MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HMIS</th>
<th>Personal Protective Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>Health Hazard 2</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>Fire Hazard 1</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>Reactivity 0</td>
</tr>
</tbody>
</table>

Product code: S1156
Product Name: Sodium o-Phenylphenate
Chemical Name: (1,1'-Biphenyl]-2-ol, sodium salt, tetrahydrate
Synonyms:
- 2-Biphenylol, sodium salt, tetrahydrate
- o-Phenylphenol, sodium salt, tetrahydrate
- 2-Phenylphenol, sodium salt, tetrahydrate
- 2-Hydroxydiphenyl sodium, tetrahydrate


CAS #: 6152-33-6
Formula: C12-H9-O-Na.4H2O
RTECS #: DV7750000
CI#: Not available
Supplier: Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Emergency Telephone Number: CHEMTREC: 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Chris Terpak (East Coast)

2. HAZARDS IDENTIFICATION

WARNING! May be harmful if swallowed. WARNING! IRRITANT. Irritating to eyes. Irritating to skin. Irritating to respiratory system.

Odor: No information available
Physical state: Solid
Appearance: Flakes

OSHA Regulatory Status: This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200)
2. HAZARDS IDENTIFICATION

Principal Routes of Exposure:
Ingestion. Inhalation.

Acute Potential Health Effects:

Skin Contact:
Contact causes skin irritation.

Eye Contact:
Causes eye irritation. May cause corneal injury.

Inhalation:
Irritating to respiratory system.

Ingestion:
May be harmful if swallowed. May affect respiration. May cause central nervous system effects. It may affect the urinary system. May affect the liver. May affect the blood.

Chronic Potential Health Effects:

<table>
<thead>
<tr>
<th>Component</th>
<th>Carcinogen Status:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium o-Phenylphenate, tetrahydrate 6152-33-6 (100)</td>
<td>Group 2B - Possibly Carcinogenic to Humans by IARC</td>
</tr>
</tbody>
</table>

Target Organs: No information available

Teratogenic Effects: May cause birth defects (teratogenic effects) based on animal test data. Showed teratogenic effects in animal experiments.

Mutagenic Effects: May affect genetic material. Mutations in microorganisms. Experiments with bacteria and/or yeast have shown mutagenic effects. Animal experiments showed mutagenic effects.

Aggravated Medical Conditions: No information available

See Section 11 for additional Toxicological Information

POTENTIAL ENVIRONMENTAL EFFECTS

No information available

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium o-Phenylphenate, tetrahydrate</td>
<td>6152-33-6</td>
<td>100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General Advice: Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126)
Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eye with water for 15 minutes. Get medical attention.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. In case of shortness of breath, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Notes to Physician: Treat symptomatically

5. FIRE-FIGHTING MEASURES

Flammable Properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flashpoint (°C/°F)</td>
<td>No information available.</td>
</tr>
<tr>
<td>Tested according to:</td>
<td>Not available</td>
</tr>
<tr>
<td>Lower Explosion Limit (%)</td>
<td>No information available</td>
</tr>
<tr>
<td>Upper Explosion Limit (%)</td>
<td>No information available</td>
</tr>
<tr>
<td>Autoignition Temperature (°C/°F):</td>
<td>Not applicable.</td>
</tr>
</tbody>
</table>

Suitable Extinguishing Media: Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: No information available.

Hazardous Combustion Products: Carbon monoxide; Carbon dioxide; sodium oxides

Specific hazards: May be combustible at high temperatures.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

Specific Methods: No information available.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions: Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Remove all sources of ignition.

Environmental Precautions: No information available.

Methods for Cleaning Up: Sweep up and shovel into suitable containers for disposal. Avoid dust formation. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

Product code: S1156  Product name: Sodium o-Phenylphenate
Handling

Technical Measures/Precautions:
Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. Keep away from incompatible materials.

Safe Handling Advice:
Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Do not ingest. Do not breathe vapours/dust. Keep away from heat and sources of ignition. Handle in accordance with good industrial hygiene and safety practice.

Storage

Technical Measures/Storage Conditions:
Hygroscopic. Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Products:

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Engineering measures to reduce exposure: Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Personal Protective Equipment

Eye protection: Safety glasses. Safety glasses with side-shields.

Skin and body protection: Long sleeved clothing. Chemical resistant apron. Gloves.

Respiratory protection: Wear respirator with dust filter.

Hygiene measures: Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

National occupational exposure limits

United States
U.S Occupational Exposure Limits: Not determined

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium o-Phenylphenate, tetrahydrate - 6152-33-6</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Canada
Canada Occupational Exposure Limits: Not determined

<table>
<thead>
<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium o-Phenylphenate, tetrahydrate - 6152-33-6</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

Australia and Mexico
Occupational Exposure Limits for Australia and Mexico: Not determined

Product code: S1156
Product name: Sodium o-Phenylphenate
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid.

Appearance: Flakes.


Odor: No information available

Taste: No information available

Molecular/Formula weight: 264.23

Flash point (°C): Not applicable

Lower Explosion Limit (%): Not applicable

Upper Explosion Limit (%): Not applicable

Autoignition Temperature (°C/°F): No information available

pH: No information available

Boiling point/range(°C/°F): No information available

Melting point/range(°C/°F): No information available

Decomposition temperature(°C/°F): No information available

Specific gravity: No information available

Density (g/cm3): No information available

Bulk density: No information available

Vapor pressure @ 20°C (kPa): No information available

Evaporation rate: No information available

Vapor density: No information available

VOC content (g/L): No information available

Odor threshold (ppm): No information available

Partition coefficient (n-octanol/water): No information available

Miscibility: No information available

Solubility:
Very soluble in water
Very soluble in Acetone
Very soluble in Methanol

10. STABILITY AND REACTIVITY

Stability: Stable at normal conditions


Materials to avoid: Strong oxidising agents. Acids. Strong bases.

Hazardous decomposition products: Carbon monoxide. Carbon dioxide. Sodium oxides.

Possibility of Hazardous Reactions: No information available

Polymerization: Hazardous polymerisation does not occur

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

Product code: S1156

Product name: Sodium o-Phenylphenate
Component Information

*Sodium o-Phenylphenate, tetrahydrate* - 6152-33-6

<table>
<thead>
<tr>
<th>LD50/dermal/rabbit</th>
<th>No information available</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/dermal/rat</td>
<td>No information available</td>
</tr>
<tr>
<td>LC50/inhalation/rat</td>
<td>No information available</td>
</tr>
<tr>
<td>LC50/inhalation/mouse</td>
<td>No information available</td>
</tr>
<tr>
<td>Other LD50 or LC50 information</td>
<td>No information available</td>
</tr>
</tbody>
</table>

Product Information

<table>
<thead>
<tr>
<th>LC50/inhalation/rat</th>
<th>No information available</th>
</tr>
</thead>
<tbody>
<tr>
<td>LC50/inhalation/mouse</td>
<td>No information available</td>
</tr>
<tr>
<td>LD50/dermal/rabbit</td>
<td>No information available</td>
</tr>
<tr>
<td>LD50/dermal/rat</td>
<td>No information available</td>
</tr>
<tr>
<td>LD50/oral/mouse</td>
<td>No information available</td>
</tr>
<tr>
<td>LD50/oral/rat</td>
<td>1049 mg/kg Oral LD50 Rat</td>
</tr>
</tbody>
</table>

Local Effects

- **Skin irritation:** Causes skin irritation.
- **Eye irritation:** Causes eye irritation. May cause corneal injury.
- **Inhalation:** Irritating to respiratory system.
- **Ingestion:** May be harmful if swallowed. May affect behavior/central nervous system (ataxia). It may cause central nervous system depression. May affect respiration (respiratory depression).
- **Sensitization:** No information available

Chronic Toxicity

**Chronic Toxicity**

Prolonged or repeated ingestion may affect the blood (normocytic anemia). Prolonged or repeated ingestion may affect the spleen. Prolonged or repeated ingestion may affect the liver. Prolonged or repeated ingestion may affect the kidneys. Prolonged or repeated ingestion may affect the bladder. Prolonged or repeated ingestion may cause loss of appetite. Prolonged or repeated ingestion may cause weight loss.

**Carcinogenic effects:** May cause cancer. Possibly carcinogenic to humans.

<table>
<thead>
<tr>
<th>Components</th>
<th>NTP</th>
<th>IARC</th>
<th>OSHA HCS - Carcinogens</th>
<th>ACGIH - Carcinogens</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium o-Phenylphenate, tetrahydrate</td>
<td>Not listed</td>
<td>Group 2B</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**Product code:** S1156

**Product name:** Sodium o-Phenylphenate
Mutagenic Effects: May affect genetic material
Mutations in microorganisms
Experiments with bacteria and/or yeast have shown mutagenic effects
Animal experiments showed mutagenic effects

Reproductive Effects: May cause adverse reproductive effects based on animal test data. Experiments have shown reproductive toxicity effects on laboratory animals.

Teratogenic Effects: May cause birth defects (teratogenic effects) based on animal test data. Showed teratogenic effects in animal experiments.

Target Organs: No information available

12. ECOLOGICAL INFORMATION

ECOTOXICITY

Toxicity to terrestrial and aquatic plants and animals: Information given is based on data on the components and the ecotoxicology of similar products

Ecotoxicity effects: Very toxic to aquatic organisms.

Aquatic toxicity: No information available

Mobility: No information available

Persistence and degradability: No information available

Bioaccumulative potential: No information available

13. DISPOSAL CONSIDERATIONS

Waste from residues / unused products:
Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging:
Empty containers should be taken for local recycling, recovery or waste disposal

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<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sodium o-Phenylphenate, tetrahydrate</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

DOT

UN-No: Not regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: None
Subsidiary Risk: Not applicable
Marine Pollutant: No data available
ERG No: No information available
DOT RQ (lbs): No information available

TDG (Canada)

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available

Product code: S1156
Product name: Sodium o-Phenylphenate
Packing Group: No information available
Subsidiary Risk: No information available
Description: No information available

ADR
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available
CEFIC Tremcard No: No information available

IMO / IMDG
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available
IMDG Page: No information available
Marine Pollutant: No information available
MFAG: No information available
Maximum Quantity: No information available

RID
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Classification Code: No information available
Description: No information available

ICAO
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Description: No information available

IATA
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available
Description: No information available

15. REGULATORY INFORMATION

International Inventories

Product code: S1156  Product name: Sodium o-Phenylphenate
Components | U.S. TSCA | Philippines (PICCS) | KOREA KECL | Japan ENCS | CHINA | Australia (AICS) | EINECS-No.  
--- | --- | --- | --- | --- | --- | --- | ---  
Sodium o-Phenylphenate, tetrahydrate | Not Listed | Present | Not present | Not present | Present | Present | Not present  

U.S. Regulations


Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

| Components | Carcinogen | Developmental Toxicity | Male Reproductive Toxicity | Female Reproductive Toxicity:  
--- | --- | --- | --- | ---  
Sodium o-Phenylphenate, tetrahydrate | Not Listed | Not Listed | Not Listed | Not Listed  

CERCLA/SARA

| Components | CERCLA - Hazardous Substances and their Reportable Quantities | Section 302 Extremely Hazardous Substances and TPQs | Section 302 Extremely Hazardous Substances and RQs | Section 313 - Chemical Category | Section 313 - Reporting de minimis  
--- | --- | --- | --- | --- | ---  
Sodium o-Phenylphenate, tetrahydrate | None | None | None | None | None  

U.S. TSCA

| Components | TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS) | TSCA 8(d) - Health and Safety Reporting  
--- | --- | ---  
Sodium o-Phenylphenate, tetrahydrate | Not Applicable | Not Applicable  

Canada

WHMIS hazard class:
D2B  Toxic materials

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

| Components | Canada (DSL) | Canada (NDSL)  
--- | --- | ---  
Sodium o-Phenylphenate, tetrahydrate | Not Listed | Not Listed  

| Components | CEPA Schedule I - Toxic Substances | CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting  
--- | --- | ---  
Sodium o-Phenylphenate, tetrahydrate | Not listed | Not listed  

Product code: S1156  
Product name: Sodium o-Phenylphenate
EU Classification

R -phrase(s)
R22 - Harmful if swallowed.
R41 - Risk of serious damage to eyes.
R50 - Very toxic to aquatic organisms.
R37/38 - Irritating to respiratory system and skin.

S -phrase(s)
S22 - Do not breathe dust.
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S61 - Avoid release to the environment. Refer to special instructions/safety data sheets.

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Xn - Harmful.
Xi - Irritant.
N - Dangerous for the environment.

16. OTHER INFORMATION

The MSDS format complies with ANSI Z400.1-2004 standards.

Preparation Date: 28-Oct-2011
Reason for revision: Not applicable
Prepared by: Sonia Owen
Literature reference: No information available

All chemicals may pose unknown hazards and should be used with caution. This Material Safety Data Sheet (MSDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this MSDS. The physical properties reported in this MSDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this MSDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

Product code: S1156  Product name: Sodium o-Phenylphenate