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

1.1 Product Identifier
   Chemical Name: O,O-Dimethyl Dithiophosphate
   Catalogue #: D465740

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
   Address: 2 Brisbane Road
             Toronto, ON M3J 2J8
             CANADA
   Telephone: +14166659696
   FAX: +14166654439
   Email: orders@trc-canada.com

1.4 Emergency Telephone Number
   Emergency#: +14166659696 between 0800-1700 (GMT-5)

2. HAZARDS IDENTIFICATION

<table>
<thead>
<tr>
<th>WHMIS Classification (Canada)</th>
<th>WHMIS Symbols (Canada)</th>
</tr>
</thead>
<tbody>
<tr>
<td>D1B</td>
<td>Toxic Material Causing Immediate and Serious Toxic Effects</td>
</tr>
<tr>
<td></td>
<td>Toxic by Ingestion/Skin Absorption/Inhalation</td>
</tr>
<tr>
<td>E</td>
<td>Corrosive Material</td>
</tr>
</tbody>
</table>

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

- Flammable Liquids (Category 4)
- Acute Toxicity, Oral (Category 3)
- Acute Toxicity, Inhalation (Category 2)
- Acute Toxicity, Dermal (Category 3)
- Skin Corrosion (Category 1B)
- Serious Eye Damage (Category 1)

EU Classification (According to EU Regulation 67/548/EEC)
Toxic by inhalation, in contact with skin and if swallowed. Causes severe burns. Risk of serious damage to the eyes.

EU Risk and Safety Statements (According to EU Regulation 67/548/EEC)

<table>
<thead>
<tr>
<th>Hazard Statements</th>
<th>Hazard Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxic</td>
<td>T</td>
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<tr>
<td>Corrosive</td>
<td>C</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk Codes and Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>R23/24/25</td>
</tr>
<tr>
<td>Toxic by inhalation, in contact with skin and if swallowed.</td>
</tr>
</tbody>
</table>
General Advice
If medical attention is required, show this safety data sheet to the doctor.

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

In Case of Skin Contact
Remove contaminated clothing and shoes. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In Case of Eye Contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If Swallowed

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

Signal Word  Danger

GHS Hazard Statements
H227  Combustible liquid and vapour.
H301  Toxic if swallowed.
H330  Fatal if inhaled.
H311  Toxic in contact with skin.
H314  Causes severe skin burns and eye damage.
H318  Causes serious eye damage.

GHS Precautionary Statements
P260  Do not breathe dust/fume/gas/mist/vapours/spray.
P280  Wear protective gloves/protective clothing/eye protection/face protection.
P284  Wear respiratory protection.
P305/P351/P338  IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

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

3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances
Molecular Formula: \( \text{C}_2\text{H}_7\text{O}_2\text{PS}_2 \)
Molecular Weight: 158.18
CAS Registry #: 756-80-9
EC#: 
Synonyms
Methyl Phosphorodithioate; O,O-Dimethyl Dithiophosphoric Acid; O,O-Dimethyl Phosphorodithioate; O,O-Dimethyl Phosphorodithioic Acid; O,O'-Dimethyl Hydrogen Dithiophosphate; O,O-Dimethyl S-Hydrogen Phosphorodithioate

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 casualty to fresh air. If not breathing, give artificial respiration and consult a physician.

In Case of Skin Contact
Remove contaminated clothing and shoes. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In Case of Eye Contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

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 in section 11.

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

5. FIREFIGHTING MEASURES

5.1 Extinguishing Media
Conditions of flammability
Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No Smoking.

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Specific hazards arising from chemical
Flash back possible over considerable distance. Container explosion may occur under fire conditions.

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

6.1 Personal Precautions, Protective Equipment and Emergency Procedures
Use recommended personal protective equipment (see Section 8). Adequate ventilation must be provided to ensure vapours or mists are not inhaled. Vapours are heavier than air and may accumulate in low areas. All sources of ignition, including sources of static discharge, must be removed from area.

6.2 Environmental Precautions
Material should not be allowed to enter the environment. Prevent further spillage or discharge into drains, if safe to do so.

6.3 Methods and Materials for Containment and Cleaning Up
Contain the spill and then collect using non-combustible absorbent material (such as clay, diatomaceous earth, vermiculite or other appropriate material). Place material in a suitable, sealable container and then dispose according to local/national regulations and guidance (see Section 13).

6.4 Reference to Other Sections
For protective equipment, refer to Section 8. For disposal, see Section 13.

7. HANDLING AND STORAGE

7.1 Precautions for Safe Handling
Avoid contact with skin and eyes. Ventilation and proper handling are to be used to prevent the formation of vapours and mists. Remove all sources of ignition and take precautionary measures to prevent the buildup of electrostatic discharge (ground and bond containers as appropriate). No smoking, eating or drinking around this material. Wash hands after use.

7.2 Conditions for Safe Storage, Including any Incompatibilities
Ensure container is kept securely closed before and after use. Keep in a well ventilated area and do not store with strong oxidizers or other incompatible materials (see Section 10).

Storage conditions: Hygroscopic, Refrigerator, under inert atmosphere

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

8. EXPOSURE CONTROLS/PERSOAL PROTECTION

8.1 Control Parameters
Contains no components with established occupational 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.
Suggested gloves: AnsellPro Viton/Butyl gloves style 38-612, 4/8 mil thickness. 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
Clear Colourless Oil

B) Odour
No data available.

C) Odour Threshold
No data available.

D) pH
No data available.

E) Melting Point/Freezing Point
N/A

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), DMSO (Slightly)

O) Partition Coefficient: n-octanol/water
No data available.

P) Auto-Ignition Temperature
No data available.

Q) Viscosity
N/A
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
Heat, flames and sparks.

10.5 Incompatible Materials
Strong bases, Strong acids, Strong oxidizing agents.

10.6 Hazardous Decomposition Products
In the event of fire: See section 5. Other decomposition products: Reacts with water to form Hydrogen sulfide gas.

11. TOXICOLOGICAL INFORMATION

11.1 Information on Toxicological Effects

A) Acute Toxicity
Oral LD50: Rat - 694 mg/kg
Dermal LD50: No data available.

B) Skin Corrosion/Irritation
Moderate skin irritant.

C) Serious Eye Damage/Irritation
Corrosive - causes skin and eye burns. May also cause respiratory tract damage.

D) Respiratory or Skin Sensitization
No data available

E) Germ Cell Mutagenicity
No data available

F) Carcinogenicity
No data available

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
May be harmful if inhaled. Material is extremely destructive to the mucous membranes and respiratory tract.

Ingestion
Toxic if swallowed.

Skin
Toxic if absorbed through skin. Causes skin burns.

Eyes
Causes severe eye burns and possible permanent eye damage.

L) Signs and Symptoms of Exposure
The most important known symptoms and effects are described in the labeling (see section 2.2) and/or in 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: TE0525000

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): UN3265 | IATA: UN3265 | IMDG: UN3265 | ADR/RID: UN3265 |

14.2 UN Proper Shipping Name

| DOT (US)/IATA: Corrosive liquid, acidic, organic, n.o.s. (O,O'-Dimethyl dithiophosphate) | IMDG/ARD/RID: CORROSIVE LIQUID, ACIDIC, ORGANIC, N.O.S. (O,O'-Dimethyl dithiophosphate) |

14.3 Transport Hazard Class(es)

| DOT (US): 8 | IATA: 8 | IMDG: 8 | ADR/RID: 8 |

14.4 Packing Group

| DOT (US): II | IATA: II | IMDG: II | ADR/RID: II |

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 or a component of this product is registered on the Canadian DSL/NDSL.

B) United States

TSCA Status: This product or a component is listed on the US EPA TSCA.

C) European Union

ECHA Status: This product or a component is registered with the EU ECHA.

15.2 Chemical Safety Assessment
16. OTHER INFORMATION

16.1 Revision History
Original Publication Date: 9/16/2015

16.2 List of Abbreviations
- LD50: Median lethal dose of a substance required to kill 50% of a test population.
- LC50: Median 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.