

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).

COMPANY IDENTIFICATION
TOUSIMIS RESEARCH CORP.
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20851
UNITED STATES

Company Contact Information:
301-881-2450
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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 (Inhalationaerosol)	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 (CO₂)

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.
HMIS Rating	
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