SAFETY DATA SHEET

Dichlofenthion Formulation

SECTION 1. IDENTIFICATION

Product name : Dichlofenthion 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)

Flammable liquids : Category 3
Acute toxicity (Oral) : Category 4
Skin corrosion : Category 1B
Serious eye damage : Category 1
Skin sensitization : Category 1
Germ cell mutagenicity : Category 2
Carcinogenicity (Oral) : Category 1A
Reproductive toxicity : Category 2
Specific target organ toxicity - single exposure : Category 1 (Nervous system)
Specific target organ toxicity - single exposure : Category 3
Specific target organ toxicity - repeated exposure : Category 1 (Nervous system)
Specific target organ toxicity - repeated exposure : Category 2 (Central nervous system, Kidney, Liver, Skin, Respiratory Tract, Auditory system)

GHS label elements
Hazard pictograms

Signal Word: Danger

Hazard Statements:
- H226 Flammable liquid and vapor.
- H302 Harmful if swallowed.
- H304 May be fatal if swallowed and enters airways.
- H314 Causes severe skin burns and eye damage.
- H317 May cause an allergic skin reaction.
- H335 May cause respiratory irritation.
- H341 Suspected of causing genetic defects.
- H350 May cause cancer if swallowed.
- H361d Suspected of damaging the unborn child.
- H370 Causes damage to organs (Nervous system).
- H372 Causes damage to organs (Nervous system) through prolonged or repeated exposure.
- H373 May cause damage to organs (Central nervous system, Kidney, Liver, Skin, Respiratory Tract, Auditory 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.
- P210 Keep away from heat, sparks, open flame and hot surfaces. No smoking.
- P233 Keep container tightly closed.
- P241 Use explosion-proof electrical, ventilating and lighting equipment.
- P242 Use only non-sparking tools.
- P243 Take precautionary measures against static discharge.
- P260 Do not breathe vapors.
- P264 Wash skin thoroughly after handling.
- P270 Do not eat, drink or smoke when using this product.
- P271 Use only outdoors or in a well-ventilated area.
- 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 + P330 + P331 + P310 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. Immediately call a POISON CENTER.
- P303 + P361 + P353 + P310 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water. Immediately call a POISON CENTER.
- P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Immediately call a POISON CENTER.
- 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.
P307 + P311 IF exposed: Call a doctor.
P333 + P313 If skin irritation or rash occurs: Get medical attention.
P363 Wash contaminated clothing before reuse.

Storage:
P403 + P235 Store in a well-ventilated place. Keep cool.
P405 Store locked up.

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

Other hazards
Vapors may form explosive mixture with air.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substance / Mixture</th>
<th>Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tar, wood</td>
<td>91722-33-7</td>
</tr>
<tr>
<td>Rosin</td>
<td>8050-09-7</td>
</tr>
<tr>
<td>Castor oil</td>
<td>8001-79-4</td>
</tr>
<tr>
<td>Tar, coal</td>
<td>8007-45-2</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
</tr>
<tr>
<td>Dichlofenthion (ISO)</td>
<td>97-17-6</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
</tr>
<tr>
<td>Phenol</td>
<td>108-95-2</td>
</tr>
<tr>
<td>m-Cresol</td>
<td>108-39-4</td>
</tr>
<tr>
<td>p-Cresol</td>
<td>106-44-5</td>
</tr>
</tbody>
</table>

Actual concentration is withheld as a trade secret

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.
If not breathing, give artificial respiration.
If breathing is difficult, give oxygen.
Get medical attention immediately.

In case of skin contact: In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.
Get medical attention immediately.
Wash clothing 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.
- If vomiting occurs have person lean forward.
- Call a physician or poison control center immediately.
- Rinse mouth thoroughly with water.
- Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed:

- Causes digestive tract burns.
- Harmful if swallowed.
- May be fatal if swallowed and enters airways.
- May cause an allergic skin reaction.
- Causes serious eye damage.
- May cause respiratory irritation.
- Suspected of causing genetic defects.
- May cause cancer if swallowed.
- Suspected of damaging the unborn child.
- Causes damage to organs.
- Causes damage to organs through prolonged or repeated exposure.
- Causes severe burns.

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:

- High volume water jet

Specific hazards during firefighting:

- Do not use a solid water stream as it may scatter and spread fire.
- Flash back possible over considerable distance.
- Vapors may form explosive mixtures with air.
- Exposure to combustion products may be a hazard to health.

Hazardous combustion products:

- Carbon oxides
- Metal oxides
- Nitrogen oxides (NOx)

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:
- Remove all sources of ignition.
- 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.
- 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:
- Non-sparking tools should be used.
- Soak up with inert absorbent material.
- Suppress (knock down) gases/vapors/mists with a water spray jet.
- 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:
- If sufficient ventilation is unavailable, use with local exhaust ventilation.
- Use explosion-proof electrical, ventilating and lighting equipment.

Advice on safe handling:
- Do not get on skin or clothing.
- Do not breathe vapors.
- 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.
- Non-sparking tools should be used.
- Keep container tightly closed.
- Already sensitized individuals, and those susceptible to asthma, allergies, chronic or recurrent respiratory disease, should consult their physician regarding working with respiratory irritants or sensitizers.
Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. 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.
- Keep in a cool, well-ventilated place.
- Store in accordance with the particular national regulations.
- Keep away from heat and sources of ignition.

**Materials to avoid:**
- Do not store with the following product types:
  - Strong oxidizing agents
  - Self-reactive substances and mixtures
  - Organic peroxides
  - Flammable solids
  - Pyrophoric liquids
  - Pyrophoric solids
  - Self-heating substances and mixtures
  - Substances and mixtures which in contact with water emit flammable gases
  - Explosives
  - Gases
  - Very acutely toxic substances and mixtures

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**

**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>Rosin</td>
<td>8050-09-7</td>
<td>TWA</td>
<td>0.1 mg/m³ (Formaldehyde)</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (Inhalable particulate matter)</td>
<td>0.001 mg/m³ (total Resin acids)</td>
<td>ACGIH</td>
</tr>
<tr>
<td>Castor oil</td>
<td>8001-79-4</td>
<td>TWA (mist - total)</td>
<td>10 mg/m³</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA (mist - respirable)</td>
<td>5 mg/m³</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td>Tar, coal</td>
<td>8007-45-2</td>
<td>PEL</td>
<td>0.15 mg/m³</td>
<td>OSHA CARC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>0.2 mg/m³</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
<td>TWA</td>
<td>20 ppm</td>
<td>ACGIH</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 435 mg/m³</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ST</td>
<td>125 ppm 545 mg/m³</td>
<td>NIOSH REL</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>100 ppm 435 mg/m³</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>TWA</td>
<td>100 ppm 435 mg/m³</td>
<td>OSHA Z-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA</td>
<td>20 ppm</td>
<td>ACGIH</td>
</tr>
</tbody>
</table>
### Dichlofenthion Formulation

**Components** | **CAS-No.** | **Control parameters** | **Biological specimen** | **Sampling time** | **Permissible concentration** | **Basis** |
--- | --- | --- | --- | --- | --- | --- |
Phenol | 108-95-2 | Phenol | Urine | End of shift (As soon as possible after exposure ceases) | 250 mg/g Creatinine | ACGIH BEI |
Xylene | 1330-20-7 | Methylhippuric acids | Urine | End of shift (As soon as possible after exposure ceases) | 1.5 g/g creatinine | ACGIH BEI |
Ethylbenzene | 100-41-4 | Sum of mandelic acid and phenyl glyoxylic acid | Urine | End of shift (As soon as possible after exposure ceases) | 0.15 g/g creatinine | ACGIH BEI |
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.

Use explosion-proof electrical, ventilating and lighting equipment.

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

Material: Chemical-resistant gloves
Remarks: Consider double gloving. Take note that the product is flammable, which may impact the selection of hand protection.

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.

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. The effective operation of a facility should include review of
SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

- Appearance: viscous liquid
- Color: dark, brown
- Odor: strong
- Odor Threshold: No data available
- pH: Not applicable
- Melting point/freezing point: No data available
- Initial boiling point and boiling range: No data available
- Flash point: 86 °F / 30 °C
- Evaporation rate: No data available
- Flammability (solid, gas): Not applicable
- Flammability (liquids): Not applicable
- 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: 1,009 - 1,051 g/cm³ (68 °F / 20 °C)
- Solubility(ies)
  - Water solubility: No data available
- Partition coefficient: n-octanol/water: Not applicable
- Autoignition temperature: No data available
- Decomposition temperature: No data available
- Viscosity: No data available
Viscosity, kinematic: No data available
Explosive properties: Not explosive
Oxidizing properties: The substance or mixture is not classified as oxidizing.
Particle size: Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity: Not classified as a reactivity hazard.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions: Flammable liquid and vapor. Vapors may form explosive mixture with air. Can react with strong oxidizing agents.
Conditions to avoid: Heat, flames and sparks.
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
Harmful if swallowed.

Product:
Acute oral toxicity: Acute toxicity estimate: 1,450 mg/kg
Method: Calculation method

Acute inhalation toxicity: Acute toxicity estimate: > 20 mg/l
Exposure time: 4 h
Test atmosphere: vapor
Method: Calculation method

Acute dermal toxicity: Acute toxicity estimate: 3,724 mg/kg
Method: Calculation method

Components:
Tar, wood:

Acute oral toxicity: LD50 (Rat): > 2,000 mg/kg
Method: OECD Test Guideline 423
Assessment: The substance or mixture has no acute oral toxicity
Rosin:
- Acute oral toxicity: LD50 (Rat): 2,800 mg/kg
- Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
  Method: OECD Test Guideline 402
  Assessment: The substance or mixture has no acute dermal toxicity

Castor oil:
- Acute oral toxicity: LD50 (Rat): > 4,763 mg/kg
  Method: OECD Test Guideline 401
- Acute dermal toxicity: LD50 (Rat): > 2,000 mg/kg
  Method: OECD Test Guideline 402
  Remarks: Based on data from similar materials

Tar, coal:
- Acute oral toxicity: LD50 (Rat): 1,700 mg/kg
- Acute dermal toxicity: LD50 (Rabbit): > 5,000 mg/kg

Ethylbenzene:
- Acute oral toxicity: LD50 (Rat): 3,500 mg/kg
- Acute inhalation toxicity: LC50 (Rat): 17.8 mg/l
  Exposure time: 4 h
  Test atmosphere: vapor
- Acute dermal toxicity: LD50 (Rabbit): > 5,000 mg/kg

Xylene:
- Acute oral toxicity: LD50 (Rat): 3,523 mg/kg
- Acute inhalation toxicity: LC50 (Rat): 27.571 mg/l
  Exposure time: 4 h
  Test atmosphere: vapor
- Acute dermal toxicity: LD50 (Rabbit): > 4,200 mg/kg

Dichlofenthion (ISO):
- Acute oral toxicity: LD50 (Rat): 172 mg/kg
  LD50 (Rat): 270 mg/kg
- Acute inhalation toxicity: LC50 (Rat): 1.75 mg/l
- Acute dermal toxicity: LD50 (Rat): 355 mg/kg
  LD50 (Rabbit): 6,000 mg/kg
Sodium hydroxide:
Acute inhalation toxicity: Assessment: Corrosive to the respiratory tract.

Phenol:
Acute oral toxicity: LD50 (Rat): 650 mg/kg
Method: OECD Test Guideline 401
Acute toxicity estimate (Humans): 140 - 290 mg/kg
Method: Expert judgment

Acute inhalation toxicity: LC0 (Rat): 0.9 mg/l
Exposure time: 8 h
Test atmosphere: dust/mist
Assessment: Corrosive to the respiratory tract.
Acute toxicity estimate (Humans): > 0.9 mg/l
Exposure time: 4 h
Test atmosphere: dust/mist
Method: Expert judgment

Acute dermal toxicity: LD50 (Rabbit): 660 mg/kg
Method: OECD Test Guideline 402
Acute toxicity estimate (Humans): 300 mg/kg
Method: Expert judgment

m-Cresol:
Acute oral toxicity: LD50 (Rat): 121 mg/kg
Remarks: Based on data from similar materials

Acute inhalation toxicity: Assessment: Corrosive to the respiratory tract.

Acute dermal toxicity: LD50 (Rabbit): 301 mg/kg
Remarks: Based on data from similar materials

p-Cresol:
Acute oral toxicity: LD50 (Rat): 172 - 250 mg/kg

Acute inhalation toxicity: Assessment: Corrosive to the respiratory tract.

Acute dermal toxicity: LD50 (Rabbit): 213 - 426 mg/kg

Skin corrosion/irritation
Causes severe burns.

Components:
Tar, wood:
Species: reconstructed human epidermis (RhE)
Method: OECD Test Guideline 439

Species: reconstructed human epidermis (RhE)
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Method: OECD Test Guideline 431
Result: Skin irritation

Rosin:
Species: Rabbit
Method: OECD Test Guideline 404
Result: No skin irritation

Castor oil:
Species: Rabbit
Result: No skin irritation

Tar, coal:
Species: Rabbit
Result: Mild skin irritation

Xylene:
Species: Rabbit
Result: Skin irritation

Dichlofenthion (ISO):
Result: Mild skin irritation
Remarks: Based on data from similar materials

Sodium hydroxide:
Result: Corrosive after 3 minutes or less of exposure

Phenol:
Species: Rabbit
Result: Corrosive after 3 minutes to 1 hour of exposure

m-Cresol:
Species: Rabbit
Result: Corrosive after 3 minutes to 1 hour of exposure

p-Cresol:
Species: Rabbit
Result: Corrosive after 3 minutes to 1 hour of exposure

Serious eye damage/eye irritation
Causes serious eye damage.

Components:

Tar, wood:
Result: Irritation to eyes, reversing within 7 days
### Rosin:
- **Species:** Rabbit
- **Result:** No eye irritation
- **Method:** OECD Test Guideline 405

### Castor oil:
- **Species:** Rabbit
- **Result:** No eye irritation

### Tar, coal:
- **Species:** Human
- **Result:** Irreversible effects on the eye

### Xylene:
- **Species:** Rabbit
- **Result:** Irritation to eyes, reversing within 21 days

### Sodium hydroxide:
- **Result:** Irreversible effects on the eye
- **Remarks:** Based on skin corrosivity.

### Phenol:
- **Species:** Rabbit
- **Result:** Irreversible effects on the eye
- **Method:** OECD Test Guideline 405

### m-Cresol:
- **Species:** Rabbit
- **Result:** Irreversible effects on the eye

### p-Cresol:
- **Species:** Rabbit
- **Result:** Irreversible effects on the eye

**Respiratory or skin sensitization**

**Skin sensitization**
May cause an allergic skin reaction.

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

**Components:**

### Tar, wood:
- **Test Type:** Local lymph node assay (LLNA)
- **Routes of exposure:** Skin contact
- **Species:** Mouse
- **Method:** OECD Test Guideline 429
- **Result:** positive
<table>
<thead>
<tr>
<th>Test Type</th>
<th>Routes of exposure</th>
<th>Species</th>
<th>Method</th>
<th>Result</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosin:</td>
<td>Local lymph node assay (LLNA)</td>
<td>Skin contact</td>
<td>Mouse</td>
<td>negative</td>
<td>Based on data from similar materials</td>
</tr>
<tr>
<td>Castor oil:</td>
<td>Maximization Test</td>
<td>Skin contact</td>
<td>Guinea pig</td>
<td>negative</td>
<td>Based on data from similar materials</td>
</tr>
<tr>
<td>Tar, coal:</td>
<td>Local lymph node assay (LLNA)</td>
<td>Skin contact</td>
<td>Mouse</td>
<td>positive</td>
<td>Based on data from similar materials</td>
</tr>
<tr>
<td>Xylene:</td>
<td>Local lymph node assay (LLNA)</td>
<td>Skin contact</td>
<td>Mouse</td>
<td>negative</td>
<td></td>
</tr>
<tr>
<td>Dichlofenthion (ISO):</td>
<td>Dermal</td>
<td>Does not cause skin sensitization.</td>
<td>Weak sensitizer</td>
<td>Based on data from similar materials</td>
<td></td>
</tr>
<tr>
<td>Sodium hydroxide:</td>
<td>Human repeat insult patch test (HRIPT)</td>
<td>Skin contact</td>
<td>negative</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenol:</td>
<td>Buehler Test</td>
<td>Skin contact</td>
<td>Guinea pig</td>
<td>OECD Test Guideline 406</td>
<td></td>
</tr>
</tbody>
</table>
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**Dichlofenthion Formulation**

<table>
<thead>
<tr>
<th>Result</th>
<th>negative</th>
</tr>
</thead>
</table>

**p-Cresol:**
- **Test Type**: Draize Test
- **Routes of exposure**: Skin contact
- **Species**: Guinea pig
- **Result**: negative

**Germ cell mutagenicity**
Suspected of causing genetic defects.

**Components:**

**Tar, wood:**
- **Genotoxicity in vitro**
  - **Test Type**: Bacterial reverse mutation assay (AMES)
  - **Method**: OECD Test Guideline 471
  - **Result**: negative

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

**Castor oil:**
- **Genotoxicity in vitro**
  - **Test Type**: Bacterial reverse mutation assay (AMES)
  - **Result**: negative
  - **Test Type**: Chromosome aberration test in vitro
    - **Result**: negative
  - **Test Type**: In vitro sister chromatid exchange assay in mammalian cells
    - **Result**: negative

**Genotoxicity in vivo**
- **Test Type**: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
  - **Species**: Mouse
  - **Application Route**: Ingestion
  - **Result**: negative

**Tar, coal:**
- **Genotoxicity in vitro**
  - **Test Type**: Bacterial reverse mutation assay (AMES)
    - **Method**: OECD Test Guideline 471
    - **Result**: positive
### Remarks:
- Based on data from similar materials

#### Germ cell mutagenicity - Assessment
- Positive result(s) from in vivo non-mammalian somatic cell mutagenicity tests, supported by positive results from in vitro mutagenicity assays.
- Remarks: Based on national or regional regulation.

### Ethylbenzene:

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

**Genotoxicity in vivo**
- Test Type: Unscheduled DNA synthesis (UDS) test with mammalian liver cells in vivo
  - Species: Mouse
  - Application Route: Inhalation
  - Method: OECD Test Guideline 486
  - Result: negative

### Xylene:

**Genotoxicity in vitro**
- Test Type: Bacterial reverse mutation assay (AMES)
  - Result: negative
- Test Type: Chromosome aberration test in vitro
  - Result: negative
- Test Type: In vitro mammalian cell gene mutation test
  - Result: negative
- Test Type: In vitro sister chromatid exchange assay in mammalian cells
  - Result: negative

**Genotoxicity in vivo**
- Test Type: Rodent dominant lethal test (germ cell) (in vivo)
  - Species: Mouse
  - Application Route: Skin contact
  - Result: negative

### Phenol:

**Genotoxicity in vitro**
- Test Type: Chromosome aberration test in vitro
  - Method: OECD Test Guideline 473
  - Result: positive

**Genotoxicity in vivo**
- Test Type: Mammalian erythrocyte micronucleus test (in vivo cytogenetic assay)
  - Species: Mouse
  - Application Route: Intraperitoneal injection
Germ cell mutagenicity - Assessment: Positive result(s) from in vivo mammalian somatic cell mutagenicity tests.

**m-Cresol:**

Genotoxicity in vitro: Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: positive

Test Type: Bacterial reverse mutation assay (AMES)
Method: OECD Test Guideline 471
Result: negative

Genotoxicity in vivo: Test Type: Mutagenicity (in vivo mammalian bone-marrow cytogenetic test, chromosomal analysis)
Species: Mouse
Application Route: Ingestion
Method: OECD Test Guideline 475
Result: negative

**p-Cresol:**

Genotoxicity in vitro: Test Type: Chromosome aberration test in vitro
Method: OECD Test Guideline 473
Result: positive

Test Type: In vitro mammalian cell gene mutation test
Method: OECD Test Guideline 476
Result: negative

Genotoxicity in vivo: Test Type: Rodent dominant lethal test (germ cell) (in vivo)
Species: Mouse
Application Route: Ingestion
Method: OECD Test Guideline 478
Result: negative

**Carcinogenicity**
May cause cancer if swallowed.

**Components:**

**Tar, coal:**
Species: Mouse
Application Route: Ingestion
Exposure time: 2 Years
Result: positive

Carcinogenicity - Assessment: Positive evidence from human epidemiological studies (oral)
Remarks: Based on national or regional regulation.
### Ethylbenzene:
- **Species**: Rat
- **Application Route**: Inhalation (vapor)
- **Exposure time**: 104 weeks
- **Result**: Positive
- **Remarks**: The mechanism or mode of action may not be relevant in humans.

### Xylene:
- **Species**: Rat
- **Application Route**: Ingestion
- **Exposure time**: 103 weeks
- **Result**: Negative

### Phenol:
- **Species**: Mouse
- **Application Route**: Ingestion
- **Exposure time**: 103 weeks
- **Method**: OECD Test Guideline 451
- **Result**: Negative

### m-Cresol:
- **Species**: Mouse, males
- **Application Route**: Ingestion
- **Exposure time**: 105 weeks
- **Result**: Equivocal
- **Remarks**: Based on data from similar materials

### p-Cresol:
- **Species**: Mouse
- **Application Route**: Ingestion
- **Exposure time**: 106 - 107 weeks
- **Result**: Positive
- **Remarks**: Based on data from similar materials

### IARC
- **Group 1**: Carcinogenic to humans
  - Tar, coal: 8007-45-2
- **Group 2B**: Possibly carcinogenic to humans
  - Ethylbenzene: 100-41-4

### OSHA
- **OSHA specifically regulated carcinogen**
  - Tar, coal: 8007-45-2
  - (Coke oven emissions)
Reproductive toxicity
Suspected of damaging the unborn child.

Components:

**Rosin:**
- Effects on fertility:
  - Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
  - Species: Rat
  - Application Route: Ingestion
  - Method: OECD Test Guideline 422
  - Result: negative

- Effects on fetal development:
  - Test Type: Embryo-fetal development
  - Species: Rat
  - Application Route: Ingestion
  - Method: OECD Test Guideline 414
  - Result: negative

**Castor oil:**
- Effects on fertility:
  - Test Type: Combined repeated dose toxicity study with the reproduction/developmental toxicity screening test
  - Species: Rat
  - Application Route: Ingestion
  - Result: negative

**Ethylbenzene:**
- Effects on fertility:
  - Test Type: Two-generation reproduction toxicity study
  - Species: Rat
  - Application Route: inhalation (vapor)
  - Method: OECD Test Guideline 416
  - Result: negative

- Effects on fetal development:
  - Test Type: Embryo-fetal development
  - Species: Rat
  - Application Route: Inhalation
  - Method: OECD Test Guideline 414
  - Result: negative

**Xylene:**
- Effects on fertility:
  - Test Type: One-generation reproduction toxicity study
  - Species: Rat
  - Application Route: inhalation (vapor)
  - Result: negative

- Effects on fetal development:
  - Test Type: Embryo-fetal development
  - Species: Rat
  - Application Route: inhalation (vapor)
Dichlofenthion (ISO):

Effects on fetal development:

- Test Type: Development
- Species: Mouse
- Application Route: Intraperitoneal
- Developmental Toxicity: LOAEL: 80 mg/kg body weight
- Result: Reduced fetal weight, Embryotoxic effects.
- Remarks: Based on data from similar materials

Test Type: Development
- Species: Rat
- Application Route: Intraperitoneal
- Developmental Toxicity: LOAEL: 10 mg/kg body weight
- Result: Reduced fetal weight, Embryotoxic effects, No teratogenic effects.
- Remarks: Based on data from similar materials

Reproductive toxicity - Assessment:

- Suspected of damaging the unborn child.

Phenol:

Effects on fertility:

- Test Type: Two-generation reproduction toxicity study
- Species: Rat
- Application Route: Ingestion
- Method: OECD Test Guideline 416
- Result: negative

Effects on fetal development:

- Test Type: Embryo-fetal development
- Species: Mouse
- Application Route: Ingestion
- Method: OECD Test Guideline 414
- Result: negative

m-Cresol:

Effects on fertility:

- Test Type: Two-generation reproduction toxicity study
- Species: Rat
- Application Route: Ingestion
- Result: negative

Effects on fetal development:

- Test Type: Prenatal development toxicity study (teratogenicity)
- Species: Rat
- Application Route: Ingestion
- Result: negative

p-Cresol:

Effects on fertility:

- Test Type: Two-generation reproduction toxicity study
- Species: Rat
- Application Route: Ingestion
- Result: negative

Effects on fetal development:

- Test Type: Embryo-fetal development
- Species: Rat
Application Route: Ingestion
Result: negative

**STOT-single exposure**
May cause respiratory irritation.
Causes damage to organs (Nervous system).

**Components:**

**Tar, coal:**
<table>
<thead>
<tr>
<th>Routes of exposure</th>
<th>Ingestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Organs</td>
<td>Nervous system</td>
</tr>
<tr>
<td>Assessment</td>
<td>Shown to produce significant health effects in animals at concentrations of 300 mg/kg bw or less.</td>
</tr>
</tbody>
</table>

**Xylene:**
| Assessment         | May cause respiratory irritation. |

**STOT-repeated exposure**
Causes damage to organs (Nervous system) through prolonged or repeated exposure.
May cause damage to organs (Central nervous system, Kidney, Liver, Skin, Respiratory Tract, Auditory system) through prolonged or repeated exposure.

**Components:**

**Tar, coal:**
<table>
<thead>
<tr>
<th>Target Organs</th>
<th>Respiratory Tract</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>Shown to produce significant health effects in animals at concentrations of &gt;0.02 to 0.2 mg/l/6h/d.</td>
</tr>
<tr>
<td>Routes of exposure</td>
<td>Inhalation (dust/mist/fume)</td>
</tr>
<tr>
<td>Target Organs</td>
<td>Respiratory Tract</td>
</tr>
<tr>
<td>Assessment</td>
<td>Shown to produce significant health effects in animals at concentrations of &gt;0.02 to 0.2 mg/l/6h/d.</td>
</tr>
</tbody>
</table>

**Ethylbenzene:**
<table>
<thead>
<tr>
<th>Routes of exposure</th>
<th>Inhalation (vapor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Organs</td>
<td>Auditory system</td>
</tr>
<tr>
<td>Assessment</td>
<td>Shown to produce significant health effects in animals at concentrations of &gt;0.2 to 1 mg/l/6h/d.</td>
</tr>
</tbody>
</table>

**Xylene:**
<table>
<thead>
<tr>
<th>Routes of exposure</th>
<th>Inhalation (vapor)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Target Organs</td>
<td>Auditory system</td>
</tr>
<tr>
<td>Assessment</td>
<td>Shown to produce significant health effects in animals at concentrations of &gt;0.2 to 1 mg/l/6h/d.</td>
</tr>
</tbody>
</table>

**Dichlofenthion (ISO):**
<table>
<thead>
<tr>
<th>Target Organs</th>
<th>Nervous system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assessment</td>
<td>Causes damage to organs through prolonged or repeated exposure.</td>
</tr>
</tbody>
</table>
Remarks: Based on human experience.

**Phenol:**

**Target Organs:** Central nervous system, Kidney, Liver, Skin

**Assessment:** May cause damage to organs through prolonged or repeated exposure.

**Repeated dose toxicity**

**Components:**

**Rosin:**

| Species | Rat, male |
| NOAEL | 335 mg/kg |
| Application Route | Ingestion |
| Exposure time | 90 Days |
| Method | OECD Test Guideline 408 |

**Castor oil:**

| Species | Rat |
| NOAEL | > 5,000 mg/kg |
| Application Route | Ingestion |
| Exposure time | 13 Weeks |

**Ethylbenzene:**

| Species | Rat |
| LOAEL | 0.868 mg/l |
| Application Route | Inhalation (vapor) |
| Exposure time | 13 Weeks |

| Species | Rat |
| NOAEL | 75 mg/kg |
| LOAEL | 250 mg/kg |
| Application Route | Ingestion |
| Method | OECD Test Guideline 408 |

**Xylene:**

| Species | Rat |
| LOAEL | > 0.2 - 1 mg/l |
| Application Route | Inhalation (vapor) |
| Exposure time | 13 Weeks |
| Remarks | Based on data from similar materials |

**Dichlofenthion (ISO):**

| Species | Rat |
| NOAEL | 0.75 mg/kg |
Application Route: Oral  
Exposure time: 90 d

Species: Dog  
NOAEL: 0.75 mg/kg

Phenol:
Species: Rat  
LOAEL: 300 mg/kg
Application Route: Ingestion
Exposure time: 90 Days
Method: OECD Test Guideline 408

Species: Rat  
NOAEL: >= 0.1 mg/l
Application Route: inhalation (vapor)
Exposure time: 74 Days

Species: Rabbit  
LOAEL: 260 mg/kg
Application Route: Skin contact
Exposure time: 18 Days

m-Cresol:
Species: Rat  
NOAEL: 150 mg/kg
Application Route: Ingestion
Exposure time: 13 Weeks
Method: OECD Test Guideline 408

p-Cresol:
Species: Rat  
NOAEL: 50 mg/kg
LOAEL: 175 mg/kg
Application Route: Ingestion
Exposure time: 90 Days
Method: OECD Test Guideline 408

Aspiration toxicity
May be fatal if swallowed and enters airways.

Product:
The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

Components:

Ethylbenzene:
The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.
Xylene:
The substance or mixture is known to cause human aspiration toxicity hazards or has to be regarded as if it causes a human aspiration toxicity hazard.

Experience with human exposure

Components:

Dichlofenthion (ISO):

<table>
<thead>
<tr>
<th>Component</th>
<th>Symptoms:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skin contact</td>
<td>irritating, central nervous system effects, sweating</td>
</tr>
<tr>
<td></td>
<td>Remarks: Can be absorbed through skin.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>constriction of pupils, central nervous system effects</td>
</tr>
<tr>
<td>Ingestion</td>
<td>Nausea, Diarrhea, Vomiting, sweating, Lachrymation, constriction of pupils,</td>
</tr>
<tr>
<td></td>
<td>Central nervous system depression, Gastrointestinal disturbance, bronchospasm,</td>
</tr>
<tr>
<td></td>
<td>central nervous system effects, Edema</td>
</tr>
</tbody>
</table>

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Tar, wood:

<table>
<thead>
<tr>
<th>Component</th>
<th>EC50 (Desmodesmus subspicatus (green algae)): 17 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to algae/aquatic plants</td>
<td>Exposure time: 72 h</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 201</td>
</tr>
</tbody>
</table>

Rosin:

<table>
<thead>
<tr>
<th>Component</th>
<th>LL50 (Danio rerio (zebra fish)): &gt; 1 - 10 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to fish</td>
<td>Exposure time: 96 h</td>
</tr>
<tr>
<td></td>
<td>Test substance: Water Accommodated Fraction</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 203</td>
</tr>
<tr>
<td></td>
<td>Remarks: Based on data from similar materials</td>
</tr>
</tbody>
</table>

Toxicity to daphnia and other aquatic invertebrates

<table>
<thead>
<tr>
<th>Component</th>
<th>EL50 (Daphnia magna (Water flea)): 911 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toxicity to algae/aquatic plants</td>
<td>Exposure time: 48 h</td>
</tr>
<tr>
<td></td>
<td>Test substance: Water Accommodated Fraction</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 202</td>
</tr>
</tbody>
</table>

Toxicity to algae/aquatic plants

<table>
<thead>
<tr>
<th>Component</th>
<th>EL50 (Raphidocelis subcapitata (freshwater green alga)): &gt; 1,000 mg/l</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Exposure time: 48 h</td>
</tr>
<tr>
<td></td>
<td>Test substance: Water Accommodated Fraction</td>
</tr>
<tr>
<td></td>
<td>Method: OECD Test Guideline 202</td>
</tr>
</tbody>
</table>
**Exposure time:** 72 h  
**Test substance:** Water Accommodated Fraction  
**Method:** OECD Test Guideline 201

**NOELR**  
*Raphidocelis subcapitata* (freshwater green alga):  
1,000 mg/l  
**Exposure time:** 72 h  
**Test substance:** Water Accommodated Fraction  
**Method:** OECD Test Guideline 201

**Toxicity to microorganisms**  
EC50 (activated sludge): > 10,000 mg/l  
**Exposure time:** 3 h  
**Method:** OECD Test Guideline 209

**Castor oil:**

**Toxicity to fish**  
LC50  
*Danio rerio* (zebra fish): > 100 mg/l  
**Exposure time:** 96 h  
**Method:** ISO 7346/1  
**Remarks:** Based on data from similar materials

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

**Toxicity to algae/aquatic plants**  
NOELR  
Pseuokirchneriella subcapitata (green algae): > 1 mg/l  
**Exposure time:** 72 h  
**Test substance:** Water Accommodated Fraction  
**Method:** OECD Test Guideline 201  
**Remarks:** Based on data from similar materials

EL50  
Pseuokirchneriella subcapitata (green algae): > 100 mg/l  
**Exposure time:** 72 h  
**Test substance:** Water Accommodated Fraction  
**Method:** OECD Test Guideline 201  
**Remarks:** Based on data from similar materials

**Toxicity to microorganisms**  
EC10  
Pseudomonas putida: 54,000 mg/l  
**Exposure time:** 30 min

**Tar, coal:**

**Toxicity to fish**  
LL50  
*Danio rerio* (zebra fish): > 250 mg/l  
**Exposure time:** 96 h  
**Test substance:** Water Accommodated Fraction  
**Method:** OECD Test Guideline 203  
**Remarks:** Based on data from similar materials

**Toxicity to daphnia and other aquatic invertebrates**  
EL50  
*Daphnia magna* (Water flea): 2.8 mg/l  
**Exposure time:** 48 h  
**Test substance:** Water Accommodated Fraction  
**Method:** OECD Test Guideline 202
### Dichlofenthion Formulation

<table>
<thead>
<tr>
<th>Remarks: Based on data from similar materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Toxicity to algae/aquatic plants</strong></td>
</tr>
</tbody>
</table>
| : EL50 (Desmodesmus subspicatus (green algae)): 36 mg/l  
| Exposure time: 72 h  
| Method: OECD Test Guideline 201  
| Remarks: Based on data from similar materials |
| NOELR (Desmodesmus subspicatus (green algae)): 5 mg/l  
| Exposure time: 72 h  
| Method: OECD Test Guideline 201  
| Remarks: Based on data from similar materials |

### Ethylbenzene:

<table>
<thead>
<tr>
<th>Remarks: Based on data from similar materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Toxicity to fish</strong></td>
</tr>
</tbody>
</table>
| : LC50 (Onchorhynchus mykiss (rainbow trout)): 4.2 mg/l  
| Exposure time: 96 h  
| Method: OECD Test Guideline 203 |
| **Toxicity to daphnia and other aquatic invertebrates** |
| : EC50 (Daphnia magna (Water flea)): 1.8 - 2.4 mg/l  
| Exposure time: 48 h |
| **Toxicity to algae/aquatic plants** |
| : EC50 (Pseudokirchneriella subcapitata (green algae)): 3.6 mg/l  
| Exposure time: 96 h |
| NOEC (Pseudokirchneriella subcapitata (green algae)): 3.4 mg/l  
| Exposure time: 96 h |
| **Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)** |
| : NOEC (Ceriodaphnia dubia (water flea)): 0.96 mg/l  
| Exposure time: 7 d |
| **Toxicity to microorganisms** |
| : EC50 (Nitrosomonas sp.): 96 mg/l  
| Exposure time: 24 h |

### Xylene:

<table>
<thead>
<tr>
<th>Remarks: Based on data from similar materials</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Toxicity to fish</strong></td>
</tr>
</tbody>
</table>
| : LC50 (Onchorhynchus mykiss (rainbow trout)): 13.5 mg/l  
| Exposure time: 96 h |
| **Toxicity to daphnia and other aquatic invertebrates** |
| : EC50 (Daphnia magna (Water flea)): > 1 - 10 mg/l  
| Exposure time: 24 h  
| Method: OECD Test Guideline 202  
| Remarks: Based on data from similar materials |
| **Toxicity to algae/aquatic plants** |
| : EC50 (Skeletonema costatum (marine diatom)): 10 mg/l  
| Exposure time: 72 h |
| **Toxicity to fish (Chronic toxicity)** |
| : NOEC (Danio rerio (zebra fish)): > 0.1 - < 1 mg/l  
| Exposure time: 35 d  
| Method: OECD Test Guideline 210  
| Remarks: Based on data from similar materials |
| **Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)** |
| : EL10 (Daphnia magna (Water flea)): > 1 - 10 mg/l  
| Exposure time: 21 d  
| Method: OECD Test Guideline 211 |
Remarks: Based on data from similar materials

**Toxicity to microorganisms**
- NOEC: > 100 mg/l
- Exposure time: 3 h
- Method: OECD Test Guideline 209
- Remarks: Based on data from similar materials

**Dichlofenthion (ISO):**
- **Toxicity to fish**
  - LC50 (No species specified): 0.64 mg/l
  - Exposure time: 96 h
  - Method: OECD Test Guideline 203
  - LC50 (Lepomis macrochirus (Bluegill sunfish)): 1.23 mg/l
  - Exposure time: 96 h
  - Method: OECD Test Guideline 203
- **Toxicity to daphnia and other aquatic invertebrates**
  - EC50 (Daphnia magna (Water flea)): 0.0011 mg/l
  - Exposure time: 48 h
  - Method: OECD Test Guideline 202

**Phenol:**
- **Toxicity to fish**
  - LC50 (Pimephales promelas (fathead minnow)): 24.9 mg/l
  - Exposure time: 96 h
- **Toxicity to daphnia and other aquatic invertebrates**
  - EC50 (Ceriodaphnia dubia (water flea)): 3.1 mg/l
  - Exposure time: 48 h
- **Toxicity to algae/aquatic plants**
  - EC50 (Selenastrum capricornutum (green algae)): 61.1 mg/l
  - Exposure time: 96 h
- **Toxicity to fish (Chronic toxicity)**
  - NOEC: 0.077 mg/l
  - Exposure time: 60 d
- **Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**
  - NOEC (Daphnia magna (Water flea)): 10 mg/l
  - Exposure time: 16 d
- **Toxicity to microorganisms**
  - IC50 (Nitrosomonas sp.): 21 mg/l
  - Exposure time: 24 h

**m-Cresol:**
- **Toxicity to fish**
  - LC50 (Oncorhynchus mykiss (rainbow trout)): 8.6 mg/l
  - Exposure time: 96 h
- **Toxicity to daphnia and other aquatic invertebrates**
  - EC50 (Daphnia pulex (Water flea)): > 99.5 mg/l
  - Exposure time: 48 h
- **Toxicity to fish (Chronic toxicity)**
  - NOEC (Pimephales promelas (fathead minnow)): 1.35 mg/l
  - Exposure time: 32 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
  - Remarks: Based on data from similar materials
p-Cresol:

- **Toxicity to fish**: LC50 (Oncorhynchus mykiss (rainbow trout)): 7.4 mg/l
  - Exposure time: 96 h

- **Toxicity to daphnia and other aquatic invertebrates**: EC50 (Daphnia magna (Water flea)): 7.7 mg/l
  - Exposure time: 48 h
  - Method: DIN 38412

- **Toxicity to algae/aquatic plants**: EC50 (Desmodesmus subspicatus (green algae)): 7.8 mg/l
  - Exposure time: 48 h
  - EC10 (Desmodesmus subspicatus (green algae)): 2.3 mg/l
  - Exposure time: 48 h

- **Toxicity to fish (Chronic toxicity)**: NOEC (Pimephales promelas (fathead minnow)): 1.35 mg/l
  - Exposure time: 32 d

- **Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity)**: NOEC (Daphnia magna (Water flea)): 1 mg/l
  - Exposure time: 21 d

- **Toxicity to microorganisms**: IC50 (Nitrosomonas sp.): 260 mg/l
  - Exposure time: 24 h

### Persistence and degradability

#### Components:

**Tar, wood:**

- **Biodegradability**: Result: Not readily biodegradable.
  - Biodegradation: 47 %
  - Exposure time: 28 d
  - Method: OECD Test Guideline 301B

**Rosin:**

- **Biodegradability**: Result: Readily biodegradable.
  - Biodegradation: 71 %
  - Exposure time: 28 d
  - Method: OECD Test Guideline 301D

**Castor oil:**

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

**Ethylbenzene:**

- **Biodegradability**: Result: Readily biodegradable.
  - Biodegradation: 70 - 80 %
  - Exposure time: 28 d

**Xylene:**

- **Biodegradability**: Result: Readily biodegradable.
Biodegradation: > 70%
Exposure time: 28 d
Method: OECD Test Guideline 301F
Remarks: Based on data from similar materials

Phenol:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 62%
Exposure time: 10 d
Method: OECD Test Guideline 301C

m-Cresol:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 90%
Exposure time: 28 d
Method: OECD Test Guideline 301D

p-Cresol:
Biodegradability: Result: Readily biodegradable.
Biodegradation: 100%
Exposure time: 8 d

Bioaccumulative potential

Components:

Tar, wood:
Partition coefficient: n-octanol/water: log Pow: 0.2 - 2.02

Rosin:
Partition coefficient: n-octanol/water: log Pow: > 3 - 6.2
Method: OECD Test Guideline 117

Castor oil:
Partition coefficient: n-octanol/water: log Pow: > 4
Remarks: Calculation

Tar, coal:
Partition coefficient: n-octanol/water: Remarks: No data available

Ethylbenzene:
Partition coefficient: n-octanol/water: log Pow: 3.6

Xylene:
Partition coefficient: n-octanol/water: log Pow: 3.16
Remarks: Calculation

Dichlofenthion (ISO):
Dichlofenthion Formulation

Partition coefficient: n-octanol/water

**Phenol:**
- Bioaccumulation: Species: Fish
  - Bioconcentration factor (BCF): 17.5
  - Method: OECD Test Guideline 305
- Partition coefficient: n-octanol/water: log Pow: 5.14

**m-Cresol:**
- Bioaccumulation: Species: Leuciscus idus (Golden orfe)
  - Bioconcentration factor (BCF): 17 - 20
- Partition coefficient: n-octanol/water: log Pow: 1.96

**p-Cresol:**
- Bioaccumulation: Species: Leuciscus idus (Golden orfe)
  - Bioconcentration factor (BCF): 17 - 20
  - Remarks: Based on data from similar materials
- Partition coefficient: n-octanol/water: log Pow: 1.94

**Mobility in soil**
No data available

**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. Empty containers retain residue and can be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury and/or death. If not otherwise specified: Dispose of as unused product.

**SECTION 14. TRANSPORT INFORMATION**

**International Regulations**

**UNRTDG**
- UN number: UN 2920
- Proper shipping name: CORROSIVE LIQUID, FLAMMABLE, N.O.S. (Sodium hydroxide, Ethylbenzene)
- Class: 8
Dichlofenthion Formulation

| Subsidiary risk | : 3 |
| Packing group | : II |
| Labels | : 8 (3) |

**IATA-DGR**
- UN/ID No.: UN 2920
- Proper shipping name: Corrosive liquid, flammable, n.o.s. (Sodium hydroxide, Ethylbenzene)
- Class: 8
- Subsidiary risk: 3
- Packing group: II
- Labels: Corrosive, Flammable Liquids
- Packing instruction (cargo aircraft): 855
- Packing instruction (passenger aircraft): 851

**IMDG-Code**
- UN number: UN 2920
- Proper shipping name: CORROSIVE LIQUID, FLAMMABLE, N.O.S. (Sodium hydroxide, Ethylbenzene, Dichlofenthion (ISO))
- Class: 8
- Subsidiary risk: 3
- Packing group: II
- Labels: 8 (3)
- EmS Code: F-E, S-C
- Marine pollutant: yes

**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 2920
- Proper shipping name: Corrosive liquids, flammable, n.o.s. (Sodium hydroxide, Ethylbenzene)
- Class: 8
- Subsidiary risk: 3
- Packing group: II
- Labels: CORROSIVE, FLAMMABLE LIQUID
- ERG Code: 132
- Marine pollutant: yes (Dichlofenthion (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>
<tbody>
<tr>
<td>Tar, coal</td>
<td>8007-45-2</td>
<td>1</td>
<td>8</td>
</tr>
</tbody>
</table>
SAFETY DATA SHEET

Dichlofenthion Formulation

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Component RQ (lbs)</th>
<th>Calculated product RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
<td>100</td>
<td>1075</td>
</tr>
<tr>
<td>m-Cresol</td>
<td>108-39-4</td>
<td>100</td>
<td>9090</td>
</tr>
</tbody>
</table>

SARA 304 Extremely Hazardous Substances 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>
<tbody>
<tr>
<td>Phenol</td>
<td>108-95-2</td>
<td>1000</td>
<td>52631</td>
</tr>
</tbody>
</table>

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Component TPQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phenol</td>
<td>108-95-2</td>
<td>10000</td>
</tr>
</tbody>
</table>

SARA 311/312 Hazards:
- Flammable (gases, aerosols, liquids, or solids)
- Acute toxicity (any route of exposure)
- Respiratory or skin sensitization
- Germ cell mutagenicity
- Carcinogenicity
- Reproductive toxicity
- Specific target organ toxicity (single or repeated exposure)
- Aspiration hazard
- Skin corrosion or irritation
- Serious eye damage or eye irritation

SARA 313:
- The following components are subject to reporting levels established by SARA Title III, Section 313:
  - Ethylbenzene 100-41-4 >= 5 - < 10 %
  - Xylene 1330-20-7 >= 5 - < 10 %
  - Phenol 108-95-2 >= 1 - < 5 %
  - m-Cresol 108-39-4 >= 1 - < 5 %
  - p-Cresol 106-44-5 >= 1 - < 5 %

US State Regulations

Pennsylvania Right To Know
- Tar, wood 91722-33-7
- Rosin 8050-09-7
- Castor oil 8001-79-4
- Water 7732-18-5
- Tar, coal 8007-45-2
- Ethylbenzene 100-41-4
- Xylene 1330-20-7
- Dichlofenthion (ISO) 97-17-6
- Sodium hydroxide 1310-73-2
- Phenol 108-95-2
- m-Cresol 108-39-4
- p-Cresol 106-44-5

California Prop. 65
WARNING: This product can expose you to chemicals including Tar, coal, which is/are known to the State of California to cause cancer. For more information go to www.P65Warnings.ca.gov.
California List of Hazardous Substances

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosin</td>
<td>8050-09-7</td>
</tr>
<tr>
<td>Tar, coal</td>
<td>8007-45-2</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>100-41-4</td>
</tr>
<tr>
<td>Xylene</td>
<td>1330-20-7</td>
</tr>
<tr>
<td>Sodium hydroxide</td>
<td>1310-73-2</td>
</tr>
<tr>
<td>Phenol</td>
<td>108-95-2</td>
</tr>
<tr>
<td>m-Cresol</td>
<td>108-39-4</td>
</tr>
<tr>
<td>p-Cresol</td>
<td>106-44-5</td>
</tr>
</tbody>
</table>

California Permissible Exposure Limits for Chemical Contaminants

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rosin</td>
<td>8050-09-7</td>
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<tr>
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<td>108-39-4</td>
</tr>
<tr>
<td>p-Cresol</td>
<td>106-44-5</td>
</tr>
</tbody>
</table>

California Regulated Carcinogens

<table>
<thead>
<tr>
<th>Substance</th>
<th>CAS Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tar, coal</td>
<td>8007-45-2</td>
</tr>
</tbody>
</table>

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
SAFETY DATA SHEET

Dichlofenthion Formulation

Version 6.0
Revision Date: 04/04/2023
SDS Number: 1552594-00014
Date of last issue: 10/01/2022
Date of first issue: 04/14/2017

NFPA 704:

<table>
<thead>
<tr>
<th>Flammability</th>
<th>Health</th>
<th>Instability</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

Special hazard

HMIS® IV:

<table>
<thead>
<tr>
<th>HEALTH</th>
<th>FLAMMABILITY</th>
<th>PHYSICAL HAZARD</th>
</tr>
</thead>
<tbody>
<tr>
<td>* 4</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

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)
ACGIH BEI : ACGIH - Biological Exposure Indices (BEI)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
OSHA CARC : OSHA Specifically Regulated Chemicals/Carcinogens
OSHA Z-1 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants

ACGIH / TWA : 8-hour, time-weighted average
ACGIH / C : Ceiling limit
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek
NIOSH REL / ST : STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday
NIOSH REL / C : Ceiling value not be exceeded at any time.
OSHA CARC / PEL : Permissible exposure limit (PEL)
OSHA Z-1 / TWA : 8-hour time weighted average

AILC - 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; IBC - 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 Pre-
SAFETY DATA SHEET

Dichlofenthion Formulation

Revision Date: 04/04/2023
SDS Number: 1552594-00014
Date of last issue: 10/01/2022
Date of first issue: 04/14/2017

Sources of key data used to compile the Material Safety Data Sheet:

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.

US / Z8