to abbreviations and acronyms used in the safety data sheet**

TWA : 8-hour, time-weighted average  
 ACGIH : American Conference of Governmental Industrial Hygienists  
 OSHA : Occupational Safety and Health Administration  
 WHMIS : Workplace Hazardous Materials Information System  
 NTP : National Toxicology Program  
 IARC : International Agency for Research on Cancer  
 : Solvay Acceptable Exposure Limit  
 NIOSH : National Institute for Occupational Safety and Health  
 NFPA : National Fire Protection Association  
 HMIS : Hazardous Materials Identification System (Paint & Coating)

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information, and belief at the date of its publication. Such information is only given as a guidance to help the user handle, use, process, store, transport, dispose, and release the product in satisfactory safety conditions and is not to be considered as a warranty or quality specification. It should be used in conjunction with technical sheets but do not replace them. Thus, the information only relates to the designated specific product and may not be applicable if such product is used in combination with other materials or in another manufacturing process, unless otherwise specifically indicated. It does not release the user from ensuring he is in conformity with all regulations linked to its activity.