1. Identification

Product Name  Trimethylaluminium, 1.0M solution in heptane
Cat No. :      AC189270000; AC189271000; AC189278000
Synonyms      No information available
Recommended Use Laboratory chemicals.
Uses advised against Food, drug, pesticide or biocidal product use.

2. Hazard(s) identification

Classification
This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<table>
<thead>
<tr>
<th>Flammable liquids</th>
<th>Category 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substances/mixtures which, in contact with water, emit flammable gases</td>
<td>Category 1</td>
</tr>
<tr>
<td>Skin Corrosion/Irritation</td>
<td>Category 1 B</td>
</tr>
<tr>
<td>Serious Eye Damage/Eye Irritation</td>
<td>Category 1</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
<tr>
<td>Target Organs - Central nervous system (CNS), Respiratory system.</td>
<td>Category 3</td>
</tr>
<tr>
<td>Aspiration Toxicity</td>
<td>Category 1</td>
</tr>
</tbody>
</table>

Label Elements

Signal Word
Danger

Hazard Statements
Highly flammable liquid and vapor
In contact with water releases flammable gases which may ignite spontaneously
May be fatal if swallowed and enters airways
Causes severe skin burns and eye damage
May cause respiratory irritation
May cause drowsiness or dizziness

**Precautionary Statements**

**Prevention**
- Do not breathe dust/fume/gas/mist/vapors/spray
- Wash face, hands and any exposed skin thoroughly after handling
- Wear protective gloves/protective clothing/eye protection/face protection
- 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 electrical/ventilating/lighting equipment
- Use only non-sparking tools
- Take precautionary measures against static discharge
- Keep away from any possible contact with water, because of violent reaction and possible flash fire
- Handle under inert gas. Protect from moisture
- Keep cool

**Response**
- Immediately call a POISON CENTER or doctor/physician

**Inhalation**
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

**Skin**
- IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
- Wash contaminated clothing before reuse
- Brush off loose particles from skin. Immerse in cool water/wrap with wet bandages

**Eyes**
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

**Ingestion**
- Do NOT induce vomiting
- Rinse mouth

**Fire**
- In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction

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

**Disposal**
- Dispose of contents/container to an approved waste disposal plant

**Hazards not otherwise classified (HNOC)**
- Toxic to aquatic life with long lasting effects
- Reacts violently with water

### 3. Composition/Information on Ingredients

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>Weight %</th>
</tr>
</thead>
</table>

Page 2 / 9
4. First-aid measures

**General Advice**
Show this safety data sheet to the doctor in attendance. Immediate medical attention is required.

**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. Remove and wash contaminated clothing and gloves, including the inside, before re-use. Call a physician immediately.

**Inhalation**
If not breathing, give artificial respiration. Remove from exposure, lie down. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. Call a physician immediately.

**Ingestion**
Do NOT induce vomiting. Clean mouth with water. Never give anything by mouth to an unconscious person. Call a physician immediately.

**Most important symptoms and effects**
Causes burns by all exposure routes. Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting: Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated: Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

**Notes to Physician**
Treat symptomatically

5. Fire-fighting measures

**Suitable Extinguishing Media**
Dry chemical, approved class D extinguishers. Dry sand. sodium carbonate. dry clay.

**Unsuitable Extinguishing Media**
Foam, Water, Carbon dioxide (CO2)

**Flash Point**
-4 °C / 24 °F

**Method -**
(based on components)

**Autoignition Temperature**
No information available

**Explosion Limits**
No data available

**Sensitivity to Mechanical Impact**
No information available

**Sensitivity to Static Discharge**
No information available

**Specific Hazards Arising from the Chemical**
Thermal decomposition can lead to release of irritating gases and vapors. The product causes burns of eyes, skin and mucous membranes. Reacts violently with water.

**Hazardous Combustion Products**
Carbon monoxide (CO), Carbon dioxide (CO2), Methane.

**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
6. Accidental release measures

Personal Precautions
Ensure adequate ventilation. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental Precautions
Should not be released into the environment.

Methods for Containment and Clean Up
Keep in suitable, closed containers for disposal. Soak up with inert absorbent material. Do not expose spill to water.

7. Handling and storage

Handling
Do not get in eyes, on skin, or on clothing. Wear personal protective equipment/face protection. Use only under a chemical fume hood. Do not breathe mist/vapors/spray. Do not ingest. If swallowed then seek immediate medical assistance. Do not allow contact with water.

Storage.

8. Exposure controls / personal protection

Exposure Guidelines

<table>
<thead>
<tr>
<th>Component</th>
<th>ACGIH TLV</th>
<th>OSHA PEL</th>
<th>NIOSH IDLH</th>
<th>Mexico OEL (TWA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trimethylaluminium</td>
<td>(Vacated)</td>
<td>TWA: 2 mg/m³</td>
<td>TWA: 2 mg/m³</td>
<td>TWA: 2 mg/m³</td>
</tr>
</tbody>
</table>

Legend
ACGIH - American Conference of Governmental Industrial Hygienists
OSHA - Occupational Safety and Health Administration
NIOSH IDLH: NIOSH - National Institute for Occupational Safety and Health

Engineering Measures
Ensure adequate ventilation, especially in confined areas. Use explosion-proof electrical/ventilating/lighting equipment. Ensure that eyewash stations and safety showers are close to the workstation location.

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.

Hygiene Measures
Handle in accordance with good industrial hygiene and safety practice.

9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Physical State</th>
<th>Liquid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Clear</td>
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<tr>
<td>Odor</td>
<td>No information available</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
</tr>
</tbody>
</table>
Trimethylaluminium, 1.0M solution in heptane

pH                        No information available
Melting Point/Range       No data available
Boiling Point/Range       No information available
Flash Point               -4 °C / 24 °F (based on components)
Evaporation Rate          No information available
Flammability (solid,gas)  Not applicable
Flammability or explosive limits
  Upper                   No data available
  Lower                   No data available
Vapor Pressure            48 hPa @ 20°C
Vapor Density             No information available
Specific Gravity          0.688
Solubility                Reacts with water
Partition coefficient; n-octanol/water  No data available
Autoignition Temperature  No information available
Decomposition Temperature > 180°C
Viscosity                 0.90 mPa s at 30 °C
Molecular Formula         C3 H9 Al
Molecular Weight          72.09

10. Stability and reactivity

Reactive Hazard           Yes
Stability                 Volatile at high temperatures. Moisture sensitive. Air sensitive.
Conditions to Avoid       Keep away from open flames, hot surfaces and sources of ignition. Exposure to air. Incompatible products. Exposure to moist air or water. Exposure to moisture.
Incompatible Materials    Acids, Strong oxidizing agents, Alcohols, oxygen
Hazardous Decomposition Products Carbon monoxide (CO), Carbon dioxide (CO₂), Methane
Hazardous Polymerization  No information available.
Hazardous Reactions       None under normal processing. Reacts violently with water.

11. Toxicological information

Acute Toxicity

Product Information
Oral LD50                 Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Dermal LD50               Based on ATE data, the classification criteria are not met. ATE > 2000 mg/kg.
Vapor LC50               Based on ATE data, the classification criteria are not met. ATE > 20 mg/l.
Component Information
Toxicologically Synergistic No information available
Products
Delayed and immediate effects as well as chronic effects from short and long-term exposure

Irritation               Causes skin burns
Sensitization            No information available
Carcinogenicity          The table below indicates whether each agency has listed any ingredient as a carcinogen.

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>IARC</th>
<th>NTP</th>
<th>ACGIH</th>
<th>OSHA</th>
<th>Mexico</th>
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</thead>
<tbody>
<tr>
<td>Hydrocarbons, C7, n-alkanes, isalkanes, cyclics (&gt;1%)</td>
<td>92045-53-9</td>
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<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>
Trimethylaluminium, 1.0M solution in heptane

<table>
<thead>
<tr>
<th>Substance</th>
<th>Health Hazard Class</th>
<th>Skin Hazard Class</th>
<th>Eye Hazard Class</th>
<th>Inhalation Hazard Class</th>
<th>Skin Absorption Hazard Class</th>
<th>Other Hazard Class</th>
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</thead>
<tbody>
<tr>
<td>Trimethylaluminium</td>
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<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
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</tr>
<tr>
<td>n-heptane</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Mutagenic Effects: No information available
Reproductive Effects: No information available.
Developmental Effects: No information available.
Teratogenicity: No information available.

STOT - single exposure: Central nervous system (CNS) Respiratory system
STOT - repeated exposure: None known

Aspiration hazard: No information available

Symptoms / effects, both acute and delayed: Inhalation of high vapor concentrations may cause symptoms like headache, dizziness, tiredness, nausea and vomiting. Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation.

Endocrine Disruptor Information: No information available
Other Adverse Effects: The toxicological properties have not been fully investigated.

12. Ecological information

Ecotoxicity: The product contains following substances which are hazardous for the environment. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Reacts with water so no ecotoxicity data for the substance is available.

Persistence and Degradability: May persist based on information available.
Bioaccumulation/Accumulation: No information available.
Mobility: Will likely be mobile in the environment due to its water solubility. Is not likely mobile in the environment.

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.

14. Transport information

DOT
- UN-No: UN3399
- Proper Shipping Name: ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE
- Technical Name: Hydrocarbons, C7, n-alkanes, isalkanes, cyclics (>1% n-heptane), Trimethylaluminium
- Hazard Class: 4.3
- Subsidiary Hazard Class: 3
- Packing Group: I
- TDG: Forbidden

IATA
- UN-No: UN3399
- Proper Shipping Name: ORGANOMETALLIC SUBSTANCE, LIQUID, WATER-REACTIVE, FLAMMABLE
- Hazard Class: 4.3
- Subsidiary Hazard Class: 3
- Packing Group: I

IMDG/IMO
- UN-No: UN3399
### 15. Regulatory information

#### United States of America Inventory

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>TSCA</th>
<th>TSCA Inventory notification - Active-Inactive</th>
<th>TSCA - EPA Regulatory Flags</th>
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</thead>
<tbody>
<tr>
<td>Hydrocarbons, C7, n-alkanes, isalkanes, cyclics (&gt;1% n-heptane)</td>
<td>92045-53-9</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Trimethylaluminium</td>
<td>75-24-1</td>
<td>X</td>
<td>ACTIVE</td>
<td>-</td>
</tr>
</tbody>
</table>

**Legend:**  
TSCA - US EPA (TSCA) - Toxic Substances Control Act, (40 CFR Part 710)  
'X' - Listed  
'-' - Not Listed

TSCA - Per 40 CFR 751, Regulation of Certain Chemical Substances & Mixtures, Under TSCA Section 6(h) (PBT)  
Not applicable

TSCA 12(b) - Notices of Export  
Not applicable

#### International Inventories

Canada (DSL/NDSL), Europe (EINECS/ELINCS/NLP), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), China (IECSC), Korea (KECL).

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>DSL</th>
<th>NDSL</th>
<th>EINECS</th>
<th>PICCS</th>
<th>ENCS</th>
<th>ISHL</th>
<th>AICS</th>
<th>IECSC</th>
<th>KECL</th>
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</thead>
<tbody>
<tr>
<td>Hydrocarbons, C7, n-alkanes, isalkanes, cyclics (&gt;1% n-heptane)</td>
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<td>-</td>
<td>295-434-2</td>
<td>X</td>
<td>-</td>
<td>-</td>
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<td>75-24-1</td>
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<td>-</td>
<td>200-853-0</td>
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<td>X</td>
<td>X</td>
<td>KE-05-1326</td>
<td></td>
</tr>
</tbody>
</table>

**KECL** - NIER number or KE number (http://ncis.nier.go.kr/en/main.do)

#### U.S. Federal Regulations

**SARA 313**  
Not applicable

**SARA 311/312 Hazard Categories**  
See section 2 for more information

**CWA (Clean Water Act)**  
Not applicable

**Clean Air Act**  
Not applicable

**OSHA - Occupational Safety and Health Administration**  
Not applicable

<table>
<thead>
<tr>
<th>Component</th>
<th>Specifically Regulated Chemicals</th>
<th>Highly Hazardous Chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trimethylaluminium</td>
<td>-</td>
<td>TQ: 5000 lb</td>
</tr>
</tbody>
</table>

**CERCLA**  
Not applicable

**California Proposition 65**  
This product does not contain any Proposition 65 chemicals.

#### U.S. State Right-to-Know Regulations

<table>
<thead>
<tr>
<th>Component</th>
<th>Massachusetts</th>
<th>New Jersey</th>
<th>Pennsylvania</th>
<th>Illinois</th>
<th>Rhode Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trimethylaluminium</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>-</td>
<td>X</td>
</tr>
</tbody>
</table>
U.S. Department of Transportation
Reportable Quantity (RQ):
- N
- 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

Authorisation/Restrictions according to EU REACH

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Hydrocarbons, C7, n-alkanes, isalkanes, cyclics (&gt;1% n-heptane)</td>
<td>92045-53-9</td>
<td>Use restricted. See item 28. (see link for restriction details) Use restricted. See item 29. (see link for restriction details) Use restricted. See item 75. (see link for restriction details)</td>
<td></td>
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</tr>
<tr>
<td>Trimethylaluminium</td>
<td>75-24-1</td>
<td>Use restricted. See item 75. (see link for restriction details)</td>
<td></td>
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</tbody>
</table>


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

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS No</th>
<th>OECD HPV</th>
<th>Persistent Organic Pollutant</th>
<th>Ozone Depletion Potential</th>
<th>Restriction of Hazardous Substances (RoHS)</th>
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</thead>
<tbody>
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</table>

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<tbody>
<tr>
<td>Hydrocarbons, C7, n-alkanes, isalkanes, cyclics (&gt;1% n-heptane)</td>
<td>92045-53-9</td>
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<td>Not applicable</td>
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</tr>
<tr>
<td>Trimethylaluminium</td>
<td>75-24-1</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>

16. Other information

Prepared By
Regulatory Affairs
Thermo Fisher Scientific
Email: EMSDS.RA@thermofisher.com
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 SDS