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Version 1

1. IDENTIFICATION

Product Identifier

Product Name MICCROSHIELD[®]

Other means of identification

SDS # TD-001-OSHA

UN/ID No UN1263

Recommended use of the chemical and restrictions on use

Recommended Use Plating.

Details of the supplier of the safety data sheet

Supplier Address

Tolber Chemical Division
 220 West 5th Street
 Hope, AR 71801

Emergency Telephone Number

Company Phone Number 870-777-3251
Emergency Telephone (24 hr) INFOTRAC 1-352-323-3500 (International)
 1-800-535-5053 (North America)

2. HAZARDS IDENTIFICATION

Appearance Not determined

Physical State Liquid

Odor Ketone

Classification

Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 2
Serious eye damage/eye irritation	Category 2
Germ cell mutagenicity	Category 1B
Carcinogenicity	Category 1B
Reproductive toxicity	Category 2
Specific target organ toxicity (single exposure)	Category 3
Specific target organ toxicity (repeated exposure)	Category 2
Aspiration toxicity	Category 1
Flammable Liquids	Category 2

Signal Word

Danger

Hazard Statements

Harmful if swallowed
Causes skin irritation
Causes serious eye irritation
May cause genetic defects
May cause cancer
Suspected of damaging fertility or the unborn child
May cause respiratory irritation. May cause drowsiness or dizziness
May cause damage to organs through prolonged or repeated exposure
May be fatal if swallowed and enters airways
Highly flammable liquid and vapor

**Precautionary Statements - Prevention**

Obtain special instructions before use
Do not handle until all safety precautions have been read and understood
Use personal protective equipment as required
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Wear eye/face protection
Do not breathe dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Keep away from heat/sparks/open flames/hot surfaces. — No smoking
Keep container tightly closed
Ground/bond container and receiving equipment
Use explosion-proof equipment
Use only non-sparking tools
Take precautionary measures against static discharge
Keep cool

Precautionary Statements - Response

If exposed or concerned: Get medical advice/attention
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
If eye irritation persists: Get medical advice/attention
If skin irritation occurs: Get medical advice/attention
IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
Wash contaminated clothing before reuse
IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician
Do not induce vomiting
Rinse mouth
IN CASE OF FIRE: Use CO₂, dry chemical, or foam for extinction

Precautionary Statements - Storage

Store locked up
Store in a well-ventilated place. Keep container tightly closed

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

Other Hazards

Harmful to aquatic life with long lasting effects

3. COMPOSITION/INFORMATION ON INGREDIENTS		
Chemical Name	CAS No	Weight-%
Toluene	108-88-3	40-50
Tetrahydrofuran	109-99-9	15-25
Methyl ethyl ketone	78-93-3	5-15
Propylene oxide	75-56-9	0.5-1.5

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES		
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First Aid Measures

- General Advice** If exposed or concerned: Get medical advice/attention.
- Eye Contact** Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician immediately.
- Skin Contact** Flush with water. Take off contaminated clothing. Wash contaminated clothing before reuse. Get medical attention if irritation occurs.
- Inhalation** Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if you feel unwell.
- Ingestion** Do not induce vomiting. Call a physician or poison control center immediately. Rinse mouth.

Most important symptoms and effects

- Symptoms** Skin contact can lead to drying, defatting, itching, stinging and irritation. Prolonged contact may cause painful stinging or burning of eyes and lids, watering of eye, and irritation. Prolonged breathing of vapors may cause nausea, headache, weakness and/or dizziness. May cause nausea, vomiting, stomach ache, and diarrhea.

Indication of any immediate medical attention and special treatment needed

- Notes to Physician** Treat symptomatically.

5. FIRE-FIGHTING MEASURES		
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Suitable Extinguishing Media

Carbon dioxide (CO2). Dry chemical. Foam.

- Unsuitable Extinguishing Media** Not determined.

Specific Hazards Arising from the Chemical

Highly flammable liquid and vapor.

- Hazardous Combustion Products** Carbon monoxide.

Sensitivity to Mechanical Impact Not available.

Sensitivity to Static Discharge Take precautionary measures against static discharge.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protective equipment as required. Remove all sources of ignition.

Environmental Precautions See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.

Methods for Clean-Up Absorb spillage with non-combustible, absorbent material.

7. HANDLING AND STORAGE

Precautions for safe handling

Advice on Safe Handling Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use personal protection recommended in Section 8. Wash face, hands, and any exposed skin thoroughly after handling. Avoid breathing vapors or mists. Ground/bond container and receiving equipment. Use spark-proof tools and explosion-proof equipment. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Use only in well-ventilated areas. Do not eat, drink or smoke when using this product. Take precautionary measures against static discharges.

Conditions for safe storage, including any incompatibilities

Storage Conditions Keep containers tightly closed in a dry, cool and well-ventilated place. Store locked up.

Incompatible Materials Strong oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Toluene 108-88-3	TWA: 20 ppm	TWA: 200 ppm (vacated) TWA: 100 ppm (vacated) TWA: 375 mg/m ³ (vacated) STEL: 150 ppm (vacated) STEL: 560 mg/m ³ Ceiling: 300 ppm	IDLH: 500 ppm TWA: 100 ppm TWA: 375 mg/m ³ STEL: 150 ppm STEL: 560 mg/m ³
Tetrahydrofuran 109-99-9	STEL: 100 ppm TWA: 50 ppm S*	TWA: 200 ppm TWA: 590 mg/m ³ (vacated) TWA: 200 ppm (vacated) TWA: 590 mg/m ³ (vacated) STEL: 250 ppm (vacated) STEL: 735 mg/m ³	IDLH: 2000 ppm TWA: 200 ppm TWA: 590 mg/m ³ STEL: 250 ppm STEL: 735 mg/m ³
Methyl ethyl ketone 78-93-3	STEL: 300 ppm TWA: 200 ppm	TWA: 200 ppm TWA: 590 mg/m ³ (vacated) TWA: 200 ppm (vacated) TWA: 590 mg/m ³ (vacated) STEL: 300 ppm (vacated) STEL: 885 mg/m ³	IDLH: 3000 ppm TWA: 200 ppm TWA: 590 mg/m ³ STEL: 300 ppm STEL: 885 mg/m ³
Propylene oxide 75-56-9	TWA: 2 ppm	TWA: 100 ppm TWA: 240 mg/m ³ (vacated) TWA: 20 ppm (vacated) TWA: 50 mg/m ³	IDLH: 400 ppm

Appropriate engineering controls

Engineering Controls Apply technical measures to comply with the occupational exposure limits.

Individual protection measures, such as personal protective equipment

Eye/Face Protection Wear approved safety goggles.

Skin and Body Protection Chemical resistant, impermeable gloves. Long sleeve shirt and long pants. Protective shoes or boots.

Respiratory Protection In case of insufficient ventilation, wear suitable respiratory equipment.

General Hygiene Considerations Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES**Information on basic physical and chemical properties**

Physical State	Liquid	Odor	Ketone
Appearance	Not determined	Odor Threshold	Not determined
Color	Not determined		

Property	Values	Remarks • Method
pH	Not determined	
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	90 °C / 194 °F	(at 760 mm Hg)
Flash Point	-1.1 °C / 30 °F	Tag Closed Cup
Evaporation Rate	3.5	(butyl acetate = 1)
Flammability (Solid, Gas)	n/a-liquid	
Upper Flammability Limits	10%	
Lower Flammability Limit	2%	
Vapor Pressure	Not determined	
Vapor Density	2.9	(Air=1)
Specific Gravity	0.95	
Water Solubility	Insoluble in water	
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	65 °C / 149 °F	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	

10. STABILITY AND REACTIVITY**Reactivity**

Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Conditions to Avoid

Keep away from heat, sparks and open flame.

Incompatible Materials

Strong oxidizing agents.

Hazardous Decomposition Products

Thermal decomposition may produce oxides of carbon.

11. TOXICOLOGICAL INFORMATION**Information on likely routes of exposure****Product Information**

Eye Contact	Causes serious eye irritation.
Skin Contact	Causes skin irritation.
Inhalation	Avoid breathing vapors or mists.
Ingestion	Harmful if swallowed.

Component Information

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Toluene 108-88-3	= 636 mg/kg (Rat)	= 8390 mg/kg (Rabbit) = 12124 mg/kg (Rat)	= 12.5 mg/L (Rat) 4 h > 26700 ppm (Rat) 1 h
Tetrahydrofuran 109-99-9	= 1650 mg/kg (Rat)	-	= 53.9 mg/L (Rat) 4 h = 180 mg/L (Rat) 1 h
Methyl ethyl ketone 78-93-3	= 2737 mg/kg (Rat)	= 6480 mg/kg (Rabbit)	-
Propylene oxide 75-56-9	= 520 mg/kg (Rat)	-	-

Information on physical, chemical and toxicological effects

Symptoms Please see section 4 of this SDS for symptoms.

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Germ cell mutagenicity May cause genetic defects.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen. However, the product as a whole has not been tested.

Chemical Name	ACGIH	IARC	NTP	OSHA
Toluene 108-88-3		Group 3		
Tetrahydrofuran 109-99-9	A3			
Propylene oxide 75-56-9	A3	Group 2B	Reasonably Anticipated	X

ACGIH (American Conference of Governmental Industrial Hygienists)

A3 - Animal Carcinogen

IARC (International Agency for Research on Cancer)

Group 2B - Possibly Carcinogenic to Humans

Group 3 IARC components are "not classifiable as human carcinogens"

NTP (National Toxicology Program)

Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

Reproductive toxicity Suspected of damaging fertility or the unborn child.

STOT - single exposure May cause respiratory irritation. May cause drowsiness or dizziness.

STOT - repeated exposure May cause damage to organs through prolonged or repeated exposure.

Aspiration hazard May be fatal if swallowed and enters airways.

Numerical measures of toxicity

Not determined

12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic life with long lasting effects.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Toluene 108-88-3	433: 96 h Pseudokirchneriella subcapitata mg/L EC50 12.5: 72 h Pseudokirchneriella subcapitata mg/L EC50 static	15.22 - 19.05: 96 h Pimephales promelas mg/L LC50 flow-through 12.6: 96 h Pimephales promelas mg/L LC50 static 5.89 - 7.81: 96 h Oncorhynchus mykiss mg/L LC50 flow-through 14.1 - 17.16: 96 h Oncorhynchus mykiss mg/L LC50 static 5.8: 96 h Oncorhynchus mykiss mg/L LC50 semi-static 11.0 - 15.0: 96 h Lepomis macrochirus mg/L LC50 static 54: 96 h Oryzias latipes mg/L LC50 static 28.2: 96 h Poecilia reticulata mg/L LC50 semi-static 50.87 - 70.34: 96 h Poecilia reticulata mg/L LC50 static	EC50 = 19.7 mg/L 30 min	5.46 - 9.83: 48 h Daphnia magna mg/L EC50 Static 11.5: 48 h Daphnia magna mg/L EC50
Tetrahydrofuran 109-99-9		1970 - 2360: 96 h Pimephales promelas mg/L LC50 flow-through 2700 - 3600: 96 h Pimephales promelas mg/L LC50 static		5930: 24 h Daphnia magna mg/L EC50
Methyl ethyl ketone 78-93-3		3130 - 3320: 96 h Pimephales promelas mg/L LC50 flow-through	EC50 = 3403 mg/L 30 min EC50 = 3426 mg/L 5 min	520: 48 h Daphnia magna mg/L EC50 5091: 48 h Daphnia magna mg/L EC50 4025 - 6440: 48 h Daphnia magna mg/L EC50 Static
Propylene oxide 75-56-9	240: 96 h Pseudokirchneriella subcapitata mg/L EC50	215: 96 h Lepomis macrochirus mg/L LC50 static	EC50 = 3300 mg/L 160 min	350: 48 h Daphnia magna mg/L EC50

Persistence/Degradability

Not determined.

Bioaccumulation

Not determined.

Mobility

Chemical Name	Partition Coefficient
Toluene 108-88-3	2.65
Tetrahydrofuran 109-99-9	0.45
Methyl ethyl ketone 78-93-3	0.29
Propylene oxide 75-56-9	0.08

Other Adverse Effects

Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated Packaging Disposal should be in accordance with applicable regional, national and local laws and regulations.

US EPA Waste Number

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
Toluene 108-88-3	U220	Included in waste streams: F005, F024, F025, F039, K015, K036, K037, K149, K151		U220
Tetrahydrofuran 109-99-9				U213
Methyl ethyl ketone 78-93-3	U159	Included in waste streams: F005, F039	200.0 mg/L regulatory level	U159

Chemical Name	RCRA - Halogenated Organic Compounds	RCRA - P Series Wastes	RCRA - F Series Wastes	RCRA - K Series Wastes
Toluene 108-88-3			Toxic waste waste number F025 Waste description: Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated aliphatic hydrocarbons are those having carbon chain lengths ranging from one to and including five, with varying amounts and positions of chlorine substitution.	

California Hazardous Waste Status

Chemical Name	California Hazardous Waste Status
Toluene 108-88-3	Toxic Ignitable
Tetrahydrofuran 109-99-9	Toxic Ignitable
Methyl ethyl ketone 78-93-3	Toxic Ignitable
Propylene oxide 75-56-9	Toxic Ignitable

14. TRANSPORT INFORMATION

Note Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

DOT

UN/ID No UN1263
 Proper Shipping Name Paint
 Hazard Class 3
 Packing Group II

IATA

UN/ID No UN1263
 Proper Shipping Name Paint
 Hazard Class 3
 Packing Group II

IMDG

UN/ID No UN1263
 Proper Shipping Name Paint
 Hazard Class 3
 Packing Group II
 Marine Pollutant This material may meet the definition of a marine pollutant

15. REGULATORY INFORMATION

International Inventories

DSL Listed
 NDSL Listed

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
Toluene 108-88-3	1000 lb 1 lb		RQ 1000 lb final RQ RQ 454 kg final RQ RQ 1 lb final RQ RQ 0.454 kg final RQ
Tetrahydrofuran 109-99-9	1000 lb		RQ 1000 lb final RQ RQ 454 kg final RQ
Methyl ethyl ketone 78-93-3	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ
Propylene oxide 75-56-9	100 lb	100 lb	RQ 100 lb final RQ RQ 45.4 kg final RQ

SARA 313

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Toluene - 108-88-3	108-88-3	40-50	1.0
Propylene oxide - 75-56-9	75-56-9	0.5-1.5	0.1

CWA (Clean Water Act)

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Toluene 108-88-3 (40-50)	1000 lb	X	X	X
Propylene oxide 75-56-9 (0.5-1.5)	100 lb			X

US State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Toluene - 108-88-3	Developmental Female Reproductive
Propylene oxide - 75-56-9	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Toluene 108-88-	X	X	X
Tetrahydrofuran 109-99-9	X	X	X
Methyl ethyl ketone 78-93-3	X	X	X
Propylene oxide 75-	X	X	X

16. OTHER INFORMATION

NFPA	Health Hazards	Flammability	Instability	Special Hazards
	3	3	0	Not determined
HMIS	Health Hazards	Flammability	Physical Hazards	Personal Protection
	3	3	0	X

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Disclaimer

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. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet