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## Material Safety Data Sheet

### **N,N-Diethyl-m-toluamide/DEET**

#### **Section 1: Chemical Product and Company Identification**

MSDS Name: N,N-Diethyl-m-toluamide

Catalog Numbers: AC407520000, AC407520010, AC407522500, ACE1197151, ACE1197169

Synonyms: DEET; Benzamide, N,N-Diethyl-3-Methyl-; N,N-Diethyl-3-Methylbenzamide;  
Diethyltoluamide; Diethyl-M-Toluamide; 3-Methyl-N,N-Diethylbenzamide.

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#### **Section 2: Composition and Information on Ingredients**

Composition:

Name	CAS # %	By Weight
N,N-Diethyl-m-toluamide	134-62-3	≥ 99.0%

#### **Section 3: Hazards Identification**

**Appearance:** colorless liquid.

**Caution!** Causes eye and skin irritation. May be harmful if swallowed. May cause respiratory and digestive tract irritation. This substance has caused adverse reproductive and fetal effects in animals. May cause central nervous system effects. Possible sensitizer.

**Target Organs:** Central nervous system, eyes, skin.

#### **Potential Health Effects**

**Eye:** Causes eye irritation.

**Skin:** Causes skin irritation.

May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.

**Ingestion:** May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May be harmful if swallowed.

May cause central nervous system effects.

**Inhalation:** May cause respiratory tract irritation. May cause irritation of the mucous membranes.

**Chronic:** Prolonged or repeated exposure may cause adverse reproductive effects. Laboratory experiments have resulted in mutagenic effects. Chronic overexposure may produce erythremia, bullous eruptions, contact urticaria, muscle cramping, slurred speech, tremors, seizures, or coma.

#### **Section 4: First Aid Measures**

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** Do not induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Remove from exposure and move to fresh air immediately. Get medical aid. Do NOT use mouth-to-mouth resuscitation. Administer oxygen. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Notes to Physician:** For ingestion, the stomach should be intubated, aspirated, and lavaged with a slurry of activated

charcoal--protect the airway from aspiration of gastric contents.

## Section 5: Fire and Explosion Data

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

During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Water may be ineffective. Material is lighter than water and a fire may be spread by the use of water. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

**Extinguishing Media:** Use extinguishing media most appropriate for the surrounding fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** 155 deg C ( 311.00 deg F)

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 1; Instability: 0

## Section 6: Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Clean up spills immediately, observing precautions in the Protective Equipment section. Provide ventilation.

## Section 7: Handling and Storage

### Handling:

Wash thoroughly after handling.

Use only in a well-ventilated area.

Avoid breathing dust, mist, or vapor.

Avoid contact with skin and eyes.

Do not ingest or inhale. Wash clothing before reuse.

**Storage:**

Keep container closed when not in use.

Store in a tightly closed container.

Store in a cool, dry, well-ventilated area away from incompatible substances.

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

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**Exposure Limits**

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
N,N-Diethyl-m-toluamide	none listed	none listed	none listed

**OSHA Vacated PELs:** N,N-Diethyl-m-toluamide: No OSHA Vacated PELs are listed for this chemical.

**Personal Protective Equipment**

**Eyes:** 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:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

**Section 9: Physical and Chemical Properties**

<b>Physical State:</b>	Liquid
<b>Appearance:</b>	colorless
<b>Odor:</b>	practically odorless
<b>pH:</b>	Not available.
<b>Vapor Pressure:</b>	< 0.01 mm Hg @ 25 C

<b>Vapor Density:</b>	6.60
<b>Evaporation Rate:</b>	Not available.
<b>Viscosity:</b>	cP 30 deg C
<b>Boiling Point:</b>	147 deg C @ 7 mm Hg
<b>Freezing/Melting Point:</b>	Not available.
<b>Decomposition Temperature:</b>	Not available.
<b>Solubility:</b>	Partially soluble.
<b>Specific Gravity/Density:.</b>	9900 g/cm3
<b>Molecular Formula:</b>	C12H17NO
<b>Molecular Weight:</b>	191.27

## Section 10: Stability and Reactivity Data

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents, strong reducing agents, strong acids, strong bases, alkalis.

**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, carbon monoxide, carbon dioxide.

**Hazardous Polymerization:** Will not occur.

## Section 11: Toxicological Information

**RTECS#:**

**CAS#** 134-62-3: XS3675000

**LD50/LC50:**

CAS# 134-62-3:

Draize test, rabbit, eye: 100 mg;

Draize test, rabbit, eye: 10 mg Moderate;

Draize test, rabbit, skin: 500 mg Moderate;

Inhalation, rat: LC50 = 5950 mg/m3;

Oral, mouse: LD50 = 1170 mg/kg;

Oral, rabbit: LD50 = 1584 mg/kg;

Oral, rat: LD50 = 1892 mg/kg;

Skin, rabbit: LD50 = 3180 uL/kg;

Skin, rat: LD50 = 5 gm/kg;

**Carcinogenicity:**

CAS# 134-62-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** Oral, rat: TDLo = 7500 mg/kg (female 6-15 days after conception-Maternal effects and effects on embryo and fetus)Dermal, rat: TDLo = 19 gm/kg (female 1-19 days after conception -Effects on newborn).Oral, rabbit: TDLo = 4225 mg/kg (female 6-18 days after conception -Maternal effects).

**Mutagenicity:** Sperm Morphology: Inhalation, rat = 1500 mg/kg.

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12: Ecological Information

**Ecotoxicity:**

Fish: Fathead Minnow: 110 mg/L; 96Hr; LC50Fish: Fathead Minnow: 75.7 mg/L; 96Hr; EC50 Fish toxicity: LC50 (96 hr) cichlid 120-150 ppm. After 96 hours, glutathione levels in liver, kidney and gills were raised.Invertebrate toxicity: EC50 (5 min) Photobacterium phosphoreum 67.9 ppm Microtox test.

**Environmental:**

Anaërobic effects: Decomposition can be effected by biodegradation under anaërobic conditions.[The Dictionary of Substances and their Effects, 1992]

**Physical:**

No information available.

**Other:**

Estimated Koc value = 300. This value indicates that DEET will show moderate mobility in soil and may absorb to suspended matter in the water column. Estimated BCF values = 0.8-2.4. These values suggest that this product should not readily bioconcentrate in aquatic organisms.

**Section 13: Disposal Considerations**

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

**Section 14: Transport Information**

	<b>US DOT</b>	<b>Canada TDG</b>
<b>Shipping Name:</b>	Not regulated as a hazardous material	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

**Section 15: Other Regulatory Information**

**US FEDERAL**

**TSCA**

CAS# 134-62-3 is listed on the TSCA inventory.

**Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

**Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

**Section 12b**

None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RQ.

**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**Section 313** No chemicals are reportable under Section 313.

**Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 134-62-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

**California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

**European/International Regulations**

**European Labeling in Accordance with EC Directives**



**Hazard Symbols:**

XN

**Risk Phrases:**

R 22 Harmful if swallowed.

R 36/38 Irritating to eyes and skin.

R 52/53 Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety Phrases:**

S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

**WGK (Water Danger/Protection)**

CAS# 134-62-3: 1

**Canada - DSL/NDSL**

CAS# 134-62-3 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of D2A.

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

**Canadian Ingredient Disclosure List**

**Section 16: Other Information**

**MSDS Creation Date:** 2/26/1999

Reversion Date: June 01, 2011

Version No.: 20110601002

*The information above is believed to be accurate and represents the best information currently available to us. However,*

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