Safety Data Sheet
PENDULUM AQUACAP HERBICIDE

1. Product and Company Identification

Company: BASF CORPORATION
100 Park Avenue
Florham Park, NJ 07932, USA

24 Hour Emergency Response Information
CHEMTREC: 1-800-424-9300
BASF HOTLINE: 1-800-832-HELP (4357)

Substance number: 000000171005
Molecular formula: C13 H19 N3 O4
Chemical family: aniline derivative
Synonyms: pendimethalin

2. Hazards Identification

Emergency overview
CAUTION:
Causes eye irritation. HARMFUL IF ABSORBED THROUGH SKIN. HARMFUL IF SWALLOWED. KEEP OUT OF REACH OF CHILDREN. KEEP OUT OF REACH OF DOMESTIC ANIMALS. Avoid contact with the skin, eyes and clothing.

See Product Label for additional precautionary statements.

State of matter: liquid
Colour: yellow to brown
Odour: faint odour, nutty

Potential health effects
Primary routes of exposure:
Routes of entry for solids and liquids include eye and skin contact, ingestion and inhalation. Routes of entry for gases include inhalation and eye contact. Skin contact may be a route of entry for liquified gases.

Acute toxicity:

Irritation / corrosion:
May cause slight but temporary irritation to the eyes. May cause slight irritation to the skin.

Sensitization:
Skin sensitizing effects were not observed in animal studies.
Medical conditions aggravated by overexposure:
Individuals with pre-existing diseases of the respiratory system, skin or eyes may have increased susceptibility to excessive exposures.

Signs and symptoms of overexposure:
orange-red coloured urine caused by dye (not associated with methemoglobinemia)

Potential environmental effects

Aquatic toxicity:
Very toxic (acute effect) to aquatic organisms.

Terrestrial toxicity:
Acute harmful to terrestrial organisms.

3. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>CAS Number</th>
<th>Content (W/W)</th>
<th>Chemical name</th>
</tr>
</thead>
<tbody>
<tr>
<td>40487-42-1</td>
<td>38.7 %</td>
<td>pendimethalin</td>
</tr>
<tr>
<td></td>
<td>61.3 %</td>
<td>Proprietary ingredients</td>
</tr>
</tbody>
</table>

4. First-Aid Measures

General advice:
First aid providers should wear personal protective equipment to prevent exposure. Remove contaminated clothing. Move person to fresh air. If person is not breathing, call 911 or ambulance, then give artificial respiration, preferably mouth-to-mouth if possible. Call a poison control center or physician for treatment advice. Have the product container or label with you when calling a poison control center or doctor or going for treatment.

If inhaled:
Remove the affected individual into fresh air and keep the person calm.

If on skin:
Rinse skin immediately with plenty of water for 15 - 20 minutes.

If in eyes:
Hold eyes open and rinse slowly and gently with water for 15 to 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing.

If swallowed:
Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Do not induce vomiting. Have person sip a glass of water if able to swallow.

Note to physician
Antidote: No known specific antidote.
Treatment: Treat symptomatically.

5. Fire-Fighting Measures

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash point:</td>
<td>&gt; 230 °F</td>
</tr>
<tr>
<td>Autoignition:</td>
<td>354 °C (DIN EN 14522)</td>
</tr>
<tr>
<td>Lower explosion limit:</td>
<td>not determined</td>
</tr>
<tr>
<td>Upper explosion limit:</td>
<td>not determined</td>
</tr>
<tr>
<td>Flammability:</td>
<td>not highly flammable</td>
</tr>
</tbody>
</table>
Suitable extinguishing media:
foam, dry powder, carbon dioxide, water spray

Hazards during fire-fighting:
carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Hydrocarbons,
If product is heated above decomposition temperature, toxic vapours will be released. The substances/groups of
substances mentioned can be released in case of fire.

Protective equipment for fire-fighting:
Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

Further information:
Evacuate area of all unnecessary personnel. Contain contaminated water/firefighting water. Do not allow to
enter drains or waterways.

6. Accidental release measures

Personal precautions:
Take appropriate protective measures. Clear area. Shut off source of leak only under safe conditions.
Extinguish sources of ignition nearby and downwind. Ensure adequate ventilation. Wear suitable personal
protective clothing and equipment.

Environmental precautions:
Do not discharge into the subsoil/soil. Do not discharge into drains/surface waters/groundwater. Contain
contaminated water/firefighting water.

Cleanup:
Dike spillage. Pick up with suitable absorbent material. Place into suitable containers for reuse or disposal in a
licensed facility. Spilled substance/product should be recovered and applied according to label rates whenever
possible. If application of spilled substance/product is not possible, then spills should be contained, solidified,
and placed in suitable containers for disposal. After decontamination, spill area can be washed with water.
Collect wash water for approved disposal.

7. Handling and Storage

Handling

General advice:
RECOMMENDATIONS ARE FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING
WORKERS. PESTICIDE APPLICATORS & WORKERS must refer to the Product Label and Directions for Use
attached to the product for Agricultural Use Requirements in accordance with the EPA Worker Protection
Standard 40 CFR part 170. Ensure adequate ventilation. Provide good ventilation of working area (local exhaust
ventilation if necessary). Keep away from sources of ignition - No smoking. Keep container tightly sealed.
Protect contents from the effects of light. Protect against heat. Protect from air. Handle and open container with
care. Do not open until ready to use. Once container is opened, content should be used as soon as possible.
Avoid aerosol formation. Avoid dust formation. Provide means for controlling leaks and spills. Do not return
residues to the storage containers. Follow label warnings even after container is emptied. The substance/
product may be handled only by appropriately trained personnel. Avoid all direct contact with the
substance/product. Avoid contact with the skin, eyes and clothing. Avoid inhalation of dusts/mists/vapours.
Wear suitable personal protective clothing and equipment.

Protection against fire and explosion:
The relevant fire protection measures should be noted. Fire extinguishers should be kept handy. Avoid all
sources of ignition: heat, sparks, open flame. Sources of ignition should be kept well clear. Avoid extreme heat.
Keep away from oxidizable substances. Electrical equipment should conform to national electric code. Ground
all transfer equipment properly to prevent electrostatic discharge. Electrostatic discharge may cause ignition.

Storage

General advice:
8. Exposure Controls and Personal Protection

Users of a pesticidal product should refer to the product label for personal protective equipment requirements.

Advice on system design:
Whenever possible, engineering controls should be used to minimize the need for personal protective equipment.

Personal protective equipment

RECOMMENDATIONS FOR MANUFACTURING, COMMERCIAL BLENDING, AND PACKAGING WORKERS:

Respiratory protection:
Wear respiratory protection if ventilation is inadequate. Wear a NIOSH-certified (or equivalent) TC23C Chemical/Mechanical type filter system to remove a combination of particles, gas and vapours. For situations where the airborne concentrations may exceed the level for which an air purifying respirator is effective, or where the levels are unknown or Immediately Dangerous to Life or Health (IDLH), use NIOSH-certified full facepiece pressure demand self-contained breathing apparatus (SCBA) or a full facepiece pressure demand supplied-air respirator (SAR) with escape provisions.

Hand protection:
Chemical resistant protective gloves, Protective glove selection must be based on the user's assessment of the workplace hazards.

Eye protection:
Safety glasses with side-shields. Tightly fitting safety goggles (chemical goggles). Wear face shield if splashing hazard exists.

Body protection:
Body protection must be chosen depending on activity and possible exposure, e.g. head protection, apron, protective boots, chemical-protection suit.

General safety and hygiene measures:
Wear long sleeved work shirt and long work pants in addition to other stated personal protective equipment. Work place should be equipped with a shower and an eye wash. Handle in accordance with good industrial hygiene and safety practice. Personal protective equipment should be decontaminated prior to reuse. Gloves must be inspected regularly and prior to each use. Replace if necessary (e.g. pinhole leaks). Take off immediately all contaminated clothing. Store work clothing separately. Hands and/or face should be washed before breaks and at the end of the shift. No eating, drinking, smoking or tobacco use at the place of work. Keep away from food, drink and animal feeding stuffs.
9. Physical and Chemical Properties

- **Form:** microencapsulated, suspension
- **Odour:** faint odour, nutty
- **Colour:** yellow to brown
- **pH value:** approx. 8 - 10 (1%(m), 21 °C)
- **Melting point:** approx. 0 °C Information applies to the solvent.
- **Density:** approx. 9.79 lb/USg (68 °F)
- **Viscosity, dynamic:** 128 mPa.s (20 °C) (OECD 114)
- **Solubility in water:** dispersible
- **Molar mass:** 281.31 g/mol

10. Stability and Reactivity

**Conditions to avoid:**
Avoid all sources of ignition: heat, sparks, open flame. Avoid prolonged storage. Avoid electro-static discharge.
Avoid contamination. Avoid prolonged exposure to extreme heat. Avoid extreme temperatures.

**Substances to avoid:**
strong acids, strong bases, strong oxidizing agents

**Hazardous reactions:**
The product is chemically stable. Hazardous polymerization will not occur. No hazardous reactions if stored and handled as prescribed/indicated.

**Decomposition products:**
No hazardous decomposition products if stored and handled as prescribed/indicated. Prolonged thermal loading can result in products of degradation being given off.

**Thermal decomposition:**
Possible thermal decomposition products:
carbon monoxide, carbon dioxide, nitrogen dioxide, nitrogen oxide, Hydrocarbons
Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released.

**Oxidizing properties:**
not fire-propagating

11. Toxicological information

**Acute toxicity**

**Oral:**
Type of value: LD50
Species: rat (male/female)
Value: > 5,000 mg/kg (OECD Guideline 401)

**Inhalation:**
Type of value: LC50
Species: rat (male/female)
Value: > 5.23 mg/l (OECD Guideline 403)
Exposure time: 4 h
An aerosol was tested.
No mortality was observed.

**Dermal:**
Type of value: LD50  
Species: rat (male/female)  
Value: > 5,000 mg/kg (OECD Guideline 402)

Irritation / corrosion

Skin:  
Species: rabbit  
Result: mildly irritating

Eye:  
Species: rabbit  
Result: mildly irritating

Sensitization:  
modified Buehler test  
Species: guinea pig  
Result: Non-sensitizing.  
Method: OECD Guideline 406

Repeated dose toxicity

Information on: pendimethalin  
Assessment of repeated dose toxicity:  
No substance-specific organotoxicity was observed after repeated administration to animals. Adaptive effects were observed after repeated exposure in animal studies.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
Assessment of repeated dose toxicity:  
The substance may cause damage to the olfactory epithelium after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

Information on: Methylenediphenyl diisocyanate  
Assessment of repeated dose toxicity:  
The substance may cause damage to the olfactory epithelium after repeated inhalation. These effects are not relevant to humans at occupational levels of exposure.

Carcinogenicity

Information on: pendimethalin  
In long-term studies in rats the substance induced thyroid tumors. The effect is caused by an animal specific mechanism that has no human counterpart. In long-term studies in mice in which the substance was given by feed, a carcinogenic effect was not observed.

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure.

Information on: Methylenediphenyl diisocyanate  
A carcinogenic potential cannot be excluded after prolonged exposure to severely irritating concentrations. These effects are not relevant to humans at occupational levels of exposure.

Development:

Information on: Diphenylmethane-4,4'-diisocyanate (MDI)  
The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Information on: Methylenediphenyl diisocyanate  
The substance did not cause malformations in animal studies; however, toxicity to development was observed at high doses that were toxic to the parental animals.

Experiences in humans:
Pendimethalin is a strongly orange-red compound - virtually an aniline dye. Cases have been described of orange-yellow colouration of urine following heavy exposure of workers to the dust of pendimethalin. Despite its structure as both a nitro-compound and aromatic amine, exposure to pendimethalin is NOT associated with methemoglobinemia.

Other Information:

Misuse can be harmful to health.

12. Ecological Information

Fish

Acute:
OECD Guideline 203 static
Oncorhynchus mykiss/LC50 (96 h): 20.36 mg/l

Aquatic invertebrates

Acute:
OECD Guideline 202, part 1 static
Daphnia magna/EC50 (48 h): > 100 mg/l

Aquatic plants

Toxicity to aquatic plants:
OECD Guideline 201 green algae/EC50 (72 h): 1.49 mg/l

Non-Mammals

Information on: pendimethalin
Other terrestrial non-mammals:
mallard duck/LD50: 1,421 mg/kg
Acutely harmful to terrestrial organisms.
Honey bee/LD50: 49.8 ug/bee
Acutely harmful to terrestrial organisms.

Environmental mobility:

Information on: pendimethalin
Assessment transport between environmental compartments:
Following exposure to soil, adsorption to solid soil particles is probable, therefore contamination of groundwater is not expected.

Other adverse effects:

The ecological data given are those of the active ingredient. Do not release untreated into natural waters.

13. Disposal considerations

Waste disposal of substance:
Pesticide wastes are regulated. Improper disposal of excess pesticide, spray mix or rinsate is a violation of federal law. If pesticide wastes cannot be disposed of according to label instructions, contact the State Pesticide or Environmental Control Agency or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.
14. Transport Information

**Land transport**

USDOT

Not classified as a dangerous good under transport regulations

**Sea transport**

IMDG

Hazard class: 9
Packing group: III
ID number: UN 3082
Hazard label: 9, EHSM
Marine pollutant: YES
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains PENDIMETHALIN)

**Air transport**

IATA/ICAO

Hazard class: 9
Packing group: III
ID number: UN 3082
Hazard label: 9, EHSM
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (contains PENDIMETHALIN)

**Further information**

DOT: This product is regulated if the amount in a single receptacle exceeds the Reportable Quantity (RQ). Please refer to Section 15 of this MSDS for the RQ for this product.

15. Regulatory Information

**Federal Regulations**

**Registration status:**
- Crop Protection: TSCA, US released / listed
- Chemical: TSCA, US blocked / not listed

**OSHA hazard category:** Skin and/or eye irritant; Chronic target organ effects reported

**EPCRA 311/312 (Hazard categories):** Acute; Chronic

**EPCRA 313:**
16. Other Information

Refer to product label for EPA registration number.

Recommended use: herbicide

NFPA Hazard codes:
Health: 1  Fire: 1  Reactivity: 1  Special:

We support worldwide Responsible Care® initiatives. We value the health and safety of our employees, customers, suppliers and neighbors, and the protection of the environment. Our commitment to Responsible Care is integral to conducting our business and operating our facilities in a safe and environmentally responsible fashion, supporting our customers and suppliers in ensuring the safe and environmentally sound handling of our products, and minimizing the impact of our operations on society and the environment during production, storage, transport, use and disposal of our products.