SECTION 1  PRODUCT AND COMPANY INFORMATION

PRODUCT NAME: Bis(trimethylsilyl)selenide
PRODUCT NO: 1386
CAS NO: 4099-46-1
CHEMICAL USE: Research and Development
SYNONYMS: Hexamethyldisilselanane

MANUFACTURER:
WONIK MATERIALS NORTH AMERICA
N115 W19392 EDISON DRIVE
GERMANTOWN, WI 53022
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IN CASE OF TRANSPORTATION EMERGENCY CONTACT CHEM-TREC: +1-703-741-5971
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SECTION 2  HAZARDS IDENTIFICATION

CLASSIFICATION OF THE SUBSTANCE OR MIXTURE

GHS CLASSIFICATION
Acute toxicity, Oral (Category 3)
Acute toxicity, Inhalation (Category 3)
Acute toxicity, Dermal (Category 3)
Flammable Liquid, (Category 3)

Pictogram

Signal Word Danger
SECTION 2  HAZARDS IDENTIFICATION (Cont.)

Hazard Statements

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>H226</td>
<td>Flammable liquid and vapour</td>
</tr>
<tr>
<td>H301 + H331 + H331</td>
<td>Toxic if swallowed, in contact with skin or if inhaled</td>
</tr>
<tr>
<td>H302</td>
<td>Harmful if swallowed.</td>
</tr>
<tr>
<td>H312</td>
<td>Harmful in contact with skin.</td>
</tr>
<tr>
<td>H332</td>
<td>Harmful if inhaled</td>
</tr>
</tbody>
</table>

Precautionary Phrases

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P210</td>
<td>Keep away from heat/sparks/open flames/hot surfaces. –No smoking.</td>
</tr>
<tr>
<td>P222</td>
<td>Do not allow contact with air</td>
</tr>
<tr>
<td>P232</td>
<td>Protect from moisture</td>
</tr>
<tr>
<td>P233</td>
<td>Keep container tightly closed</td>
</tr>
<tr>
<td>P235</td>
<td>Keep cool</td>
</tr>
<tr>
<td>P240</td>
<td>Ground and bond container and receiving equipment</td>
</tr>
<tr>
<td>P241</td>
<td>Use explosion-proof electrical, ventilating and lighting equipment</td>
</tr>
<tr>
<td>P242</td>
<td>Use non-sparking tools</td>
</tr>
<tr>
<td>P243</td>
<td>Take action to prevent static charges</td>
</tr>
<tr>
<td>P246</td>
<td>Avoid breathing fume/gas/mist/vapors/spray.</td>
</tr>
<tr>
<td>P261</td>
<td>Wash hands thoroughly after handling</td>
</tr>
<tr>
<td>P270</td>
<td>Do not eat, drink, or smoke when using this product</td>
</tr>
<tr>
<td>P271</td>
<td>Use only outdoors or in a well-ventilated area</td>
</tr>
<tr>
<td>P280</td>
<td>Wear protective gloves/protective clothing/eye protection/face protection</td>
</tr>
<tr>
<td>P301 + P312</td>
<td>IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.</td>
</tr>
<tr>
<td>P303 + P361 + P353</td>
<td>IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.</td>
</tr>
<tr>
<td>P304 + P340</td>
<td>IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing</td>
</tr>
<tr>
<td>P370 + P378</td>
<td>In case of fire: Use CO2, foam or extinguishing powder for extinction.</td>
</tr>
<tr>
<td>P402</td>
<td>Store in a dry place</td>
</tr>
<tr>
<td>P403</td>
<td>Store in a well-ventilated place</td>
</tr>
</tbody>
</table>

OTHER HAZARDS
Additional precautionary phrases are located throughout the safety data sheet

HMIS CLASSIFICATION:
- Health: 3
- Flammability: 3
- Reactivity: 1
- Special: Water Reactive

SECTION 3  COMPOSITION / INFORMATION ON INGREDIENTS

Formula: C₆H₁₈SeSi₂

Molecular Weight: 225.34

<table>
<thead>
<tr>
<th>Chemical Name</th>
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</tr>
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<tr>
<td>Bis(trimethylsilyl)selenide</td>
<td>4099-46-1</td>
</tr>
</tbody>
</table>

SECTION 4  FIRST AID MEASURES

**EYE EXPOSURE:** Immediately flush the eyes with copious amounts of water for at least 15 minutes. Assure flushing under eyelids. A victim may need assistance in keeping their eyelids open Remove contacts if easily possible. Get immediate, professional care from qualified physician or emergency care facility

**SKIN EXPOSURE:** Wash affected area with copious amounts of water for at least 15 minutes. Remove contaminated clothes and shoes if necessary. Seek medical assistance immediately.

**INHALATION:** Remove victim to fresh air. Closely monitor the victim for signs of respiratory problems, such as difficulty in breathing, coughing, wheezing, or pain. If not breathing administer CPR. If having trouble breathing give oxygen if available. Seek immediate emergency medical assistance and call Poison Center.

**INGESTION:** Do not induce vomiting. Rinse out mouth with water provided person is conscious. Seek immediate medical assistance and call Poison Center.
SECTION 5  FIREFIGHTING MEASURES

EXTINGUISHING MEDIA:
Suitable  In case of fire: Use CO2, foam or extinguishing powder
Unsuitable  DO NOT USE WATER!

HAZARDOUS COMBUSTION AND DECOMPOSITION PRODUCTS:
Carbon Monoxide, Carbon Dioxide, Hydrogen Selenide, and Sulfur Oxides

SPECIAL HAZARDS ARISING FROM THE SUBSTANCE OR MIXTURE
In combustion, toxic fumes may form.
Vapors can form explosive mixtures.
Moisture reactive, Exposure to moisture releases Hydrogen Selenide
Contact with strong oxidizers may cause fire.

ADVICE FOR FIRE FIGHTERS
Wear self-contained breathing apparatus.
Wear protective clothing to prevent contact with skin and eyes.
Vapors can form explosive mixtures
If allowable withdrawal from area and allow to burn

SECTION 6  ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS
Eliminate all sources of ignition.
Evacuate the area immediately.
Do not attempt to take action without suitable protective clothing.

ENVIRONMENTAL PRECAUTIONS
Do not discharge into drains or rivers.
Contain the spillage.

METHODS AND MATERIALS
Use non-sparking tools for clean-up procedure.
Use dry lime, soda ash, or sand.

SECTION 7  HANDLING AND STORAGE

PERSONAL PRECAUTIONS
SAFE HANDLING: WARNING! FLAMMABLE LIQUID TOXIC BY INHALATION
AIR SENSITIVE WATER AND MOISTURE reactive!
Ensure there is sufficient ventilation of the area. Do not eat, drink or smoke when using this product. Ground container and receiving equipment. Wash hands thoroughly after handing. Wash contaminated clothing before reuse. Safety showers, Eye wash station readily available in working area.
PROTECTION AGAINST EXPLOSIONS AND FIRES: KEEP AWAY FROM INCOMPATIBLE MATERIALS! Take precautionary measures against static discharge. Use explosion-proof electrical/ventilating/lighting. Use only non-sparking tools.

CONDITIONS FOR SAFE STORAGE
STORAGE CONTROLS: Store in a well-ventilated area. Keep away from incompatibles. Keep cool.
MAINTAINING INTEGRITY: Keep away from heat/sparks/open flames/hot surfaces. –No smoking. Keep container tightly closed.
Handle and use in a controlled environment under inert atmosphere. To be handled and used by competent individuals only.
SECTION 8  EXPOSURE CONTROLS AND PERSONAL PROTECTION

EYE PROTECTION: Approved safety glasses w/side shields, or safety goggles and face shield

SKIN PROTECTION: Wear appropriate chemical resistant gloves, rubber, neoprene

VENTILATION: Chemical fume hood. Handle and use under inert atmosphere.

RESPIRATOR: If adequate ventilation if not available, a respirator should be worn. The use of respirators requires a Respirator Protection Program to be in compliance with 29CFR 1910.34 or NIOSH/MSHA or European Standard EN 149 approved respirator.

ADDITIONAL PROTECTION: WARNING! FLAMMABLE LIQUID  TOXIC BY INHALATION  Water/Moisture reactive and Air Sensitive. Avoid contact with skin, eyes, clothing, shoes. Do not inhale vapors. Use with adequate ventilation. Use in a controlled environment. Avoid contact with WATER, MOISTURE, Oxidizing agents, friction, heat, flames and sparks. Use adequate protection to avoid contact with skin, clothing, and shoes. (Apron, lab coat, arm sleevelets). Eyewash and safety shower in area capable of sustained flushing. Do not eat, drink or smoke in area.

SECTION 9  PHYSICAL AND CHEMICAL PROPERTIES

COLOR AND FORM: Colorless liquid
pH: not applicable
MELTING POINT/ FREEZING POINT: -7 deg C.
BOILING POINT: 31 deg C @ 2.00mm Hg (87.80 deg F)
FLASH POINT: 43 deg C
AUTO-IGNITION TEMPERATURE: not known
LOWER EXPLOSION LIMIT: not applicable.
UPPER EXPLOSION LIMIT: not applicable
VAPOR PRESSURE: ~ 2mm @ 25 deg C
RELATIVE DENSITY: 0.900
SOLUBILITY IN WATER: Insoluble, reacts
PARTITION COEFFICIENT: n-octanol/water: not applicable
VAPOR DENSITY: not applicable
ODOR: Strong stench
ODOR THRESHOLD: not applicable
EVAPORATION RATE: not applicable

SECTION 10  STABILITY AND REACTIVITY

STABILITY: Stable if stored in sealed corrosion resistant containers under dry inert atmosphere.
HAZARDOUS POLYMERIZATION: Has not been reported.
CONDITIONS TO AVOID: Moist, humid conditions, exposure to air, heat, friction, flames, sparks.
INCOMPATIBILITY: Water, moisture, strong oxidizing agents
DECOMPOSITION PRODUCTS: Hexamethyldisiloxane, silicon oxide

SECTION 11  TOXICOLOGICAL DATA

ACUTE TOXICITY: No data available
SKIN CORROSION/IRRITATION: Irritant for skin and mucous membranes
SERIOUS EYE DAMAGE/IRRITATION: Irritant effect
RESPIRATORY OR SKIN SENSITIZATION: No sensitizing effect known
GERM CELL MUTAGENICITY: Not known
CARCINOGENICITY: Not known
REPRODUCTIVE TOXICITY: Not known
SPECIFIC TARGET ORGAN TOXICITY-SINGLE EXPOSURE: Not known
SPECIFIC TARGET ORGAN TOXICITY-REPEATED EXPOSURE: Not known
ASPIRATION HAZARD: Not known
ADDITIONAL INFORMATION: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA, or ACGIH
SECTION 12 ECOLOGICAL DATA

TOXICITY: Not known
PERSISTANCE AND DEGRADABILITY: Not known
BIOACCUMULATIVE POTENTIAL: Not known
MOBILITY AND SOIL: Not known
PBT AND vPvB ASSESSMENT: Not known
OTHER ADVERSE EFFECTS: Water hazard class 2 (self assessment); hazardous for water
ECOLOGICAL INFORMATION: May be hazardous to aquatic life. Do not allow product to reach ground water, water course or sewage system. Do not allow product to be released to the environment without proper governmental permits

SECTION 13 DISPOSAL CONSIDERATIONS

DISPOSAL OF PACKAGING: Disposal must be made according to official regulations

SECTION 14 TRANSPORTATION DATA

Toxic liquid, flammable, organic, n.o.s. (Bis(trimethylsilyl)selenide)
Class 6.1 Subclass 3
UN2929
PG II

DOT, IATA, and IMDG Regulated
Marine Pollutant: YES

SECTION 15 REGULATORY INFORMATION

OSHA HAZARDS
None of the chemicals in this product are considered highly hazardous by OSHA

TSCA
CAS # 4099-46-1 is not listed on the TSCA inventory. It is for research and development use only.

CLEAN AIR ACT:
CAS #4099-46-1 (listed as Selenium compounds) is listed as a hazardous air pollutant (HAP).
This material does not contain any Class 1 Ozone depletors
This material does not contain any Class 2 Ozone depletors

CLEAN WATER ACT:
CAS # 4099-46-1 is listed as a Toxic Pollutant

SARA 302 COMPONENTS
None of the chemicals in this products have a TPQ

SARA 313 COMPONENTS
This material contains bis(trimethylsilyl)selenide (listed as Selenium compounds), 98%, (CAS # 4099-46-1) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373

STATE
CAS # 4099-46-1 can be found on the following state right to know lists: California, (listed as Silica, amorphous), California, (listed s Selenium compounds), New Jersey, (listed as silica, amorphous), Pennsylvania, (listed as Silica, amorphous), Pennsylvania, (listed as Selenium compounds), Minnesota, (listed as Silica, amorphous), Massachusetts, (listed as Silica, amorphous).

CALIFORNIA PROP 65
California No significant Risk Level: None of the chemicals in this product are listed.
SECTION 16 OTHER INFORMATION

OTHER INFORMATION:

CAS: Chemical Abstract Service
DOT: Department of Transportation
EPA: Environmental Protection Agency
IARC: International Agency for the Research on Cancer
IATA: International Air Transport Association
IMDG: International Maritime Code for Dangerous Goods
OSHA: Occupational Safety and Health Administration
SDS: Safety Data Sheet
TSCA: Toxic Substances Control Act

DISCLAIMER: The information herein is believed to be accurate and reliable as of the date compiled. However, Wonik Materials North America makes no representation, warranty, or guarantee of any kind with respect to the information in this document or any use of the product based on the information.

DATE PREPARED: 03/2013
REVISED DATE: 09/2018
MSDS DEPT