



MATERIAL SAFETY DATA SHEET

TRIEST MICROBIOCIDE

Page 1 of 9

1. CHEMICAL PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: TriEst Microbiocide
CHEMICAL FAMILY: Aldehydes
SYNONYMS: Formalin
PRINCIPAL USE: Pesticide (Fumigant)

Date Prepared: November 22, 2010
Date Revised: NA

DISTRIBUTOR: TriEst Ag Group, Inc. P.O. Box 448 1101 Industrial Blvd. Greenville, NC 27835-0448 Customer Service: 800-637-9466	DISTRIBUTOR EMERGENCY TELEPHONE NUMBER: Emergency Phone: (800) 637-9466 Monday – Friday, 8:00am – 5:00 pm EST 24-HOUR EMERGENCY TELEPHONE NUMBER: CHEMTREC: (800) 424-9300 (24 hours)
--	---

2. COMPOSITION, INFORMATION ON INGREDIENTS

CAS #	Chemical Name	RTECS Number	% by Weight	NFPA 704 Rating
50-00-0	Formaldehyde	LP8925000	37	3 – 2 – 1 H – F – R
67-56-1	Methanol	PC1400000	11	
	Water		52	

EXPOSURE GUIDELINES

Chemical Name	ACGIH TLV	OSHA	IDLH Immediately Dangerous to Life or Health	Mfg Recommendation
Formaldehyde	0.3 ppm (C)	0.75 ppm (TWA) 2 ppm (ST)	20 ppm	< 0.3 ppm
Methanol	200 ppm (TWA) 250 ppm (ST)	200 ppm (TWA) 250 ppm (ST)	6000 ppm	<200 ppm

*C = Ceiling – not to be exceeded; ST = Short Term Exposure Limit – a 15 minute Time Weighted Average (TWA)

3. HAZARDS IDENTIFICATION

Emergency Overview

Appearance:	Clear, colorless liquid with a pungent odor.
WARNING!	Combustible. May react at high temperatures to form methanol, formic acid or methylals. At low temperatures will self-polymerize to form paraformaldehyde. Harmful if inhaled. Can cause central nervous system depression. Causes chemical burns to eyes. May be harmful if swallowed. Ingestion may cause blindness. May be harmful if absorbed through skin. Causes skin irritation. May cause allergic skin reaction.



MATERIAL SAFETY DATA SHEET

TRIEST MICROBIOCIDE

Page 2 of 9

Target Organs:	Eyes, skin, respiratory system.
Routes of Exposure:	Ingestion, inhalation and skin absorption.
Signs & Symptoms:	Symptoms appear slowly and include: headache, dizziness, nausea, vomiting, unconsciousness and asphyxiation.
Medical Conditions Aggravated by Exposure	Dermatitis; Respiratory disorders

POTENTIAL HEALTH EFFECTS*

Eyes	<ul style="list-style-type: none"> Chemical burns are possible.
Skin	<ul style="list-style-type: none"> May be harmful if absorbed through skin. Causes irritation.
Ingestion	<ul style="list-style-type: none"> May be harmful if swallowed. Ingestion may cause blindness. Can cause central nervous system depression. If accidentally swallowed, burns or irritation to mucous membranes, esophagus or GI tract can result.
Inhalation	<ul style="list-style-type: none"> Harmful if inhaled. Can cause central nervous system depression. Can cause irritation of nose, throat and lungs.
Chronic:	<ul style="list-style-type: none"> Chronic overexposure may cause respiratory sensitization, such as asthma, and that pre-existing respiratory and skin disorders may be aggravated by exposure.
Carcinogenicity	<ul style="list-style-type: none"> OSHA regulates formaldehyde as a potential human carcinogen. NTP and IARC have listed formaldehyde as a probable human carcinogen.

4. FIRST AID MEASURES

Eyes	Hold eyelids open and flush with a steady, gentle stream of water for at least 15 minutes. Occasionally, lift the upper and lower eyelids. Get medical attention if discomfort continues.
Skin	Immediately remove contaminated clothing, shoes, and other items covering the skin. Wash contaminated skin area thoroughly with soap and water for at least 20 minutes. Aerate and then launder any contaminated clothing, shoes, gloves, etc. dispose of heavily contaminated clothing.
Inhalation	Get exposed person to fresh air. Keep warm. Make sure person can breathe freely. Place victim if half upright position. If breathing has stopped, give artificial respiration, preferably with the aid of a pocket mask to avoid contact with the chemical substance. Do not give anything by mouth to an unconscious person. Get medical attention as soon as possible. Administer 100% humidified oxygen, if available.
Ingestion	If conscious and alert, have victim dilute by drinking large quantities of water. Immediately contact poison control center or hospital emergency room for any other additional treatment directions.
Other Instructions	Obtain medical assistance at once in case of illness or burn after exposure, or if irritation to eyes and respiratory tract persist. Do not allow conditions that could accidentally cause further exposure until recovery is complete.
Note to Physician	No additional information available.



MATERIAL SAFETY DATA SHEET

TRIEST MICROBIOCIDE

Page 3 of 9

5. FIRE-FIGHTING MEASURES

Flash Point (°F.)	62 °C (144 °F) Tag Closed Cup ASTM D 56
Flammable Limits	7 – 70 %
Auto Ignition Temperature	420 °C (788 °F)
Extinguishing Media	All conventional fire extinguishing media are suitable: water spray, dry chemical, carbon dioxide, alcohol-resistant chemical foam.
Special Fire Fighting Procedures	<ul style="list-style-type: none"> • Combustible. Keep away from heat and flame. • Evacuate area at least 100 feet. • Wear self-contained breathing apparatus and full turnout gear for fire situations. See Section 8, which addresses protective clothing for spill situations. • Cool with flooding water from a distance upwind using unattended hose holders. • Stay away from the ends of cylinders.
Unusual Fire & Explosion Hazards	<ul style="list-style-type: none"> • Not explosive but during a fire, irritating and toxic gas may be generated by thermal decomposition or combustion. • Closed cylinder may rupture if heated by fire. • NOTE: Per DOT regulations, cylinders containing this product are not equipped with relief valves or fusible overpressure devices.

6. ACCIDENTAL RELEASE MEASURES

Spill Mitigation	<ul style="list-style-type: none"> • Use proper personal protective equipment (PPE) as indicated in Section 8. • Eliminate all sources of ignition in immediate area. • Do not touch damaged containers or spilled material unless wearing appropriate PPE. • Avoid low places, ventilate closed spaces before entering, and work upwind if possible.
Small Spills <5 gallons	<ul style="list-style-type: none"> • Isolate immediate area at least 100 feet. • Wear recommended PPE. • Provide ventilation. • Absorb onto inert material such as vermiculite, dry sand, or dirt and deposit spill in a sealable polyethylene or steel container.
Large Spills >5 gallons	<ul style="list-style-type: none"> • Isolate at least 300 feet in all directions. • Wear recommended PPE. • Enclose with diking material to prevent seepage into sewer systems, surface/ground water or natural bodies of water. • If possible neutralize with dilute (<5%) solutions of ammonium hydroxide, sodium hydroxide, sodium bisulfite or sodium sulfite.
Containment	<ul style="list-style-type: none"> • Prevent entry into waterways, sewers, basements, or confined areas. • Do not permit entry into the spill or leak area by any other person until the concentration of Formaldehyde is measured to be less than 0.01 ppm.
Disposal	<ul style="list-style-type: none"> • See section 13.



MATERIAL SAFETY DATA SHEET

TRIEST MICROBIOCIDE

Page 4 of 9

7. HANDLING AND STORAGE

HANDLING

- This fumigant product is a highly hazardous material and must be handled with care only by those individual experienced with its proper use. READ AND OBSERVE ALL PRECAUTIONS ON PRODUCT LABEL.
- Persons moving, handling, or opening containers must wear the personal protective equipment as specified in the Hazards to Humans section of the product label.
- Ropes, slings, hooks, tongs, and similar handling devices should not be used for unloading cylinders. A suitable hand truck, fork truck, or similar device to which the cylinders can be firmly secured should be used for transporting the heavier cylinders.
- When cylinder not in use, keep valves closed and secure.
- Ventilation: Whenever possible. Open cylinder only in a well-ventilated area with the operator "upwind" from the container or provide ventilation to control airborne levels below the permissible exposure limit.
- Keep away from open flame or heat.
- Do not allow to spill.
- Always have adequate clean water available to wash the skin.
- If product splashes or spill on shoes or clothing, remove them at once. If liquid contacts skin where rings or bandages area worn, remove them and wash exposed skin with soap and water. Keep and wash PPE and work clothing separately from other laundry. Discard clothing and other absorbent materials that have been drenched or heavily contaminated with this product.
- Use only dry nitrogen gas (180 psig maximum) to pressurize cylinders.
- Containers should never be refilled by the consumer or used for any other product or purpose.
- For disposal, see Section 13.

STORAGE

- Cylinders should be tightly closed.
- Storage temperature should be controlled to avoid precipitation or vaporization. Formaldehyde solutions will start to precipitate paraformaldehyde if stored below their recommended storage temperatures, making the freezing point difficult to determine.
- Store in a cool, dry, well-ventilated area under lock and key (secured).
- Keep flammable and combustible liquids, oxidizers, and combustible solid materials away from cylinders.
- Post as a pesticide storage area.
- Do not contaminate water, food, or feed by storage or disposal.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

ENGINEERING CONTROLS

Work / Hygienic Practices	Wash hands and face before eating, drinking, or smoking after handling material.
Equipment	Emergency eyewash and shower facilities should be readily accessible.
Ventilation	Use in well ventilated places and work upwind from cylinders whenever possible. Use only under a chemical fume hood.

PERSONAL PROTECTION FOR ROUTINE USE OF PRODUCT

Clothing	Loose-fitting or well ventilated long-sleeved shirt, long pants or coveralls, socks with shoes. Do NOT wear jewelry when handling.
Eyes	Full-face shield, goggles or safety glasses with brow and side shields must be worn if



MATERIAL SAFETY DATA SHEET

TRIEST MICROBIOCIDE

Page 5 of 9

	full-facepiece respiratory protection is not required.
Skin	Gloves must be worn – butyl, nitrile and Viton appear to be quite impervious to formaldehyde solutions.
Respiratory NOTE: Only NIOSH- approved respirators may be used for Respiratory Protection	<ul style="list-style-type: none"> • A full facepiece respirator with cartridges or canisters specifically approved for formaldehyde may be used for exposure levels up to 7.5 ppm (10 times the PEL). • Full-face mask with industrial size canister specifically approved for formaldehyde may be used for exposure levels up to 75 ppm (100 times the PEL). • Above 75 ppm or unknown, a positive-pressure self-contained breathing apparatus (SCBA) must be worn. • For firefighting, a positive-pressure SCBA is required.
Measurement	The air concentration level can be measured by a direct reading detection device, such as a Dräger pump, using a formaldehyde detector tube.

PERSONAL PROTECTION FOR SPILLS/EMERGENCY

Fire	In case of fire only, use normal fire fighting equipment. If chemical release and fire involved, wear recommended chemical protective clothing in conjunction with normal fire fighting gear.
Spills	Minimum PPE: Liquid impervious chemical coveralls and gloves. Upgrade respiratory protection in accordance with the "Routine Use" table above in this Section.
Chemical Protective Clothing	<ul style="list-style-type: none"> • For cleanup where liquid splash will be incidental, a liquid impervious chemical coveralls may be worn such as Tyvek QC or Saranex SL. • In confined areas or where liquid splash is likely, wear a vapor-tight suit such as Tychem TK or Lappler CPF3. • Use Responder, or Tychem against permeation by Formaldehyde for periods • greater than 8 hours.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Clear, colorless liquid
Odor	Pungent
pH	3.0 – 4.5
Vapor Pressure	40 @ 39 °C (102 °F)
Vapor Density	~ 1.00
Evaporation Rate	< 1 (Butyl Acetate = 1)
Specific Gravity	1.08
Density	9.0 pounds/gallon
Boiling Point	212 °F (100 °C)
Flash Point	137 °F (58 °C)
Freezing/Melting Point	Not available for product
Decomposition Temperature	Not available for product
Solubility	Complete
Viscosity	Not available for product
% Volatile	Not tested, presumed volatile
Molecular Formula	Mixture, not available
Molecular Weight	Mixture, not available



MATERIAL SAFETY DATA SHEET

TRIEST MICROBIOCIDE

Page 6 of 9

10. STABILITY AND REACTIVITY

Stability	Product is stable under normal temperatures and pressures. At low temperatures will self-polymerize to form paraformaldehyde.
Conditions to Avoid	Incompatible materials; temperature extremes.
Materials to Avoid Incompatibility	Reaction with phenol, strong acids or alkalis may be violent. Reaction with hydrochloric acid may form bis-chloromethyl ether, an OSHA regulated carcinogen.
Hazardous Decomposition Products	Decomposes to carbon monoxide and carbon dioxide.
Hazardous Polymerization	Will not occur.
Special Precautions	None reported.

11. TOXICOLOGICAL INFORMATION

HUMAN TOXICOLOGY FOR FORMALDEHYDE

NOTE: Formaldehyde has been evaluated and the data are summarized below:

Value (LD ₅₀ or LC ₅₀)	Animal	Routes	Components
0.59 mg/l	Rat	Acute Inhalation	Formaldehyde
270 mg/kg	Rabbit	Acute Skin	Formaldehyde
800 mg/kg	Rat	Acute Oral	Formaldehyde

TOXICOLOGICAL INFORMATION

POTENTIAL CANCER HAZARD. Rats chronically exposed to 14 ppm formaldehyde contracted nasal cancers. Based on animal data and limited epidemiological evidence, NTP and IARC have listed formaldehyde as a probable human carcinogen. OSHA regulates formaldehyde as a potential human carcinogen.

As of 11/18/2003, this material has not been listed by NTP, classified by IARC nor regulated by OSHA as a carcinogen.

12. ECOLOGICAL INFORMATION FOR FORMALDEHYDE

- Formaldehyde is highly toxic to algae, protozoa and other unicellular organisms and slightly toxic to fish. In the atmosphere the material is rapidly degraded by photolysis and photooxidation. Formaldehyde is mobile in the soil. In water or soil, formaldehyde is biodegraded in a few days. Experiments performed on a variety of fish and shrimp show no bioconcentration of formaldehyde. Exotoxicity: Algae (scenedesmus): toxic: 0.3-0.5 mg/l; Arthropoda (daphnia): toxic: 2 mg/l; Fish (guppies): TLm = 50-200 mg/l; Environmental Fate: BOD5 = 60% of ThOD = 0.6-1.07 standard dilution at <260 mg/l; Octanol/Water Partition Coefficient = 0.35 (LKOW).



MATERIAL SAFETY DATA SHEET

TRIEST MICROBIOCIDE

Page 7 of 9

13. DISPOSAL CONSIDERATIONS

Return Cylinders To: TriEst Ag Group, Inc. 1101 Industrial Blvd. Greenville, NC 27834 Customer Service: (800) 637-9466	<ul style="list-style-type: none"> • Cylinders are the property of TriEst Ag Group, Inc. and should be returned promptly by collect auto freight and according to label instructions on cylinder. • Do not ship cylinders without safety caps or valve protection bonnets. • When a cylinder is partially full and there is no further requirement for the product, contact the company for return instructions. • May contain explosive vapors. NO NOT cut, puncture or weld on or nearby.
Discharge	<ul style="list-style-type: none"> • Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a national discharge elimination system (NPDES) permit. • Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority.
Disposal	<ul style="list-style-type: none"> • Do not contaminate water, food, or feed by storage or disposal. Pesticide wastes are toxic. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. • If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, the Hazardous Waste representative at the nearest EPA Regional Office, or the product manufacturer or distributor for guidance.

14. TRANSPORT INFORMATION

LAND USDOT	<p>Shipping Paper Description for non-bulk packages: UN2209, Formaldehyde, solutions, 8, PG III</p> <p>Shipping Paper Description for Bulk packages: UN2209, Formaldehyde, solutions, 8, PG III, RQ</p> <p>DOT Marking on Non-Bulk Package: UN2209, Formaldehyde solutions</p> <p>DOT Marking on Bulk Package: UN2209, Formaldehyde solutions, RQ</p> <p>DOT Hazard Warning Label: Corrosive 8</p> <p>DOT Placard: Corrosive 8</p> <p>Notes:</p> <ol style="list-style-type: none"> 1. For packages that contain less than the reportable quantity of 100# of Formaldehyde, RQ is not necessary on shipping paper or marking
WATER (IMO/IMDG)	Same as above
AIR (IATA/ICAO)	Same as above
Reportable Quantity	100# (Formaldehyde) - 5000# (Methanol)
Emergency Guide	132 (ERG-Emergency Response Guidebook)



MATERIAL SAFETY DATA SHEET

TRIEST MICROBIOCIDE

Page 8 of 9

15. REGULATORY INFORMATION

U.S. FEDERAL

TSCA

TSCA Inventory:	Formaldehyde, CAS# 50-00-0 is listed Methanol, CAS# 67-56-1 is listed
-----------------	--

SARA

Section 302 (RQ)	RQ (Reportable Quantity) for Formaldehyde is 100 lbs		
Section 302 (TPQ)	TPQ (Threshold Planning Quantity) for Formaldehyde is 500 lbs		
SARA Codes	TriEst Microbiocide	Acute, Chronic, Fire	
	Formaldehyde, CAS# 50-00-0	Acute, Chronic	
	Methanol, CAS# 67-56-1	Chronic, Fire	
Section 313	This product contains the following EPCRA Section 313 chemicals subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To –Know Act of 1986 (40 CFR 372):		
	<u>CAS Registry Number</u>	<u>Chemical Name</u>	<u>% by Weight</u>
	50-00-0	Formaldehyde	37

RCRA (HAZARDOUS WASTES)

Listed U or P	This product or its ingredients are not specifically listed
---------------	---

CLEAN AIR ACT

Hazardous Air Pollutants	This material does not contain any HAPS
Class 1 or 2 Ozone depleters	This material is not considered to be an ozone depletor

CLEAN WATER ACT / OIL POLLUTION ACT OF 1990

Section 311 (40 CFR 110)	Formaldehyde is classified.
Priority Pollutants	Formaldehyde is listed

STATE

Formaldehyde can be found on the following state right-to-know lists:

EUROPEAN / INTERNATIONAL REGULATIONS

This material is listed on the following inventories:

Canada – DSL



MATERIAL SAFETY DATA SHEET

TRIEST MICROBIOCIDE

Page 9 of 9

16. ADDITIONAL INFORMATION

Hazard Rating Systems

Category	NFPA 704*	NPCA-HMIS**
	TriEst Microbiocide	TriEst Microbiocide
Health	3	3
Flammability	2	2
Reactivity	1	1

* NFPA – National Fire Protection Association

** NPCA – National Paint Coatings Association

704 – (National Fire Code Standard No. 704)

HMIS – Hazardous Material Information System

Hazard Key

4 - Severe 3 - Serious 2 - Moderate 1 - Slight 0 - Minimal

WARRANTY

Notice: The information above is believed to be accurate and represents the best information currently available to us. Seller warrants that this product conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use, but neither this warranty nor any other warranty of merchantability or fitness for a particular purpose, express or implied, extends to the use of this product contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential, or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.