

ACROS ORGANICS

Material Safety Data Sheet

Creation Date 28-Jul-2009

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Revision Number 1

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Methylaluminoxane, 10 wt.% (1.5M) solution in toluene

Cat No. AC427870000; AC427871000; AC427878000

Synonyms MAO

Recommended Use Laboratory chemicals

Company
Fisher Scientific
One Reagent Lane
Fair Lawn, NJ 07410
Tel: (201) 796-7100

Entity / Business Name
Acros Organics
One Reagent Lane
Fair Lawn, NJ 07410

Emergency Telephone Number
For information in the US, call: 800-ACROS-01
For information in Europe, call: +32 14 57 52 11

Emergency Number, Europe: +32 14 57 52 99
Emergency Number, US: 201-796-7100

CHEMTREC Phone Number, US: 800-424-9300
CHEMTREC Phone Number, Europe: 703-527-3887

2. HAZARDS IDENTIFICATION

DANGER!

Emergency Overview

Flammable liquid and vapor. Reacts violently with water. Spontaneously flammable in air. Possible cancer hazard. May cause cancer based on animal data. Causes burns by all exposure routes. Inhalation may cause central nervous system effects. Aspiration hazard if swallowed - can enter lungs and cause damage. May cause harm to the unborn child.
Danger of serious damage to health by prolonged exposure.

Appearance Colorless

Physical State Liquid

odor No information available

Target Organs Skin, Respiratory system, Eyes, Gastrointestinal tract (GI), Heart, Liver, Kidney, spleen, Central nervous system (CNS), Blood

Potential Health Effects

Acute Effects

Principle Routes of Exposure

Eyes	Causes burns.
Skin	Causes burns. May be harmful in contact with skin.
Inhalation	Causes burns. May be harmful if inhaled. Inhalation may cause central nervous system effects.
Ingestion	Causes burns. Aspiration hazard. May be harmful if swallowed.

Chronic Effects

Possible cancer hazard based on tests with laboratory animals. Tumorigenic effects have been reported in experimental animals.. Experiments have shown reproductive toxicity effects on laboratory animals. May cause adverse liver effects. May cause adverse kidney effects.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions

Central nervous system disorders. Preexisting eye disorders. Kidney disorders. Liver disorders. Skin disorders.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Haz/Non-haz

Component	CAS-No	Weight %
Toluene	108-88-3	90
Poly[oxy(methylaluminin)]	120144-90-3	6-8
Trimethylaluminium	75-24-1	2-4

4. FIRST AID MEASURES

Eye Contact

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required.

Skin Contact

Wash off immediately with plenty of water for at least 15 minutes. Immediate medical attention is required.

Inhalation

Move to fresh air. If breathing is difficult, give oxygen. Do not use mouth-to-mouth resuscitation if victim ingested or inhaled the substance; induce artificial respiration with a respiratory medical device. Immediate medical attention is required.

Ingestion

Do not induce vomiting. Call a physician or Poison Control Center immediately.

Notes to Physician

Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flash Point

4°C / 39.2°F

Method

No information available.

Autoignition Temperature

No information available.

Explosion Limits

Upper

No data available

Lower

No data available

Suitable Extinguishing Media	Dry chemical, soda ash, lime or sand. approved class D extinguishers.
Unsuitable Extinguishing Media	DO NOT USE WATER!.
Hazardous Combustion Products	No information available.
Sensitivity to mechanical impact	No information available.
Sensitivity to static discharge	No information available.

Specific Hazards Arising from the Chemical

Flammable. Containers may explode when heated. Vapors may form explosive mixtures with air. Vapors may travel to source of ignition and flash back. Reacts violently with water.

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. Thermal decomposition can lead to release of irritating gases and vapors.

NFPA **Health 3** **Flammability 3** **Instability 2** **Physical hazards W**

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions	Use personal protective equipment. Keep people away from and upwind of spill/leak. Evacuate personnel to safe areas. Remove all sources of ignition. Take precautionary measures against static discharges. Do not get in eyes, on skin, or on clothing.
Environmental Precautions	Should not be released into the environment.
Methods for Containment and Clean Up	Soak up with inert absorbent material. Keep in suitable and closed containers for disposal. Remove all sources of ignition. Use spark-proof tools and explosion-proof equipment. Do not expose spill to water.

7. HANDLING AND STORAGE

Handling	Use only under a chemical fume hood. Wear personal protective equipment. Do not get in eyes, on skin, or on clothing. Keep away from open flames, hot surfaces and sources of ignition. Use only non-sparking tools. Use explosion-proof equipment. Do not breathe vapors/dust. Do not ingest. Take precautionary measures against static discharges. Handle under an inert atmosphere. Do not allow contact with water.
Storage	Flammables area. Keep away from heat and sources of ignition. Store under an inert atmosphere. Keep away from water. Keep refrigerated. Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering Measures

Use only under a chemical fume hood. Ensure that eyewash stations and safety showers are close to the workstation location. Use explosion-proof electrical/ventilating/lighting/equipment.

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	NIOSH IDLH
Toluene	TWA: 20 ppm	(Vacated) TWA: 375 mg/m ³ (Vacated) TWA: 100 ppm Ceiling: 300 ppm (Vacated) STEL: 150 ppm (Vacated) STEL: 560 mg/m ³ TWA: 200 ppm	IDLH: 500 ppm TWA: 375 mg/m ³ TWA: 100 ppm STEL: 150 ppm STEL: 560 mg/m ³
Trimethylaluminium		(Vacated) TWA: 2 mg/m ³	TWA: 2 mg/m ³

Component	Quebec	Mexico OEL (TWA)	Ontario TWAEV
Toluene	TWA: 188 mg/m ³ TWA: 50 ppm Skin	TWA: 188 mg/m ³ TWA: 50 ppm	TWA: 20 ppm
Trimethylaluminium	TWA: 2 mg/m ³	TWA: 2 mg/m ³	TWA: 2 mg/m ³

NIOSH IDLH: Immediately Dangerous to Life or Health

Personal Protective Equipment

Eye/face Protection

Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin and body protection

Wear appropriate protective gloves and clothing to prevent skin exposure.

Respiratory Protection

Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State

Liquid

Appearance

Colorless

odor

No information available

Odor Threshold

No information available.

pH

No information available.

Vapor Pressure

0.76 mmHg @ 60°C

Vapor Density

No information available.

Viscosity

No information available.

Boiling Point/Range

111°C / 231.8°F @ 760 mmHg

Melting Point/Range

-20°C / -4°F

Decomposition temperature °C

No information available.

Flash Point

4°C / 39.2°F

Evaporation Rate

No information available.

Specific Gravity

0.884

Solubility

No information available.

log Pow

No data available

Molecular Weight

58.02

Molecular Formula

[-Al(CH₃)O-]_n

10. STABILITY AND REACTIVITY

Stability	Moisture sensitive. Reacts violently with water. Pyrophoric: Spontaneously flammable in air.
Conditions to Avoid	Incompatible products. Keep away from open flames, hot surfaces and sources of ignition. Exposure to moist air or water. Exposure to air.
Incompatible Materials	Strong oxidizing agents
Hazardous Decomposition Products	Carbon monoxide (CO), Carbon dioxide (CO ₂), Fumes, Hydrogen
Hazardous Polymerization	No information available.
Hazardous Reactions .	Reacts violently with water.. Pyrophoric: Spontaneously flammable in air.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
Toluene	636 mg/kg (Rat)	12124 mg/kg (Rat) 8390 mg/kg (Rabbit)	26700 ppm (Rat) 1 h 12.5 mg/L (Rat) 4 h

Irritation	Causes burns by all exposure routes
Toxicologically Synergistic Products	No information available.
Chronic Toxicity	
Carcinogenicity	There are no known carcinogenic chemicals in this product
Sensitization	No information available.
Mutagenic Effects	No information available.
Reproductive Effects	No information available.
Developmental Effects	No information available.
Teratogenicity	No information available.
Other Adverse Effects	See actual entry in RTECS for complete information. The toxicological properties have not been fully investigated..

Endocrine Disruptor Information No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Component	Freshwater Algae	Freshwater Fish	Microtox	Water Flea
Toluene	EC50 96 h >433 mg/L EC50 72 h 12.5 mg/L EC50 96 h >433 mg/L	Not listed	EC50 = 19.7 mg/L 30 min	EC50 48 h 11.3 mg/L EC50 48 h 310 mg/L EC50 48 h 11.3 mg/L

Persistence and Degradability No information available

Bioaccumulation/ Accumulation No information available

Mobility

Component	log Pow
Toluene	2.65

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Chemical waste generators must also consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

Component	RCRA - U Series Wastes	RCRA - P Series Wastes
Toluene - 108-88-3	U220	-

14. TRANSPORT INFORMATION

DOT

UN-No UN3394
Proper Shipping Name Organometallic substance, liquid, pyrophoric, water-reactive
Proper technical name Toluene, Poly[oxy(methylaluminin)]
Hazard Class 4.2
Subsidiary Hazard Class 4.3
Packing Group I

TDG

UN-No UN3394
Proper Shipping Name Organometallic substance, liquid, pyrophoric, water-reactive
Hazard Class 4.2
Subsidiary Hazard Class 4.3
Packing Group I

14. TRANSPORT INFORMATION

IATA

UN-No UN3394
 Proper Shipping Name Organometallic substance, liquid, pyrophoric, water-reactive (Mixture)
 Hazard Class 4.2
 Subsidiary Hazard Class 4.3

IMDG/IMO

UN-No UN3394
 Proper Shipping Name Organometallic substance, Liquid, Pyrophoric, water-reactive (Mixture)
 Hazard Class 4.2
 Subsidiary Hazard Class 4.3
 Packing Group I

15. REGULATORY INFORMATION

International Inventories

Component	TSCA	DSL	NDSL	EINECS	ELINCS	NLP	PICCS	ENCS	AICS	CHINA	KECL
Toluene	X	X	-	203-625-9	-		X	X	X	X	KE-33936 X
Trimethylaluminium	X	X	-	200-853-0	-		X	X	X	X	KE-05-1326 X

Legend:

- X - Listed
- E - Indicates a substance that is the subject of a Section 5(e) Consent order under TSCA.
- F - Indicates a substance that is the subject of a Section 5(f) Rule under TSCA.
- N - Indicates a polymeric substance containing no free-radical initiator in its inventory name but is considered to cover the designated polymer made with any free-radical initiator regardless of the amount used.
- P - Indicates a commenced PMN substance
- R - Indicates a substance that is the subject of a Section 6 risk management rule under TSCA.
- S - Indicates a substance that is identified in a proposed or final Significant New Use Rule
- T - Indicates a substance that is the subject of a Section 4 test rule under TSCA.
- XU - Indicates a substance exempt from reporting under the Inventory Update Rule, i.e. Partial Updating of the TSCA Inventory Data Base Production and Site Reports (40 CFR 710(B)).
- Y1 - Indicates an exempt polymer that has a number-average molecular weight of 1,000 or greater.
- Y2 - Indicates an exempt polymer that is a polyester and is made only from reactants included in a specified list of low concern reactants that comprises one of the eligibility criteria for the exemption rule.

U.S. Federal Regulations

TSCA 12(b) Not applicable

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values %
Toluene	108-88-3	90	1.0

SARA 311/312 Hazardous Categorization

Acute Health Hazard Yes
 Chronic Health Hazard Yes
 Fire Hazard Yes
 Sudden Release of Pressure Hazard No
 Reactive Hazard Yes

Clean Water Act

Component	CWA - Hazardous Substances	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants
Toluene	X	1000 lb	X	X

Clean Air Act

Component	HAPS Data	Class 1 Ozone Depletors	Class 2 Ozone Depletors
Toluene	X		-

OSHA

Component	Specifically Regulated Chemicals	Highly Hazardous Chemicals
Trimethylaluminium	-	TQ: 5000 lb

CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Component	Hazardous Substances RQs	CERCLA EHS RQs
Toluene	1000 lb	-

California Proposition 65

This product contains the following Proposition 65 chemicals:

Component	CAS-No	California Prop. 65	Prop 65 NSRL
Toluene	108-88-3	Developmental	-

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
Toluene	X	X	X	X	X
Trimethylaluminium	X	X	X	-	X

U.S. Department of Transportation

Reportable Quantity (RQ): Y
 DOT Marine Pollutant N
 DOT Severe Marine Pollutant N

U.S. Department of Homeland Security

This product does not contain any DHS chemicals.

Other International Regulations

Mexico - Grade No information available

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

WHMIS Hazard Class

B6 Reactive flammable material

D2A Very toxic materials

E Corrosive material



16. OTHER INFORMATION

Prepared By	Regulatory Affairs Thermo Fisher Scientific Tel: (412) 490-8929
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Disclaimer

The information provided on 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 guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as 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 material or in any process, unless specified in the text.

End of MSDS