1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product Identifier

Chemical Name  N-Nitrosobis(2-oxopropyl)amine

Catalogue #  N525250

1.2 Relevant Identified Uses of the Substance or Mixture and Uses Advised Against

Product Uses  To be used only for scientific research and development. Not for use in humans or animals.

1.3 Details of the Supplier of the Safety Data Sheet

Company  Toronto Research Chemicals
2 Brisbane Road
Toronto, ON  M3J 2J8
CANADA

Telephone  +14166659696
FAX  +14166654439
Email  orders@trc-canada.com

1.4 Emergency Telephone Number

Emergency#  +1(416) 665-9696 between 0800-1700 (GMT-5)

2. HAZARDS IDENTIFICATION

WHMIS Classification (Canada)  
D1B  Toxic Material Causing Immediate and Serious Toxic Effects
  Toxic by Ingestion/Skin Absorption
D2A  Very Toxic Material Causing Other Toxic Effects
  Carcinogen/Mutagen

WHMIS Symbols (Canada)

2.1/2.2 Classification of the Substance or Mixture and Label Elements

GHS Hazards Classification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

Acute Toxicity, Oral (Category 3)
Acute Toxicity, Dermal (Category 3)
Germ Cell Mutagenicity (Category 1B)
Carcinogenicity (Category 2)

GHS Hazards Identification (According to EU Regulation 1272/2008 and US OSHA 1910.1200)

Signal Word  Danger

GHS Hazard Statements

H301  Toxic if swallowed.
H311  Toxic in contact with skin.
H340  May cause genetic defects.
H351  Suspected of causing cancer.
General Advice
If medical attention is required, show this safety data sheet to the doctor.

If Inhaled
If inhaled, move person to fresh air. If not breathing, give artificial respiration and consult a physician.

In Case of Skin Contact
Wash affected area with soap and water. Consult a physician if any exposure symptoms are observed.

In Case of Eye Contact
Immediately rinse eyes with plenty of water for at least 15 minutes. Consult a physician.

If Swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting unless advised to do so by a physician or Poison Control Center. Seek medical attention.

GHS Precautionary Statements
P201 Obtain special instructions before use.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray
P301/P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P273 Avoid release to the environment.

2.3 Unclassified Hazards/Hazards Not Otherwise Classified
No data available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Molecular Formula: C_{10}H_{10}N_{2}O_{3}  Molecular Weight: 158.16
CAS Registry #: 60599-38-4  EC#: 
Synonyms
2,2'-Dioxo-N-nitroso-dipropylamine; BOP; 1,1'-(Nitrosoimino)bis-2-propanone;

3.2 Mixtures
Not a mixture.

4. FIRST AID MEASURES

4.1 Description of First Aid Measures
General Advice
If medical attention is required, show this safety data sheet to the doctor.

If Inhaled
If inhaled, move person to fresh air. If not breathing, give artificial respiration and consult a physician.

In Case of Skin Contact
Wash affected area with soap and water. Consult a physician if any exposure symptoms are observed.

In Case of Eye Contact
Immediately rinse eyes with plenty of water for at least 15 minutes. Consult a physician.

If Swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Do NOT induce vomiting unless advised to do so by a physician or Poison Control Center. Seek medical attention.

4.2 Most Important Symptoms and Effects, Both Acute and Delayed
The most important known symptoms and effects are described in the labeling (see section 2.2) and/or section 11.

4.3 Indication of any Immediate Medical Attention and Special Treatment Needed
No data available.

5. FIREFIGHTING MEASURES

5.1 Extinguishing Media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

5.2 Special Hazards Arising from the Substance or Mixture
Carbon oxides, Nitrogen oxides

5.3 Advice for Firefighters
Wear self contained breathing apparatus for fire fighting if necessary.

5.4 Further Information
No data available.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Method and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.
Keep in a dry place.

Storage conditions: -20°C Freezer

7.3 Specific End Uses
For scientific research and development only. Not for use in humans or animals.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control Parameters
Contains no components with established occupation exposure limits.

8.2 Exposure Controls

Appropriate Engineering Controls
A laboratory fume hood or other appropriate form of local exhaust ventilation should be used to avoid exposure.

Personal Protective Equipment
All recommendations below are advisory in nature and a risk assessment should be performed by the employer/end user prior to use of this product. The type of protective equipment must be selected based on the amount and concentration of the dangerous material being used in the workplace.

Eye/Face Protection
Safety goggles or face shield. All equipment should have been tested and approved under appropriate standards, such as NIOSH (US), CSA (Canada), or EN 166 (EU).

Skin Protection
Gloves should be used when handling this material. Gloves are to be inspected prior to use. Contaminated gloves are to be removed using proper glove removal technique so that the outer surface of the glove does not contact bare skin. Dispose of contaminated gloves after use in compliance with good laboratory practices and local requirements.

Gloves used for incidental exposures (splash protection) should be designated as “chemical resistant” by EU standard EN 374 with the resistance codes corresponding to the anticipated use of the material. Unrated gloves are not recommended.
Suggested gloves: AnsellPro Sol-Vex nitrile gloves style 37-175, 15 mil thickness.
Penetration time has not been determined.

Gloves used for prolonged direct exposure (immersion) should be designated “chemical resistant” as per EN 734 with the resistance codes corresponding to the anticipated use of the material.
Penetration time has not been determined.

These recommendations may not apply if the material is mixed with any other chemical, or dissolved into a solution. A risk assessment must be performed to ensure the gloves will still offer acceptable protection.

Body Protection
Fire resistant (Nomex) coveralls or chemical-resistant bodysuit (laminated Tychem SL or equivalent).

Respiratory Protection
Recommended respirators are NIOSH-approved N100 or CEN-approved FFP3 particulate respirators. These are to be
only used as a backup to local exhaust ventilation or other engineering controls. If the respirator is the only means of protection, a full-face supplied air respirator must be used.

9. PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on Basic Physical and Chemical Properties

| A) Appearance                  | Off-White to Pale Yellow Solid |
| B) Odour                       | No data available             |
| C) Odour Threshold             | No data available             |
| D) pH                          | No data available             |
| E) Melting Point/Freezing Point| 44-46°C                      |
| F) Initial Boiling Point/Boiling Range | No data available |
| G) Flash Point                 | No data available             |
| H) Evaporation Rate            | No data available             |
| I) Flammability (Solid/Gas)    | No data available             |
| J) Upper/Lower Flammability/Explosive Limits | No data available |
| K) Vapour Pressure             | No data available             |
| L) Vapour Density              | No data available             |
| M) Relative Density            | No data available             |
| N) Solubility                  | Chloroform (Slightly), Ethyl Acetate (Slightly) |
| O) Partition Coefficient: n-octanol/water | No data available |
| P) Auto-Ignition Temperature   | No data available             |
| Q) Decomposition Temperature   | No data available             |
| R) Viscosity                   | No data available             |
| S) Explosive Properties        | No data available             |

9.2 Other Information

no data available

10. STABILITY AND REACTIVITY

10.1 Reactivity

No data available.

10.2 Chemical Stability

Stable under recommended storage conditions.

10.3 Possibility of Hazardous Reactions

No data available.

10.4 Conditions to Avoid

No data available.

10.5 Incompatible Materials

Strong oxidizing agents.

10.6 Hazardous Decomposition Products

In the event of fire: See section 5. Other decomposition products: No data available.

11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

A) Acute Toxicity

Oral LD50: Rat - 142 mg/kg
Dermal LD50: No data available.

B) Skin Corrosion/Irritation

No data available

C) Serious Eye Damage/Irritation

No data available

D) Respiratory or Skin Sensitization

No data available

E) Germ Cell Mutagenicity

Probable human mutagen. Laboratory results have shown mutagenicity in several model systems (including human).
F) Carcinogenicity
   Evidence of a carcinogenic effect.
   This compound has been designated by the IARC as Group 2B: Possibly carcinogenic to humans.

G) Reproductive Toxicity/Teratogenicity
   No data available

H) Single Target Organ Toxicity - Single Exposure
   No data available

I) Single Target Organ Toxicity - Repeated Exposure
   No data available

J) Aspiration Hazard
   No data available

K) Potential Health Effects and Routes of Exposure
   **Inhalation**
   Harmful if inhaled. May cause respiratory tract irritation.

   **Ingestion**
   Harmful if swallowed.

   **Skin**
   Harmful if absorbed through skin. May cause skin irritation.

   **Eyes**
   May cause eye irritation.

L) Signs and Symptoms of Exposure
   The most important known symptoms and effects are described in the labeling (see section 2.2) and/or section 11.

To the best of our knowledge, the chemical, physical, and toxicological properties of this material have not been thoroughly investigated.

M) Additional Information
   RTECS: JL9678000

12. ECOLOGICAL INFORMATION

12.1 Toxicity
   No data available.

12.2 Persistence and Degradability
   No data available.

12.3 Bioaccumulative Potential
   No data available.

12.4 Mobility in Soil
   No data available.

12.5 Results of PBT and vPvB Assessment
   No data available.

12.6 Other Adverse Effects
   No data available.

13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods
   **A) Product**
   Product may be burned in an incinerator equipped with afterburner and scrubber. Excess and expired materials are to be offered to a licensed hazardous material disposal company. Ensure that all Federal and Local regulations regarding the disposal and destruction of this material are followed.

   **B) Contaminated Packaging**
   Dispose of as above.

   **C) Other Considerations**
   Product is not to be disposed of in sanitary sewers, storm sewers, or landfills.

14. TRANSPORT INFORMATION

14.1 UN Number
   DOT (US): UN2811   IATA: UN2811   IMDG: UN2811   ADR/RID: UN2811

14.2 UN Proper Shipping Name
   DOT (US)/IATA:
Toxic solids, organic, n.o.s. (N-Nitrosobis(2-oxopropyl)amine)

14.3 Transport Hazard Class(es)

14.4 Packing Group

14.5 Environmental Hazards
DOT (US): None IATA: None IMDG: None ADR/RID: None

14.6 Special Precautions for User
None

15. REGULATORY INFORMATION
This safety data sheet complies with the requirements of WHMIS (Canada), OSHA 1910.1200 (US), and EU Regulation EC No. 1907/2006 (European Union).

15.1 Safety, Health and Environmental Regulations/Legislation Specific for the Substance or Mixture
A) Canada
   DSL/NDSL Status: This product is not listed on the Canadian DSL/NDSL.
B) United States
   TSCA Status: This product is not listed on the US EPA TSCA.
C) European Union
   ECHA Status: This product is not registered with the EU ECHA.

15.2 Chemical Safety Assessment
No data available

16. OTHER INFORMATION

16.1 Revision History
Original Publication Date: 1/20/2014

16.2 List of Abbreviations
LD50 Median lethal dose of a substance required to kill 50% of a test population.
LC50 Medial lethal concentration of a substance required to kill 50% of a test population.
LDLo Lowest known lethal dose
TDLo Lowest known toxic dose
IARC International Agency for Research on Cancer
NTP National Toxicology Program
RTECS Registry of Toxic Effects of Chemical Substances

16.3 Further Information
Copyright 2015. Toronto Research Chemicals Inc. Copies may be made for internal use only. The above information is believed to be correct to the best of our knowledge, but is to be only used as a guide. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated. Please take all due care when handling this product.