

**SAFETY DATA SHEET**  
**NADIC METHYL ANHYDRIDE (NMA)**

**CATALOG #3143**

**1. IDENTIFICATION**

**Product Identifier**

**Product name:** Nadic Methyl Anhydride, NMA, NMA NE

**Product form:** Substance

**Product code:** NMA, NMA NE

**Other means of identification:** Methyl-5-norbornene-2,3-dicarboxylic anhydride;  
4-7-Methanoisobenzofuran-1, 3-dione

**Relevant identified uses of the substance or mixture and uses advised against**

Use of the substance/mixture:	Use in closed process, no likelihood of exposure. Use in closed, continuous process with occasional controlled exposure. Use in closed batch process (synthesis or formulation). Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities. Transfer of substance or preparation into small containers (dedicated filling line, including weighing).
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**COMPANY IDENTIFICATION**

TOUSIMIS RESEARCH CORP.  
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MARYLAND 20851  
UNITED STATES

**Company Contact Information:**

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**EMERGENCY TELEPHONE NUMBER**

**Emergency Contact: 1-800-424-9300**

## 2. HAZARDS IDENTIFICATION

### Classification of the substance or mixture

#### GHS-US classification

Acute Tox. 4 (Oral)	H302
Acute Tox. 3 (Inhalation/aerosol)	H331
Skin Irrit. 2	H315
Eye Dam. 1	H318
Resp. Sens. 1	H334
Skin Sens. 1	H317

#### Label elements

#### GHS-US labeling

Hazard pictograms (GHS-US)



GHS05



GHS06



GHS08

Signal word (GHS-US):

**Danger**

Hazard statement(s) (GHS-US)

H302 – Harmful if swallowed  
H315 – Causes skin irritation  
H317 – May cause an allergic skin reaction  
H318 – Causes serious eye damage  
H331 – Toxic if inhaled  
H334 – May cause allergy or asthma symptoms or breathing difficulties if inhaled

Precautionary statement(s)

P261 – Avoid breathing mist  
P264 – Wash hands, forearms and face thoroughly after handling  
P270 – Do not eat, drink or smoke when using this product  
P271 – Use only outdoors or in a well-ventilated area  
P272 – Contaminated work clothing must not be allowed out of the workplace.  
P280 – Wear eye protection, face protection, protective clothing, protective gloves  
P284 – [In case of inadequate ventilation] wear respiratory protection  
P301 + P312 – If swallowed: Call a doctor, a poison center if you feel unwell  
P302 + P352 – If on skin: Wash with plenty of soap and water  
P304 + P340 – IF INHALED: Remove person to fresh air and keep comfortable

P305 + P351 + P338 – IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

P310 – Immediately call a doctor, a poison center

P311 – Call a doctor, a poison center

P321 – Specific treatment (see first aid instructions on this label)

P330 – Rinse mouth

P332+P313 – If skin irritation occurs: Get medical advice/attention

P333+P313 – If skin irritation or rash occurs: Get medical advice/attention

P342+P311 – If experiencing respiratory symptoms: Call a poison center, a doctor

P362 – Take off contaminated clothing and wash it before reuse

P362+P364 - Take off contaminated clothing and wash it before reuse

P403+P233 – Store in a well-ventilated place. Keep container tightly closed

P405 – Store locked up

P501 – Dispose of contents/container to hazardous or special waste collection point in accordance with local, regional, national and/or international regulation

**Other hazards**

No additional information available

**Unknown acute toxicity (GHS-US)**

No data available

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Substance**

Methyl-5-norbornene-2,3-dicarboxylic anhydride

CAS No. 25134-21-8

90-100%

**Mixture**

Not applicable

### 4. FIRST AID MEASURES

**Description of first aid measures**

**General Advice**

If exposed or concerned, get medical attention/advice. Show this safety data sheet to the doctor in attendance. Wash contaminated clothing before re-use. Never give anything to an unconscious person.

**If inhaled**

Remove to fresh air and keep at rest in a position comfortable for breathing. Get medical attention. If breathing is difficult, supply oxygen. If breathing has stopped, give artificial respiration.

**In case of skin contact**

Remove affected clothing and wash all exposed skin with water for at least 15 minutes. Get medical attention immediately.

**In case of eye contact**

Immediately flush with plenty of water for at least 15 minutes. Remove contact lenses if present and easy to do so. Get medical attention immediately. Continue rinsing.

**If swallowed**

Rinse mouth thoroughly. Do not induce vomiting without advice from poison control center or medical professional. Get medical attention immediately.

**Most important symptoms and effects, both acute and delayed**

**After inhalation**

Toxic if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

**After skin contact**

May cause an allergic skin reaction. Causes skin irritation.

**After eye contact**

Causes serious eye damage.

**After swallowing**

Harmful if swallowed.

**Indication of any immediate medical attention and special treatment needed**

No additional information available

**5. FIREFIGHTING MEASURES**

**Extinguishing media**

**Suitable extinguishing agents** Water spray. Carbon dioxide. Alcohol-resistant foam.

**Unsuitable extinguishing agents** Do not use a heavy water stream.

**Special hazards arising from the substance or mixture**

Fire Hazard: Must be preheated before ignition can occur.

Explosion Hazard: Product is not explosive.

Reactivity: Carbon dioxides may be emitted upon combustion of material. This material reacts with water or steam to form phthalic acids. This reaction is slightly exothermic.

### **Advice for firefighters**

Firefighting instructions: Use cold water spray to cool fire-exposed containers to minimize risk of rupture. Do not dispose of fire-fighting water in the environment. Dispose of in accordance with relevant local regulations. Prevent human exposure to fire, fumes, smoke and products of combustion.

Protection during firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.

## **6. ACCIDENTAL RELEASE MEASURES**

### **Personal precautions, protective equipment and emergency procedures**

General measures: Evacuate area. Keep upwind. Ventilate area. Spill should be handled by trained clean-up crews properly equipped with respiratory equipment and full chemical protective gear (see Section 8).

### **For non-emergency personnel**

Protective equipment: Wear Protective equipment as described in Section 8.

Emergency procedures: Evacuate unnecessary personnel.

### **For emergency responders**

Protective equipment: For further information refer to section 8: "Exposure controls/personal protection".

### **Environmental precautions**

Notify authorities if product enters sewers or public waters. Prevent entry to sewers and public waters. Avoid release to the environment.

### **Methods and material for containment and cleaning up**

For containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams.

Methods for cleaning up: Eliminate ignition sources. Soak up spills with inert solids, such as clay or diatomaceous earth as soon as possible. Place in a suitable container for disposal in accordance with the waste regulations (see Section 13).

### **Reference to other sections**

See Sections 8 and 13.

## **7. HANDLING AND STORAGE**

### **Precautions for safe handling**

Wear personal protective equipment. Do not handle until all safety precautions have been read and understood. Ensure good ventilation of the work station. Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Preferably transfer by pump or gravity. Handle small quantities under a lab hood. Prevent product vapors of decomposition from contacting hot spots. Prevent product vapors of decomposition from electric arc action (welding).

**Conditions for safe storage, including any incompatibilities**

Storage conditions: Protect from sunlight. Store in a well-ventilated place. Store in original container. Keep the container tightly closed. Keep in a bonded area.

Packaging materials: Polyethylene. Steel coated (enameled).

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

Methyl-5-norbornene-2,3-dicarboxylic anhydride **(25134-21-8)**

Remark (ACGIH) : OELs not established

Remark (OSHA) : OELs not established

**Exposure controls**

Appropriate engineering controls: Provide adequate general and local exhaust ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Use explosion-proof equipment with flammable materials. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment: Gloves. Wear chemical goggles and face shield in combination. Protective clothing. Insufficient ventilation: wear respiratory protection.

Hand protection: Use gloves chemically resistant to this material when prolonged or repeated contact could occur. Gloves should be classified under Standard EN 374 or ASTM F1296. Suggested glove materials are: Neoprene, Nitrile/butadiene rubber, Polyethylene, Ethyl vinyl alcohol laminate, PVC, or vinyl. Be aware that the chemical may penetrate the gloves. Frequent changes are advisable. Suitable gloves for this specific application can be recommended by the glove supplier.

Eye protection: Wear eye protection, including chemical splash goggles and a face shield when possibility exists for eye contact due to spraying fluid or airborne particles.

Skin and body protection: Wear long sleeves, and chemically impervious PPE/coveralls to minimize bodily exposure.

Respiratory protection: Use NIOSH-approved dust/particulate respirator. Where vapor, mist, or dust exceed PELs or other applicable OELs, use NIOSH-approved respiratory protective equipment.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

#### Appearance

Form	Liquid
Color	Pale yellow to tan.

Smell Slight.

Odor Threshold No data available

pH No data available

#### Relative evaporation rate

(butyl acetate = 1) No data available

Melting point/range No data available

Boiling point/range 132°C (270°F) at 2 mm Hg or ca. 140°C (284°F) at 10 mm Hg

Flash point 135°C (275°F) PMCC, ASTM D93

Auto-ignition temperature No data available

Decomposition temperature 200°C (392°F)

Flammability (solid, gas) No data available

Vapour pressure 5 mm Hg at 120°C (248°F)

#### Relative vapour density

at 20°C 6.1 g/L (AIR = 1)

Relative density 1.2 (≥ 1.25) at 20°C (68°F)

Solubility No data available

Log Pow No data available

Log Kow No data available

Viscosity, kinematic No data available

Viscosity, dynamic No data available

Explosive properties No data available

Oxidising properties No data available

Explosive limits No data available

Other safety information No data available

## 10. STABILITY AND REACTIVITY

**Reactivity:** Carbon oxides may be emitted upon combustion of material. This material reacts with water or steam to form phthalic acids. This reaction is slightly exothermic.

**Chemical stability:** Stable under normal conditions

**Possibility of hazardous reactions:** Heating above 200°C may result in product decomposition and release of hazardous fumes.

**Conditions to avoid:** Ignition sources. Incompatibles. Water.

**Incompatible materials:**

Acids. Oxidizing agents. Bases. Water

**Hazardous decomposition products:**

Carbon monoxide (CO), carbon dioxide (CO<sub>2</sub>)

## 11. TOXICOLOGICAL INFORMATION

**Information on toxicological effects**

**Acute toxicity:** Oral: Harmful if swallowed. Inhalation: aerosol: Toxic if inhaled.

**Methyl-5-norbornene-2,3-dicarboxylic anhydride (25134-21-8)**

LD50 oral rat – 914 mg/kg

Skin corrosion/irritation: Causes skin irritation.

Serious eye damage/irritation: Causes serious eye damage.

Respiratory or skin sensitization: May cause allergy or asthma or breathing difficulties if inhaled. May cause an allergic skin reaction.

Germ cell mutagenicity: Not classified

Carcinogenicity: Not classified

Reproductive toxicity: Not classified

Specific target organ toxicity (single exposure): Not classified

Specific target organ toxicity (repeated exposure): Not classified

Aspiration hazard: Not classified

Symptoms/injuries after inhalation: Toxic if inhaled. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Symptoms/Injuries after skin contact: May cause an allergic skin reaction. Causes skin irritation.



Symptoms/injuries after eye contact: Causes serious eye damage.

Symptoms/injuries after ingestion: Harmful if swallowed.

## 12. ECOLOGICAL INFORMATION

### **Toxicity**

Ecology – general: No information available.

### **Persistence and degradability**

#### **Nadic Methyl Anhydride**

Persistence and degradability: No data available

### **Bioaccumulative potential**

#### **Nadic Methyl Anhydride**

Persistence and degradability: No information available

**Other adverse effects:** No additional information available

## 13. DISPOSAL CONSIDERATIONS

### **Waste treatment methods**

Do not discharge to public wastewater systems without permit of pollution control authorities. No discharge to surface waters is allowed without an NPDES permit.

### **Waste disposal recommendations**

Dispose in a safe manner in accordance with local/national regulations. Do not allow the product to be released into the environment.

## 14. TRANSPORT INFORMATION

In accordance with DOT

Transport document description: UN3265 Corrosive liquid, acidic, organic, n.o.s., (Contains: Methyl-5-norbornene-2,3-dicarboxylic anhydride) 8, III

UN-No. (DOT): 3265

DOT NA no.: UN3265

Proper Shipping Name (DOT): Corrosive liquid, acidic, organic, n.o.s. (Contains: Methyl-5-nornornene-2,3-dicarboxylic anhydride)

Department of Transportation (DOT) Hazard Classes: 8 – Class 8 – Corrosive material 49 CFR 173.136

Hazard labels (DOT): 8 – Corrosive

Packing group (DOT): III – Minor Danger

DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27): 5 L

DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75): 60 L

DOT Vessel Stowage Location: A – The material may be stowed “on deck” or “under deck” on a cargo vessel and on a passenger vessel.

DOT Vessel Stowage Other: 40 – Slow “clear of living quarters”

### **Additional information**

Other information: No supplementary information available.

### **Transport by sea**

UN-No. (IMDG): 3265

Proper Shipping Name (IMDG): CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.

Class (IMDG): 8 – Corrosive substances

Packing group (IMDG): III – substances presenting low danger

### **Air transport**

UN-No. (IATA): 3265

Proper Shipping Name (IATA): CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S.

Class (IATA): 8 – Corrosive substances

Packing group (IATA): III – Minor Danger

## **15. REGULATORY INFORMATION**

### **US Federal regulations**

#### **Nadic Methyl Anhydride**

All chemical substances in this product are listed in the EPA (Environment Protection Agency) TSCA (Toxic Substances Control Act) Inventory

SARA Section 311/312 Hazard Classes – Immediate (acute) health hazard

### **International regulations**

All chemical substances in this product are listed on the Australian Inventory of Chemical Substances (AICS) or are exempt

All chemical substances in this product are listed on the Canadian Domestic Substances List (DSL) or are exempt

All chemical substances in this product are listed on the Chinese Inventory of Existing Chemical Substances (IECSC) or are exempt

All chemical substances in this product are listed on the European EINECS Inventory or the ELINCS list or are exempt

All chemical substances in this product are listed on the Japanese Existing and New Chemical Substances Inventory (ENCS) or are exempt

All chemical substances in this product are listed on the Korean Existing Chemicals Inventory (KECI) or are exempt

All chemical substances in this product are listed on the New Zealand Inventory of Chemicals (NzIoC) or are exempt

All chemical substances in this product are listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS) or are exempt

All chemical substances in this product are listed on the Taiwan Chemical Substance Inventory (TSCI) or are exempt

### **US State regulations**

This product does not contain any substances known to the state of California to cause cancer and/or reproductive harm

## **16. OTHER INFORMATION**

Indication of changes	April 2016
Other information	Author: ANF.
NFPA health hazard	2 – Intense or continued exposure could cause temporary incapacitation or possible residual injury unless prompt medical attention is given.
NFPA fire hazard	1 – Must be preheated before ignition can occur.
NFPA reactivity	1 – Normally stable, but can become unstable at elevated temperatures and pressures or may react with water with some release of energy, but not violently.
<b>HMIS Rating</b>	
Health hazard:	2*
Flammability:	1
Physical Hazard	1
Personal Protection	

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product