SAFETY DATA SHEET

Amitraz Solid Formulation

SECTION 1. IDENTIFICATION

Product name : Amitraz Solid Formulation

Manufacturer or supplier's details
Company name of supplier : Merck & Co., Inc
Address : 126 E. Lincoln Avenue
           Rahway, New Jersey U.S.A. 07065
Telephone : 908-740-4000
Emergency telephone : 1-908-423-6000
E-mail address : EHSDATASTEWARD@merck.com

Recommended use of the chemical and restrictions on use
Recommended use : Veterinary product
Restrictions on use : Not applicable

SECTION 2. HAZARDS IDENTIFICATION

GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)
Combustible dust

Acute toxicity (Oral) : Category 4
Serious eye damage : Category 1
Skin sensitization : Category 1
Germ cell mutagenicity : Category 2
Carcinogenicity : Category 1B
Specific target organ toxicity - repeated exposure : Category 2 (Liver, Central nervous system)

GHS label elements
Hazard pictograms : ![Danger symbol]
Signal Word : Danger
Hazard Statements : If small particles are generated during further processing, handling or by other means, may form combustible dust concentrations in air.
H302 Harmful if swallowed.
H317 May cause an allergic skin reaction.
H318 Causes serious eye damage.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H373 May cause damage to organs (Liver, Central nervous system) through prolonged or repeated exposure.

Precautionary Statements:

Prevention:
P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves, protective clothing, eye protection and face protection.

Response:
P301 + P312 + P330 IF SWALLOWED: Call a doctor if you feel unwell. Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER.
P308 + P313 IF exposed or concerned: Get medical attention.
P333 + P313 If skin irritation or rash occurs: Get medical attention.
P363 Wash contaminated clothing before reuse.

Storage:
P405 Store locked up.

Disposal:
P501 Dispose of contents and container to an approved waste disposal plant.

Additional Labeling
The following percentage of the mixture consists of ingredient(s) with unknown acute toxicity:

10 %

Other hazards
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture: Mixture

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amitraz (ISO)</td>
<td>33089-61-1</td>
<td>50</td>
</tr>
<tr>
<td>Aluminium silicate</td>
<td>12141-46-7</td>
<td>&gt;= 10 - &lt;= 20</td>
</tr>
<tr>
<td>Calcium carbonate</td>
<td>471-34-1</td>
<td>&gt;= 10 - &lt;= 20</td>
</tr>
<tr>
<td>Paral formaldehyde</td>
<td>30525-89-4</td>
<td>2.55</td>
</tr>
<tr>
<td>Sodium bis(2-ethylhexyl)sulfo succinate</td>
<td>577-11-7</td>
<td>1</td>
</tr>
</tbody>
</table>
SECTION 4. FIRST AID MEASURES

General advice: In the case of accident or if you feel unwell, seek medical advice immediately.
When symptoms persist or in all cases of doubt seek medical advice.

If inhaled: If inhaled, remove to fresh air.
Get medical attention.

In case of skin contact: In case of contact, immediately flush skin with plenty of water.
Remove contaminated clothing and shoes.
Get medical attention.
Wash clothing before reuse.
Thoroughly clean shoes before reuse.

In case of eye contact: In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
If easy to do, remove contact lens, if worn.
Get medical attention immediately.

If swallowed: If swallowed, DO NOT induce vomiting.
Get medical attention.
Rinse mouth thoroughly with water.
Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:
Harmful if swallowed.
May cause an allergic skin reaction.
Causes serious eye damage.
Suspected of causing genetic defects.
May cause cancer.
May cause damage to organs through prolonged or repeated exposure.

Protection of first-aiders: First Aid responders should pay attention to self-protection, and use the recommended personal protective equipment when the potential for exposure exists (see section 8).

Notes to physician: Treat symptomatically and supportively.

SECTION 5. FIRE-FIGHTING MEASURES

Suitable extinguishing media: Water spray
Alcohol-resistant foam
Carbon dioxide (CO2)
Dry chemical

Unsuitable extinguishing media: None known.

Specific hazards during fire fighting: Avoid generating dust; fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Exposure to combustion products may be a hazard to health.

Hazardous combustion products:
Carbon oxides
Silicon oxides
Metal oxides
Nitrogen oxides (NOx)
Sulfur oxides
SPECIFIC EXTINGUISHING METHODS

- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Use water spray to cool unopened containers.
- Remove undamaged containers from fire area if it is safe to do so.
- Evacuate area.

SPECIAL PROTECTIVE EQUIPMENT FOR FIRE-FIGHTERS

- In the event of fire, wear self-contained breathing apparatus.
- Use personal protective equipment.

SECTION 6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT AND EMERGENCY PROCEDURES

- Use personal protective equipment.
- Follow safe handling advice (see section 7) and personal protective equipment recommendations (see section 8).

ENVIRONMENTAL PRECAUTIONS

- Avoid release to the environment.
- Prevent further leakage or spillage if safe to do so.
- Retain and dispose of contaminated wash water.
- Local authorities should be advised if significant spillages cannot be contained.

METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

- Sweep up or vacuum up spillage and collect in suitable container for disposal.
- Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
- Dust deposits should not be allowed to accumulate on surfaces, as these may form an explosive mixture if they are released into the atmosphere in sufficient concentration.
- Local or national regulations may apply to releases and disposal of this material, as well as those materials and items employed in the cleanup of releases. You will need to determine which regulations are applicable.
- Sections 13 and 15 of this SDS provide information regarding certain local or national requirements.

SECTION 7. HANDLING AND STORAGE

TECHNICAL MEASURES

- Static electricity may accumulate and ignite suspended dust causing an explosion.
- Provide adequate precautions, such as electrical grounding and bonding, or inert atmospheres.

LOCAL/TOTAL VENTILATION

- If sufficient ventilation is unavailable, use with local exhaust ventilation.

ADVICE ON SAFE HANDLING

- Do not get on skin or clothing.
- Do not breathe dust.
- Do not swallow.
- Do not get in eyes.
- Wash skin thoroughly after handling.
- Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment.
- Keep container tightly closed.
- Keep away from water.
- Protect from moisture.
Minimize dust generation and accumulation.
Keep container closed when not in use.
Keep away from heat and sources of ignition.
Take precautionary measures against static discharges.
Do not eat, drink or smoke when using this product.
Take care to prevent spills, waste and minimize release to the environment.

**Conditions for safe storage:**
- Keep in properly labeled containers.
- Store locked up.
- Keep tightly closed.
- Store in accordance with the particular national regulations.

**Materials to avoid:**
- Do not store with the following product types:
  - Strong oxidizing agents
  - Self-reactive substances and mixtures
  - Organic peroxides
  - Explosives
  - Gases

### SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Ingredients with workplace control parameters

**Inert or nuisance dust**
- 50 Million particles per cubic foot
  - Value type (Form of exposure): TWA (total dust)
  - Basis: OSHA Z-3
- 15 mg/m³
  - Value type (Form of exposure): TWA (total dust)
  - Basis: OSHA Z-3
- 5 mg/m³
  - Value type (Form of exposure): TWA (respirable fraction)
  - Basis: OSHA Z-3
- 15 Million particles per cubic foot
  - Value type (Form of exposure): TWA (respirable fraction)
  - Basis: OSHA Z-3

**Dust, nuisance dust and particulates**
- 10 mg/m³
  - Value type (Form of exposure): PEL (Total dust)
  - Basis: CAL PEL
- 5 mg/m³
  - Value type (Form of exposure): PEL (respirable dust fraction)
  - Basis: CAL PEL

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
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<tbody>
<tr>
<td>Amitraz (ISO)</td>
<td>33089-61-1</td>
<td>TWA</td>
<td>10 µg/m³ (OEB 3)</td>
<td>Internal</td>
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<tr>
<td></td>
<td></td>
<td>Wipe limit</td>
<td>1250 µg/100 cm²</td>
<td>Internal</td>
</tr>
<tr>
<td>Aluminium silicate</td>
<td>12141-46-7</td>
<td>TWA (Respirable particulate mat)</td>
<td>1 mg/m³ (Aluminum)</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>
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<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calcium carbonate</td>
<td>471-34-1</td>
<td>TWA (Respirable)</td>
<td>5 mg/m³ (Calcium carbonate)</td>
<td>NIOSH REL</td>
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<tr>
<td></td>
<td></td>
<td>TWA (total)</td>
<td>10 mg/m³ (Calcium carbonate)</td>
<td>NIOSH REL</td>
</tr>
</tbody>
</table>

**Occupational exposure limits of decomposition products**

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value type (Form of exposure)</th>
<th>Control parameters / Permissible concentration</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde</td>
<td>50-00-0</td>
<td>TWA</td>
<td>0.1 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>0.3 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.016 ppm</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>0.1 ppm</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PEL</td>
<td>0.75 ppm</td>
<td>OSHA CARC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL</td>
<td>2 ppm</td>
<td>OSHA CARC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.016 ppm</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>C</td>
<td>0.1 ppm</td>
<td>NIOSH REL</td>
</tr>
</tbody>
</table>

**Engineering measures**: Processing may form hazardous compounds (see section 10). Minimize workplace exposure concentrations. Apply measures to prevent dust explosions. Ensure that dust-handling systems (such as exhaust ducts, dust collectors, vessels, and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is no leakage from the equipment). If sufficient ventilation is unavailable, use with local exhaust ventilation.

**Personal protective equipment**

**Respiratory protection**: General and local exhaust ventilation is recommended to maintain vapor exposures below recommended limits. Where concentrations are above recommended limits or are unknown, appropriate respiratory protection should be worn. Follow OSHA respirator regulations (29 CFR 1910.134) and use NIOSH/MSHA approved respirators. Protection provided by air purifying respirators against exposure to any hazardous chemical is limited. Use a positive pressure air supplied respirator if there is any potential for uncontrolled release, exposure levels are unknown, or any other circumstance where air purifying respirators may not provide adequate protection.

**Hand protection**: Chemical-resistant gloves

**Remarks**: Choose gloves to protect hands against chemicals depending on the concentration specific to place of work. Breakthrough time is not determined for the product. Change gloves often!

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For special applications, we recommend clarifying the resistance to chemicals of the aforementioned protective gloves with the glove manufacturer. Wash hands before breaks and at the end of workday.

Eye protection

Wear the following personal protective equipment:
Chemical resistant goggles must be worn.
If splashes are likely to occur, wear:
Face-shield

Skin and body protection

Select appropriate protective clothing based on chemical resistance data and an assessment of the local exposure potential.
Skin contact must be avoided by using impervious protective clothing (gloves, aprons, boots, etc).

Hygiene measures

If exposure to chemical is likely during typical use, provide eye flushing systems and safety showers close to the working place.
When using do not eat, drink or smoke.
Contaminated work clothing should not be allowed out of the workplace.
Wash contaminated clothing before re-use.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

: powder

Color

: white

Odor

: No data available

Odor Threshold

: No data available

pH

: No data available

Melting point/freezing point

: No data available

Initial boiling point and boiling range

: No data available

Flash point

: Not applicable

Evaporation rate

: No data available

Flammability (solid, gas)

: May form explosive dust-air mixture during processing, handling or other means.

Flammability (liquids)

: No data available

Upper explosion limit / Upper flammability limit

: No data available

Lower explosion limit / Lower flammability limit

: No data available

Vapor pressure

: No data available
Relative vapor density: No data available
Relative density: No data available
Density: No data available
Solubility(ies):
  Water solubility: insoluble
Partition coefficient: n-octanol/water: No data available
Autoignition temperature: No data available
Decomposition temperature: No data available
Viscosity:
  Viscosity, kinematic: No data available
Explosive properties: Not explosive
Oxidizing properties: The substance or mixture is not classified as oxidizing.
Molecular weight: Not applicable
Particle size: No data available

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions:
  May form explosive dust-air mixture during processing, handling or other means.
  Can react with strong oxidizing agents.
  Hazardous decomposition products will be formed upon contact with water or humid air.

Conditions to avoid:
  Exposure to moisture.
  Heat, flames and sparks.
  Avoid dust formation.

Incompatible materials:
  Oxidizing agents
  Water

Hazardous decomposition products:
  Contact with water or humid air: Formaldehyde

SECTION 11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure:
  Inhalation
  Skin contact
Ingestion

**Acute toxicity**
Harmful if swallowed.

**Product:**

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>:</td>
<td>Acute toxicity estimate:</td>
<td>955.73 mg/kg</td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Method: Calculation</td>
<td>method</td>
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<tr>
<td>Acute inhalation</td>
<td>:</td>
<td>Acute toxicity estimate:</td>
<td>41.96 mg/l</td>
</tr>
<tr>
<td>toxicity</td>
<td>:</td>
<td>Exposure time: 4 h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Test atmosphere: dust/mist</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Method: Calculation</td>
<td>method</td>
</tr>
</tbody>
</table>

**Components:**

**Amitraz (ISO):**

<p>| | | | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>:</td>
<td>LD50 (Rat): &gt; 400 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>LD50 (Mouse): &gt; 1,085 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>LD50 (Guinea pig): &gt; 400 mg/kg</td>
<td></td>
</tr>
<tr>
<td>Acute inhalation</td>
<td>:</td>
<td>Remarks: No data available</td>
<td></td>
</tr>
<tr>
<td>toxicity</td>
<td>:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>:</td>
<td>LD50 (Rat): &gt; 1,600 mg/kg</td>
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</tr>
</tbody>
</table>

**Aluminium silicate:**

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<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>:</td>
<td>LD50 (Rat): &gt; 2,000 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Assessment: The substance or mixture has no acute oral toxicity</td>
<td></td>
</tr>
<tr>
<td>Acute inhalation</td>
<td>:</td>
<td>LC50 (Rat): &gt; 2.18 mg/l</td>
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</tr>
<tr>
<td>toxicity</td>
<td>:</td>
<td>Exposure time: 4 h</td>
<td></td>
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<tr>
<td></td>
<td>:</td>
<td>Test atmosphere: dust/mist</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Assessment: The substance or mixture has no acute inhalation toxicity</td>
<td></td>
</tr>
<tr>
<td>Acute dermal toxicity</td>
<td>:</td>
<td>LD50 (Rat): &gt; 5,000 mg/kg</td>
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</tr>
</tbody>
</table>

**Calcium carbonate:**

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<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>:</td>
<td>LD50 (Rat): &gt; 2,000 mg/kg</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Method: OECD Test Guideline 420</td>
<td></td>
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<tr>
<td></td>
<td>:</td>
<td>Assessment: The substance or mixture has no acute oral toxicity</td>
<td></td>
</tr>
<tr>
<td>Acute inhalation</td>
<td>:</td>
<td>LC50 (Rat): &gt; 3 mg/l</td>
<td></td>
</tr>
<tr>
<td>toxicity</td>
<td>:</td>
<td>Exposure time: 4 h</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Test atmosphere: dust/mist</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Method: OECD Test Guideline 403</td>
<td></td>
</tr>
<tr>
<td></td>
<td>:</td>
<td>Assessment: The substance or mixture has no acute inhalation toxicity</td>
<td></td>
</tr>
</tbody>
</table>
### Acute dermal toxicity

**Amitraz (ISO):**
- Species: Rabbit
- Result: No skin irritation

**Aluminium silicate:**
- Species: Rabbit
- Result: No skin irritation
- Remarks: Based on data from similar materials

**Calcium carbonate:**
- Species: Rabbit
- Method: OECD Test Guideline 404
- Result: No skin irritation

**Paraformaldehyde:**
- Species: Rabbit
- Result: Skin irritation

**Sodium bis(2-ethylhexyl)sulfosuccinate:**
- Species: Rabbit
- Method: OECD Test Guideline 404
- Result: Skin irritation

### Paraformaldehyde:

**Acute oral toxicity:**
- LD50 (Rat, male): 592 mg/kg

**Acute inhalation toxicity:**
- LC50 (Rat): 1.07 mg/l
  - Exposure time: 4 h
  - Test atmosphere: dust/mist

**Acute dermal toxicity:**
- LD50 (Rat): > 10,000 mg/kg

### Sodium bis(2-ethylhexyl)sulfosuccinate:

**Acute oral toxicity:**
- LD50 (Rat): 3,080 mg/kg

**Acute dermal toxicity:**
- LD50 (Rabbit): > 5,000 mg/kg

### Skin corrosion/irritation

Not classified based on available information.

### Components:
Serious eye damage/eye irritation
Causes serious eye damage.

Components:

Amitraz (ISO):
- **Species**: Rabbit
- **Result**: No eye irritation

Aluminium silicate:
- **Species**: Rabbit
- **Result**: No eye irritation
- **Method**: OPPTS 870.2400
- **Remarks**: Based on data from similar materials

Calcium carbonate:
- **Species**: Rabbit
- **Result**: No eye irritation
- **Method**: OECD Test Guideline 405

Paraformaldehyde:
- **Species**: Rabbit
- **Result**: Irreversible effects on the eye

Sodium bis(2-ethylhexyl)sulfosuccinate:
- **Species**: Rabbit
- **Result**: Irreversible effects on the eye
- **Method**: OECD Test Guideline 405

Respiratory or skin sensitization

Skin sensitization
May cause an allergic skin reaction.

Respiratory sensitization
Not classified based on available information.

Components:

Amitraz (ISO):
- **Test Type**: Maximization Test
- **Routes of exposure**: Dermal
- **Species**: Guinea pig
- **Result**: Not a skin sensitizer.

Aluminium silicate:
- **Test Type**: Local lymph node assay (LLNA)
- **Routes of exposure**: Skin contact
- **Species**: Mouse
- **Result**: negative
Calcium carbonate:
- **Test Type**: Local lymph node assay (LLNA)
- **Routes of exposure**: Skin contact
- **Species**: Mouse
- **Result**: negative

Paraformaldehyde:
- **Test Type**: Local lymph node assay (LLNA)
- **Routes of exposure**: Skin contact
- **Species**: Mouse
- **Result**: positive
- **Remarks**: Based on data from similar materials
- **Assessment**: Probability or evidence of high skin sensitization rate in humans

Sodium bis(2-ethylhexyl)sulfosuccinate:
- **Test Type**: Human repeat insult patch test (HRIPT)
- **Routes of exposure**: Skin contact
- **Species**: Humans
- **Result**: negative

Germ cell mutagenicity
Suspected of causing genetic defects.

**Components:**

**Amitraz (ISO):**
- **Genotoxicity in vitro**: Test Type: Bacterial reverse mutation assay (AMES)
  Result: negative
- **Test Type**: In vitro mammalian cell gene mutation test
  Result: negative
- **Test Type**: Chromosome aberration test in vitro
  Result: negative
- **Test Type**: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
  Result: negative

**Aluminium silicate:**
- **Genotoxicity in vitro**: Test Type: Bacterial reverse mutation assay (AMES)
  Result: negative
- **Test Type**: In vitro mammalian cell gene mutation test
  Result: negative
- **Test Type**: Chromosome aberration test in vitro
  Result: negative
- **Remarks**: Based on data from similar materials
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Genotoxicity in vivo

- Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
- Species: Rat
- Application Route: Ingestion
- Result: negative
- Remarks: Based on data from similar materials

Calcium carbonate:

Genotoxicity in vitro

- Test Type: Bacterial reverse mutation assay (AMES)
  - Method: OECD Test Guideline 471
  - Result: negative
- Test Type: Chromosome aberration test in vitro
  - Method: OECD Test Guideline 473
  - Result: negative
- Test Type: In vitro mammalian cell gene mutation test
  - Method: OECD Test Guideline 476
  - Result: negative

Paraformaldehyde:

Genotoxicity in vitro

- Test Type: Bacterial reverse mutation assay (AMES)
  - Result: positive
  - Remarks: Based on data from similar materials
- Test Type: In vitro mammalian cell gene mutation test
  - Result: positive
  - Remarks: Based on data from similar materials
- Test Type: In vitro micronucleus test
  - Result: positive
  - Remarks: Based on data from similar materials
- Test Type: DNA damage and repair, unscheduled DNA synthesis in mammalian cells (in vitro)
  - Result: positive
  - Remarks: Based on data from similar materials
- Test Type: In vitro sister chromatid exchange assay in mammalian cells
  - Result: positive
  - Remarks: Based on data from similar materials

Genotoxicity in vivo

- Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
  - Species: Rat
  - Application Route: Inhalation (vapor)
  - Result: positive
  - Remarks: Based on data from similar materials
- Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
  - Species: Rat
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## Amitraz Solid Formulation

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<th>Version</th>
<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
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<tr>
<td>8.0</td>
<td>04/04/2023</td>
<td>1732058-00014</td>
<td>07/22/2022</td>
<td>06/06/2017</td>
</tr>
</tbody>
</table>

### Application Route:
Ingestion

**Result:** positive

**Remarks:** Based on data from similar materials

### Germ cell mutagenicity - Assessment:
Positive result(s) from in vivo mammalian somatic cell mutagenicity tests.

### Sodium bis(2-ethylhexyl)sulfosuccinate:

<table>
<thead>
<tr>
<th>Genotoxicity in vitro</th>
<th>Test Type: Bacterial reverse mutation assay (AMES)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Method: OECD Test Guideline 471</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genotoxicity in vitro</th>
<th>Test Type: Chromosome aberration test in vitro</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Method: OECD Test Guideline 473</td>
</tr>
<tr>
<td></td>
<td>Result: equivocal</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Genotoxicity in vitro</th>
<th>Test Type: In vitro mammalian cell gene mutation test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Method: OECD Test Guideline 476</td>
</tr>
<tr>
<td></td>
<td>Result: negative</td>
</tr>
</tbody>
</table>

**Remarks:** Based on data from similar materials

### Carcinogenicity:
May cause cancer.

### Components:

#### Amitraz (ISO):

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Oral</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>NOAEL</td>
<td>&gt; 10.18 mg/kg body weight</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Species</th>
<th>Mouse</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Exposure time</td>
<td>2 Years</td>
</tr>
<tr>
<td>LOAEL</td>
<td>2.3 mg/kg body weight</td>
</tr>
<tr>
<td>Result</td>
<td>positive</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Liver, Stomach</td>
</tr>
</tbody>
</table>

#### Aluminium silicate:

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Exposure time</td>
<td>104 weeks</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>

**Remarks:** Based on data from similar materials

#### Paraformaldehyde:

<table>
<thead>
<tr>
<th>Species</th>
<th>Rat</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application Route</td>
<td>Ingestion</td>
</tr>
<tr>
<td>Exposure time</td>
<td>105 weeks</td>
</tr>
<tr>
<td>Result</td>
<td>negative</td>
</tr>
</tbody>
</table>
Species: Rat
Application Route: Inhalation
Exposure time: 28 Months
Result: positive
Remarks: Based on data from similar materials

Carcinogenicity - Assessment
IARC: No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA’s list of regulated carcinogens.
NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

Reproductive toxicity
Not classified based on available information.

Components:

Amitraz (ISO):
Effects on fertility: Test Type: Three-generation reproduction toxicity study
Species: Rat
Application Route: Oral
Fertility: NOAEL: > 4.8 mg/kg body weight
Result: No significant adverse effects were reported

Effects on fetal development: Test Type: Embryo-fetal development
Species: Rat
Application Route: Oral
Developmental Toxicity: NOAEL: 3 mg/kg body weight
Remarks: No significant adverse effects were reported

Test Type: Embryo-fetal development
Species: Rabbit
Application Route: Oral
Developmental Toxicity: NOAEL: 5 mg/kg body weight
Result: Effects on fetal development.

Aluminium silicate:
Effects on fetal development: Test Type: Embryo-fetal development
Species: Rat
Application Route: Ingestion
Result: negative
Remarks: Based on data from similar materials

Calcium carbonate:
Effects on fertility: Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
Species: Rat
Application Route: Ingestion
Effects on fetal development:
- Test Type: Embryo-fetal development
  - Species: Rat
  - Application Route: Ingestion
  - Result: negative

**Sodium bis(2-ethylhexyl)sulfosuccinate:**
- Effects on fertility:
  - Test Type: Three-generation reproduction toxicity study
    - Species: Rat
    - Application Route: Ingestion
    - Result: negative

**STOT-single exposure**
Not classified based on available information.

**Components:**

**Paraformaldehyde:**
- Assessment: May cause respiratory irritation.

**STOT-repeated exposure**
May cause damage to organs (Liver, Central nervous system) through prolonged or repeated exposure.

**Components:**

**Amitraz (ISO):**
- Target Organs: Liver, Central nervous system
- Assessment: May cause damage to organs through prolonged or repeated exposure.

**Repeated dose toxicity**

**Components:**

**Amitraz (ISO):**
- Species: Mouse
  - NOAEL: 3 mg/kg
  - Application Route: Oral
  - Exposure time: 90 Days
  - Target Organs: Liver

- Species: Dog
  - NOAEL: 0.25 mg/kg
  - Application Route: Oral
## 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

**Amitraz (ISO):**
- **Toxicity to fish**: LC50 (Lepomis macrochirus (Bluegill sunfish)): 0.45 mg/l
  
  Exposure time: 96 h
- **Toxicity to daphnia and other**: EC50 (Daphnia magna (Water flea)): 0.035 mg/l
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Aquatic invertebrates
Exposure time: 48 h

Toxicity to algae/aquatic plants
NOEC (Pseudokirchneriella subcapitata (green algae)): 0.04 mg/l
Exposure time: 91 h

Toxicity to fish (Chronic toxicity)
NOEC (Pimephales promelas (fathead minnow)): 0.00148 mg/l
Exposure time: 32 d

Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)
NOEC (Daphnia magna (Water flea)): 0.0011 mg/l
Exposure time: 21 d

Aluminium silicate:

Ecotoxicology Assessment

Chronic aquatic toxicity: No toxicity at the limit of solubility.

Calcium carbonate:

Toxicity to fish
LL50 (Oncorhynchus mykiss (rainbow trout)): > 100 mg/l
Exposure time: 96 h
Test substance: Water Accommodated Fraction
Method: OECD Test Guideline 203

Toxicity to daphnia and other aquatic invertebrates
EL50 (Daphnia magna (Water flea)): > 100 mg/l
Exposure time: 48 h
Test substance: Water Accommodated Fraction
Method: OECD Test Guideline 202

Toxicity to algae/aquatic plants
NOELR (Pseudokirchneriella subcapitata (green algae)): 50 mg/l
Exposure time: 72 h
Test substance: Water Accommodated Fraction
Method: OECD Test Guideline 201

EL50 (Pseudokirchneriella subcapitata (green algae)): > 100 mg/l
Exposure time: 72 h
Test substance: Water Accommodated Fraction
Method: OECD Test Guideline 201

Toxicity to microorganisms
NOEC: 1,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

EC50: > 1,000 mg/l
Exposure time: 3 h
Method: OECD Test Guideline 209

Paraformaldehyde:

Toxicity to fish
LC50: > 1 mg/l
Exposure time: 96 h
Remarks: Based on data from similar materials
### Amitraz Solid Formulation

| Toxicity to daphnia and other aquatic invertebrates | EC50 (Daphnia pulex (Water flea)): > 1 mg/l |
| Exposure time: 48 h |
| Method: OECD Test Guideline 202 |
| Remarks: Based on data from similar materials |

| Toxicity to algae/aquatic plants | ErC50 (Desmodesmus subspicatus (green algae)): > 1 mg/l |
| Exposure time: 72 h |
| Method: OECD Test Guideline 201 |
| Remarks: Based on data from similar materials |

| Toxicity to fish (Chronic toxicity) | NOEC (Oryzias latipes (Orange-red killifish)): > 1 mg/l |
| Exposure time: 28 d |
| Remarks: Based on data from similar materials |

| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | NOEC (Daphnia magna (Water flea)): > 1 mg/l |
| Exposure time: 21 d |
| Method: OECD Test Guideline 211 |
| Remarks: Based on data from similar materials |

| Toxicity to microorganisms | EC50: > 10 mg/l |
| Exposure time: 3 h |
| Method: OECD Test Guideline 209 |
| Remarks: Based on data from similar materials |

### Sodium bis(2-ethylhexyl)sulfosuccinate:

| Toxicity to fish | LC50 (Danio rerio (zebra fish)): 49 mg/l |
| Exposure time: 96 h |

| Toxicity to daphnia and other aquatic invertebrates | EC50 (Daphnia magna (Water flea)): 6.6 mg/l |
| Exposure time: 48 h |

| Toxicity to algae/aquatic plants | ErC50 (Desmodesmus subspicatus (green algae)): 82.5 mg/l |
| Exposure time: 72 h |
| EC10 (Desmodesmus subspicatus (green algae)): 22 mg/l |
| Exposure time: 72 h |

| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | EC10 (Daphnia magna (Water flea)): 9 mg/l |
| Exposure time: 21 d |
| Method: OECD Test Guideline 211 |

| Toxicity to microorganisms | EC50 (Pseudomonas putida): 164 mg/l |
| Exposure time: 16 h |

### Persistence and degradability

**Components:**

**Paraformaldehyde:**

| Biodegradability | Result: Readily biodegradable. |
| Remarks: Based on data from similar materials |

| Biodegradability | Result: Readily biodegradable. |
| Remarks: Based on data from similar materials |
SAFETY DATA SHEET
Amitraz Solid Formulation

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Sodium bis(2-ethyl(hexyl)sulfosuccinate:

Biodegradability : Result: Readily biodegradable.
                  Biodegradation: 91.2 %
                  Exposure time: 28 d

Bioaccumulative potential

Components:

Amitraz (ISO):

Bioaccumulation : Species: Lepomis macrochirus (Bluegill sunfish)
                  Bioconcentration factor (BCF): 1,333
Partition coefficient: n-octanol/water : log Pow: 5.5

Paraformaldehyde:

Partition coefficient: n-octanol/water : log Pow: -1.40
Remarks: Calculation

Sodium bis(2-ethyl(hexyl)sulfosuccinate:

Partition coefficient: n-octanol/water : log Pow: 1.998
Remarks: Calculation

Mobility in soil

Components:

Amitraz (ISO):

Distribution among environmental compartments : log Koc: 3.3

Other adverse effects
No data available

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods

Waste from residues : Dispose of in accordance with local regulations.
                     Do not dispose of waste into sewer.
Contaminated packaging : Empty containers should be taken to an approved waste handling site for recycling or disposal.
                        If not otherwise specified: Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

International Regulations

UNRTDG
UN number : UN 3077
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
                       (amitraz (ISO))
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Class: 9
Packing group: III
Labels: 9

IATA-DGR
UN/ID No.: UN 3077
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Amitraz (ISO))

IMDG-Code
UN number: UN 3077
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Amitraz (ISO))

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
Not applicable for product as supplied.

Domestic regulation

49 CFR
UN/ID/NA number: UN 3077
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Amitraz (ISO))

Special precautions for user
The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
</table>

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**SAFETY DATA SHEET**

**Amitraz Solid Formulation**

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date</th>
<th>SDS Number</th>
<th>Date of last issue</th>
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<td>06/06/2017</td>
</tr>
</tbody>
</table>

Paraformaldehyde | 30525-89-4 | 1000 | 39215 |

**SARA 304 Extremely Hazardous Substances Reportable Quantity**
This material does not contain any components with a section 304 EHS RQ.

**SARA 302 Extremely Hazardous Substances Threshold Planning Quantity**
This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards**
- Combustible dust
- Acute toxicity (any route of exposure)
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Specific target organ toxicity (single or repeated exposure)
- Serious eye damage or eye irritation

**SARA 313**
- The following components are subject to reporting levels established by SARA Title III, Section 313:
  - Amitraz (ISO) 33089-61-1 50%

**US State Regulations**

**Pennsylvania Right To Know**
- Amitraz (ISO) 33089-61-1
- Calcium carbonate 471-34-1
- Aluminium silicate 12141-46-7
- Cresol-formaldehyde copolymer 1,2-naphthoquinonediazido-4-sulfonate 80296-78-2
- Paraformaldehyde 30525-89-4

**California Prop. 65**
WARNING: This product can expose you to chemicals including Amitraz (ISO), which is/are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

**California List of Hazardous Substances**
- Paraformaldehyde 30525-89-4

**California Permissible Exposure Limits for Chemical Contaminants**
- Calcium carbonate 471-34-1

The ingredients of this product are reported in the following inventories:

- AICS: not determined
- DSL: not determined
- IECSC: not determined

**SECTION 16. OTHER INFORMATION**

Further information
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Date of first issue: 06/06/2017

NFPA 704:
- Flammability
- Health
- Instability
- Special hazard

HMIS® IV:
- HEALTH
- FLAMMABILITY
- PHYSICAL HAZARD

HMIS® ratings are based on a 0-4 rating scale, with 0 representing minimal hazards or risks, and 4 representing significant hazards or risks. The "*" represents a chronic hazard, while the "/" represents the absence of a chronic hazard.

Full text of other abbreviations:

ACGIH: USA. ACGIH Threshold Limit Values (TLV)
CAL PEL: California permissible exposure limits for chemical contaminants (Title 8, Article 107)
NIOSH REL: USA. NIOSH Recommended Exposure Limits
OSHA CARC: USA. NIOSH Recommended Chemicals/Carcinogens
OSHA Z-3: USA. Occupational Exposure Limits (OSHA) - Table Z-3 Mineral Dusts
ACGIH / TWA: 8-hour, time-weighted average
ACGIH / STEL: Short-term exposure limit
CAL PEL / PEL: Permissible exposure limit
NIOSH REL / TWA: Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / C: Ceiling value not be exceeded at any time.
OSHA CARC / PEL: Permissible exposure limit (PEL)
OSHA CARC / STEL: Excursion limit
OSHA Z-3 / TWA: 8-hour time weighted average

AICL - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; BC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50% of a test population; LD50 - Lethal Dose to
50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative


Revision Date: 04/04/2023

Items where changes have been made to the previous version are highlighted in the body of this document by two vertical lines.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and shall not be considered a warranty or quality specification of any type. The information provided relates only to the specific material identified at the top of this SDS and may not be valid when the SDS material is used in combination with any other materials or in any process, unless specified in the text. Material users should review the information and recommendations in the specific context of their intended manner of handling, use, processing and storage, including an assessment of the appropriateness of the SDS material in the user’s end product, if applicable.

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