SAFETY DATA SHEET

Imidocarb Injection Formulation

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Imidocarb Injection Formulation

Manufacturer or supplier’s details
Company : MSD
Address : Rua Coronel Bento Soares, 530
Cruzeiro - Sao Paulo - Brazil  CEP 12730-340
Telephone : 908-740-4000
Emergency telephone : 1-908-423-6000
E-mail address : EHSDATASTEWARD@msd.com
Telefax : 908-735-1496

Recommended use of the chemical and restrictions on use
Recommended use : Veterinary product

SECTION 2. HAZARDS IDENTIFICATION

GHS Classification in accordance with ABNT NBR 14725 Standard
Reproductive toxicity : Category 2
Specific target organ toxicity - single exposure (Oral) : Category 1 (Central nervous system)
Specific target organ toxicity - repeated exposure (Oral) : Category 1 (Liver, Kidney)

GHS label elements in accordance with ABNT NBR 14725 Standard
Hazard pictograms :

Signal Word : Danger
Hazard Statements :
H361d Suspected of damaging the unborn child.
H370 Causes damage to organs (Central nervous system) if swallowed.
H372 Causes damage to organs (Liver, Kidney) through prolonged or repeated exposure if swallowed.

Precautionary Statements :
Prevention:
P201 Obtain special instructions before use.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

Response:
P308 + P311 IF exposed or concerned: Call a POISON CENTER/ doctor.

Storage:
P405 Store locked up.

Other hazards which do not result in classification
None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Mixture

Components

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>CAS-No.</th>
<th>Classification</th>
<th>Concentration (% w/w)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imidocarb</td>
<td>27885-92-3</td>
<td>Acute toxicity (Oral), Category 4 Reproductive toxicity, Category 2 Specific target organ toxicity - single exposure (Oral) (Central nervous system), Category 1 Specific target organ toxicity - repeated exposure (Oral) (Liver, Kidney), Category 1</td>
<td>&gt;= 10 -&lt; 20</td>
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<tr>
<td></td>
<td></td>
<td>Acute toxicity (Dermal), Category 5 Skin corrosion, Category 1B Serious eye damage, Category 1 Specific target organ toxicity - single exposure, Category 3 Short-term (acute) aquatic hazard, Category 3</td>
<td></td>
</tr>
<tr>
<td>Propionic acid</td>
<td>79-09-4</td>
<td>Flammable liquids, Category 3 Acute toxicity (Oral), Category 5 Acute toxicity (Dermal), Category 5 Skin corrosion, Category 1B Serious eye damage, Category 1 Specific target organ toxicity - single exposure, Category 3 Short-term (acute) aquatic hazard, Category 3</td>
<td>&gt;= 3 -&lt; 5</td>
</tr>
</tbody>
</table>

SECTION 4. FIRST AID MEASURES
**SAFETY DATA SHEET**

Imidocarb Injection Formulation

<table>
<thead>
<tr>
<th>Version</th>
<th>Revision Date:</th>
<th>SDS Number:</th>
<th>Date of last issue:</th>
<th>Date of first issue:</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.4</td>
<td>28.04.2020</td>
<td>632238-00010</td>
<td>23.03.2020</td>
<td>02.05.2016</td>
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</table>

**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 soap and 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**: Flush eyes with water as a precaution. Get medical attention if irritation develops and persists.

**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**: Suspected of damaging the unborn child. Causes damage to organs if swallowed. Causes damage to organs through prolonged or repeated exposure if swallowed.

**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**

- Exposure to combustion products may be a hazard to health.

**Hazardous combustion products**: Carbon 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 and personal protective equipment recommendations.
Environmental precautions: Discharge into the environment must be avoided. Prevent further leakage or spillage if safe to do so. Prevent spreading over a wide area (e.g., by containment or oil barriers). 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: Soak up with inert absorbent material. For large spills, provide diking or other appropriate containment to keep material from spreading. If diked material can be pumped, store recovered material in appropriate container. Clean up remaining materials from spill with suitable absorbent. 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: See Engineering measures under EXPOSURE CONTROLS/PERSONAL PROTECTION section.

Local/Total ventilation: Use only with adequate ventilation.

Advice on safe handling: Avoid inhalation of vapor or mist. Do not swallow. Avoid contact with eyes. Avoid prolonged or repeated contact with skin. Handle in accordance with good industrial hygiene and safety practice, based on the results of the workplace exposure assessment. Take care to prevent spills, waste and minimize release to the environment.

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. Wash contaminated clothing before re-use. The effective operation of a facility should include review of engineering controls, proper personal protective equipment, appropriate degowning and decontamination procedures, industrial hygiene monitoring, medical surveillance and the use of administrative controls.

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

Materials to avoid: Do not store with the following product types: Strong oxidizing agents Organic peroxides Explosives
Gases

In Section 8, Exposure Controls/Personal Protection, the guidelines include:

- **Ingredients with workplace control parameters**

<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>Imidocarb</td>
<td>27885-92-3</td>
<td>TWA</td>
<td>40 µg/m³ (OEB 3)</td>
<td>Internal</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Wipe limit</td>
<td>400 µg/100 cm²</td>
<td>Internal</td>
</tr>
<tr>
<td>Propionic acid</td>
<td>79-09-4</td>
<td>TWA</td>
<td>10 ppm</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>

- **Engineering measures**: Use appropriate engineering controls and manufacturing technologies to control airborne concentrations (e.g., dripless quick connections). All engineering controls should be implemented by facility design and operated in accordance with GMP principles to protect products, workers, and the environment. Containment technologies suitable for controlling compounds are required to control at source and to prevent migration of the compound to uncontrolled areas (e.g., open-face containment devices). Minimize open handling.

- **Personal protective equipment**

  - **Respiratory protection**: If adequate local exhaust ventilation is not available or exposure assessment demonstrates exposures outside the recommended guidelines, use respiratory protection.

  - **Filter type**: Combined particulates and organic vapor type

  - **Hand protection**: Chemical-resistant gloves

  - **Remarks**: Consider double gloving.

  - **Eye protection**: Wear safety glasses with side shields or goggles. If the work environment or activity involves dusty conditions, mists or aerosols, wear the appropriate goggles. Wear a faceshield or other full face protection if there is a potential for direct contact to the face with dusts, mists, or aerosols.

  - **Skin and body protection**: Work uniform or laboratory coat. Additional body garments should be used based upon the task being performed (e.g., sleevelets, apron, gauntlets, disposable suits) to avoid exposed skin surfaces. Use appropriate degowning techniques to remove potentially contaminated clothing.

In Section 9, Physical and Chemical Properties:

- **Appearance**: liquid

- **Color**: clear
### Imidocarb Injection Formulation

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor</td>
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<tr>
<td>Odor Threshold</td>
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<td>pH</td>
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<td>Melting point/freezing point</td>
<td>100 °C</td>
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<td>Initial boiling point and boiling range</td>
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<tr>
<td>Flash point</td>
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</tr>
<tr>
<td>Evaporation rate</td>
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<tr>
<td>Flammability (solid, gas)</td>
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<tr>
<td>Flammability (liquids)</td>
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<tr>
<td>Upper explosion limit / Upper flammability limit</td>
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</tr>
<tr>
<td>Lower explosion limit / Lower flammability limit</td>
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<tr>
<td>Vapor pressure</td>
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<tr>
<td>Relative vapor density</td>
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<tr>
<td>Solubility(ies)</td>
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</tr>
<tr>
<td>Water solubility</td>
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<td>Partition coefficient: n-octanol/water</td>
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<tr>
<td>Decomposition temperature</td>
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<td>Viscosity</td>
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<td>Explosive properties</td>
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<td>Oxidizing properties</td>
<td>The substance or mixture is not classified as oxidizing.</td>
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<td>Molecular weight</td>
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<tr>
<td>Particle size</td>
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</tbody>
</table>

### SECTION 10. STABILITY AND REACTIVITY
Imidocarb Injection Formulation

**SECTION 1. IDENTIFICATION**

- **Product Name:** Imidocarb Injection Formulation
- **Supplier:** MSD

**SECTION 2. HAZARDS IDENTIFICATION**

- **Reactivity:** Not classified as a reactivity hazard.
- **Chemical stability:** Stable under normal conditions.
- **Possibility of hazardous reactions:** Can react with strong oxidizing agents.
- **Conditions to avoid:** None known.
- **Incompatible materials:** Oxidizing agents
- **Hazardous decomposition products:** No hazardous decomposition products are known.

**SECTION 11. TOXICOLOGICAL INFORMATION**

**Information on likely routes of exposure:**
- Inhalation
- Skin contact
- Ingestion
- Eye contact

**Acute toxicity**

Not classified based on available information.

**Product:**

- **Acute oral toxicity:**
  - LD50 (Rat): 1.216 - 1.652 mg/kg
  - LD50 (Mouse): 544 - 702 mg/kg
  - LD50 (Rabbit): 317 mg/kg

- **Acute dermal toxicity:**
  - LD50 (Rat): 32.7 mg/kg
  - Application Route: Intravenous

- **Propionic acid:**
  - LD50 (Rat): 3.455.1 mg/kg
  - LD50 (Mouse): 22.3 mg/kg

**Skin corrosion/irritation**

Not classified based on available information.
## Components:

### Imidocarb:
Remarks: No data available

### Propionic acid:
Species: Rabbit
Result: Corrosive after 3 minutes to 1 hour of exposure

### Serious eye damage/eye irritation
Not classified based on available information.

### Respiratory or skin sensitization

#### Skin sensitization
Not classified based on available information.

#### Respiratory sensitization
Not classified based on available information.

### Components:

### Imidocarb:
Remarks: No data available

### Propionic acid:
Species: Rabbit
Result: Irreversible effects on the eye

### Germ cell mutagenicity
Not classified based on available information.

### Components:

### Imidocarb:
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: equivocal

Genotoxicity in vivo:
Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Rat
Application Route: Oral
Result: negative

Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Mouse
Application Route: Oral
Result: negative

Propionic acid:
Genotoxicity in vitro:
Test Type: Bacterial reverse mutation assay (AMES)
Result: negative

Genotoxicity in vivo:
Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
Species: Chinese hamster
Application Route: Intraperitoneal injection
Result: negative

Carcinogenicity:
Not classified based on available information.

Components:

Imidocarb:
Species: Rat
Application Route: Oral
Exposure time: 104 weeks
LOAEL: 240 mg/kg body weight
Result: negative
Target Organs: Mammary gland
Remarks: The mechanism or mode of action may not be relevant in humans.

Propionic acid:
Species: Rat
Application Route: Ingestion
Exposure time: 2 Years
Result: negative

Reproductive toxicity:
Suspected of damaging the unborn child.

Components:

Imidocarb:
Effects on fertility

- Test Type: Two-generation reproduction toxicity study
  - Species: Rat
  - Application Route: Oral
  - Fertility: LOAEL: 135 mg/kg body weight
  - Result: Adverse neonatal effects.

- Test Type: Two-generation reproduction toxicity study
  - Species: Rat
  - Application Route: Oral
  - Fertility: NOAEL: 45 mg/kg body weight

Effects on fetal development

- Test Type: Embryo-fetal development
  - Species: Rat
  - Application Route: Oral
  - Developmental Toxicity: LOAEL: 76 mg/kg body weight
  - Result: Effects on fetal development., No teratogenic effects.

- Test Type: Embryo-fetal development
  - Species: Rat
  - Application Route: Oral
  - Developmental Toxicity: NOAEL: 19 mg/kg body weight

- Test Type: Embryo-fetal development
  - Species: Rabbit
  - Application Route: Oral
  - Developmental Toxicity: NOAEL: 20 mg/kg body weight
  - Result: No effects on fetal development.

Reproductive toxicity - Assessment

- Some evidence of adverse effects on development, based on animal experiments.

Propionic acid:

Effects on fetal development

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

STOT-single exposure

Causes damage to organs (Central nervous system) if swallowed.

Components:

Imidocarb:

- Target Organs: Central nervous system
- Assessment: Causes damage to organs.

Propionic acid:

- Assessment: May cause respiratory irritation.

STOT-repeated exposure

Causes damage to organs (Liver, Kidney) through prolonged or repeated exposure if swallowed.
Components:

Imidocarb:
Target Organs: Liver, Kidney
Assessment: Causes damage to organs through prolonged or repeated exposure.

Repeated dose toxicity

Components:

Imidocarb:
Species: Rat
LOAEL: 125 mg/kg
Application Route: Oral
Exposure time: 90 Days
Target Organs: Liver
Species: Rat
NOAEL: 76 mg/kg
LOAEL: 415 mg/kg
Application Route: Oral
Exposure time: 90 Days
Target Organs: Liver
Species: Dog
NOAEL: 5 mg/kg
Application Route: Oral
Exposure time: 90 Days
Target Organs: Liver, Kidney
Symptoms: muscle twitching, Salivation, recumbency, ataxia, splayed legs
Species: Rat
NOAEL: 15 mg/kg
LOAEL: 60 mg/kg
Application Route: Oral
Exposure time: 104 Weeks
Target Organs: Liver, Kidney, Blood
Species: Monkey
NOAEL: 5 mg/kg
Application Route: Oral
Exposure time: 30 Days
Remarks: No significant adverse effects were reported

Propionic acid:
Species: Rat
NOAEL: 50000 ppm
Application Route: Ingestion
Exposure time: 90 Days

Aspiration toxicity
Not classified based on available information.
Experience with human exposure

Components:

Imidocarb:
Inhalation: Target Organs: Central nervous system
Symptoms: Salivation, muscle twitching, Tremors, Lachrymation, ataxia, lethargy
Remarks: Based on Animal Evidence

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Propionic acid:
Toxicity to fish: LC50 (Lepomis macrochirus (Bluegill sunfish)): 85,3 mg/l
Exposure time: 96 h

Toxicity to daphnia and other aquatic invertebrates: EC50 (Daphnia magna (Water flea)): 22,7 mg/l
Exposure time: 48 h

Toxicity to algae/aquatic plants: EC50 (Desmodesmus subspicatus (green algae)): 48,7 mg/l
Exposure time: 72 h

Persistence and degradability

Components:

Propionic acid:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 93 %
Exposure time: 20 d

Bioaccumulative potential

Components:

Imidocarb:
Partition coefficient: n-octanol/water: log Pow: 3,88

Propionic acid:
Partition coefficient: n-octanol/water: log Pow: 0,33

Mobility in soil
No data available

Other adverse effects
No data available
SAFETY DATA SHEET

Imidocarb Injection Formulation

Version 3.4  Revision Date: 28.04.2020  SDS Number: 632238-00010  Date of last issue: 23.03.2020  Date of first issue: 02.05.2016

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal methods
- Waste from residues: Dispose of in accordance with local regulations.
- 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: Not regulated as a dangerous good
- IATA-DGR: Not regulated as a dangerous good
- IMDG-Code: Not regulated as a dangerous good
- Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: Not applicable for product as supplied.

Domestic regulation
- ANTT: Not regulated as a dangerous good

SECTION 15. REGULATORY INFORMATION

Safety, health and environmental regulations/legislation specific for the substance or mixture
- National List of Carcinogenic Agents for Humans - (LINACH): Not applicable
- Brazil. List of chemicals controlled by the Federal Police: Not applicable

International Regulations
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
Sources of key data used to: Internal technical data, data from raw material SDSs, OECD
SAFETY DATA SHEET

Imidocarb Injection Formulation

Full text of other abbreviations
ACGIH : USA. ACGIH Threshold Limit Values (TLV)
ACGIH / TWA : 8-hour, time-weighted average

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.

BR / Z8