



# Material Safety Data Sheet

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Product Name: Harbinger™ Herbicide

MSDS Number: BAS 801

## Section 1 - Chemical Product and Company Identification

**Product Name:** Harbinger™ Herbicide

**Chemical Name:** pendimethalin

**Material Uses:** Crop Protection Product – Rice Herbicide

**Manufactured For:** Western Farm Service, Inc., P. O. Box 1168, Fresno, CA 93715-1168

Phone (559) 436-2800 8am-5pm M-F PT FAX (559) 436-2953 CHEMTREC (800) 424-9300 24 hours every day

## Section 2 - Composition / Information on Ingredients

Ingredient Name	CAS Number	%
pendimethalin	40487-42-1	37.4
solvent naphtha	64742-94-5	44.64
naphthalene	91-20-3	7.26
Proprietary ingredients		10.74

## Section 3 - Hazards Identification

### ☆☆☆☆☆ Emergency Overview ☆☆☆☆☆

CAUTION: KEEP OUT OF REACH OF CHILDREN. KEEP OUT OF REACH OF DOMESTIC ANIMALS.  
HARMFUL IF SWALLOWED. HARMFUL IF ABSORBED THROUGH SKIN. CAUSES EYE IRRITATION.  
Avoid contact with the skin, eyes, and clothing. Wash thoroughly after handling.

### Potential Health Effects

**Note:** See Product Label for Additional Precautionary Statements.

**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 liquefied gases.

**Acute Toxicity:** Slightly toxic after single ingestion. Slightly toxic after short-term skin contact. Relatively nontoxic after short-term inhalation.

*Information on: Petroleum Distillates with Naphthalene*

*Acute overexposure to solvent naphtha vapors may cause central nervous system effects, including headache, dizziness, drowsiness, and confusion. Ingestion causes nausea, vomiting, blurred vision, and CNS disorders. Aspiration of the liquid into the lungs may result in chemical pneumonitis, which may be fatal. Prolonged or repeated skin contact may cause defatting and dermatitis.*

**Irritation:** May cause slight irritation to the skin. May cause moderate but temporary irritation to the eyes.

*Information on: Petroleum Distillates with Naphthalene*

*Skin contact may result in irritation, defatting and dermatitis. Vapors cause irritation to the respiratory tract and the eyes.*

**Sensitization:** Skin sensitization effects were not observed in animal studies.

**Repeated Dose Toxicity:**

*Information on: pendimethalin*

*The substance is not considered to pose a carcinogenic risk at low human exposure levels.*

**Medical Conditions Aggravated by Overexposure:** May aggravate existing skin conditions.

### Potential Environmental Effects

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

**Terrestrial Toxicity:** Acutely harmful to terrestrial organisms.

## Section 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.

**Inhalation:** Remove the affected individual into fresh air and keep the person calm. Assist in breathing if necessary.

**Skin Contact:** Rinse skin immediately with plenty of water for 15-20 minutes.

**Eye Contact:** 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.

**Ingestion:** Rinse mouth and then drink plenty of water. Do not induce vomiting. Never induce vomiting or give anything by mouth if the victim is unconscious or having convulsions. Immediate medical attention required.

**Notes to Physician:**

Symptoms:	orange-red coloured urine caused by dye (not associated with methemoglobinemia)
Hazards:	Vomiting may cause aspiration pneumonia due to the ingredients. Because of the increased risk of chemical pneumonia or pulmonary edema caused by aspiration of the hydrocarbon solvent, vomiting should be induced only under professional supervision.
Antidote:	No known specific antidote.
Treatment:	Treat symptomatically.

## Section 5 - Fire-Fighting Measures

**Flash Point:** approx. 208 °F..... (ASTM D93)

**Autoignition Temperature:** approx. 707 °F

**Extinguishing Media:** foam, dry extinguishable media, carbon dioxide, water spray

**Hazardous Decomposition Products:** carbon monoxide, carbon dioxide, nitrogen oxides, nitrogen dioxide, Hydrocarbons.

If product is heated above decomposition temperature, toxic vapors will be released. The substances/groups of substances mentioned can be released if the product is involved in a fire.

**Fire-Fighting Equipment:** Firefighters should be equipped with self-contained breathing apparatus and turn-out gear.

**Fire-Fighting Instructions:** Evacuate area of all unnecessary personnel. Contain contaminated water/firefighting water. Do not allow to enter drain of waterways.

## Section 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 in water. Collect wash water for approved disposal.

## Section 7 - Handling and Storage

### Handling Precautions

**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 up 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 Requirements

**General advice:** Keep only in the original container in a cool, dry, well-ventilated place away from ignition sources, heat or flame. Protect containers from physical damage. Protect against contamination. The authority permits and storage regulations must be observed.

**Storage incompatibility:** General: Segregate from incompatible substances. Segregate from foods and animal feeds. Segregate from textiles and similar materials.

**Storage stability:** If substance/product crystallizes, thaw at room temperature.

**Temperature tolerance:** Protect from temperature below: 40 °F. The product can crystallize below the limit temperature.

## Section 8 - Exposure Controls / Personal Protection

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

**Engineering Controls:** naphthalene OSHA PEL 10 ppm 50 mg/m<sup>3</sup>  
ACGIH TWA value 10 ppm; STEL value 15 ppm; Skin Designation;

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.

#### Protective Clothing/Equipment:

**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:** 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. Hand 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.

## Section 9 - Physical and Chemical Properties

**Physical State:** liquid

**Appearance:** dark amber

**Odor & Odor Threshold:** aromatic, moderate odor

**Formula Weight:** 281.35 g/mol

**Density:** 1.06 g/cm<sup>3</sup>

8.858 lb/USg

**Boiling Point:** approx. 244 °C (760 mmHg)

**pH:** 6-7 (20-40 g/l)

**Partitioning coefficient n-octanol/water (log Pow):**

Not applicable

## Section 10 - Stability and Reactivity

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

**Substances to Avoid:** oxidizing agent, strong alkalies

**Hazardous Reactions:** The product is chemically stable.

**Hazardous 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:** Approx. 244 °C. Possible thermal decomposition products: carbon monoxide, carbon dioxide, nitrogen oxide, nitrogen dioxide, Hydrocarbons. Stable at ambient temperature. If product is heated above decomposition temperature toxic vapours may be released. Risk of exothermic self-accelerating decomposition above the indicated temperature.

**Corrosion to metals:** Corrosive effects to metal are not anticipated.

## Section 11- Toxicological Information

### Toxicity Data:\*

#### Acute Toxicity

**Acute Oral Effects:** LD50/rat/male/female:  
3,956 mg/kg

**Acute Inhalation Effects:** LC50/rat: >5.35  
mg/l/4h

**Acute Dermal Effects:** LD50/rat/male/female:  
>2,000 mg/kg

**Skin Irritation:** rabbit: Mildly irritating

**Eye Irritation:** rabbit: Mildly irritating

**Sensitization:** guinea pig: Non-sensitizing

#### Chronic Toxicity

**Mutagenicity:** *Information on pendimethalin*

No mutagenic effect was found in various tests with microorganisms and mammals

**Carcinogenicity:** *Information on: pendimethalin*

In long-term studies in mice in which the substance was given by feed, a carcinogen effect was not observed.

In long-term studies in rats the substance induced thyroid tumors.

A marked decrease in body weight gain and an increase in benign thyroid proliferative lesions were observed in the lifetime rat study at the highest dose tested.

The substance is not considered to pose a carcinogenic risk at low human exposure levels.

**Reproductive Toxicity:** *Information on pendimethalin*

The results of animal studies gave no indication of a fertility impairing effect.

**Teratogenicity:** *Information on: pendimethalin*

No indications of a developmental toxic/teratogenic effect were seen in animal studies.

**Experience 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:** The data on toxicology refer to the active ingredient.

\* See NIOSH, RTECS on listed ingredients for additional toxicity data.

## Section 12 - Ecological Information

*Information on: pendimethalin*

**Evaluation:** Not readily biodegradable (by OECD criteria)

#### Environmental toxicity

*Information on: pendimethalin*

Acute and prolonged toxicity to fish:  
Rainbow trout/LC50 (96 h): 0.89 mg/l

*Information on: pendimethalin*

Acute toxicity to aquatic invertebrates:  
Daphnia magna/EC50 (48 h): 0.977 mg/l

*Information on: pendimethalin*

Toxicity to aquatic plants:  
Green algae/EC50 (72 h): 0.0081 mg/l

*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.

**Other ecotoxicological advice:**

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

### Section 13 - Disposal Considerations

**Disposal of Wastes:** 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.

**Container Cleaning and Disposal:** Rinse thoroughly at least three times (triple rinse) in accordance with EPA recommendations. Consult state or local disposal authorities for approved alternative procedures such as container recycling. Recommend crushing, puncturing or other means to prevent unauthorized use of used containers.

**Disposal Regulatory Requirements:** RCRA: D028. The waste codes are manufacturer's recommendations based on the designated use of the product. Other use and special waste disposal treatment on customer's location may require different waste-code assignments.

### Section 14 - Transportation Information

## U.S. DEPARTMENT OF TRANSPORTATION

**PROPER SHIPPING NAME:** \*RQ, UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID, N.O.S.  
(NAPHTHALENE), 9, PG III, MARINE POLLUTANT, ERG 171

**PACKING GROUP:** III

**HAZARD CLASS:** MARINE POLLUTANT

**LABEL/PLACARD REQUIRED:** CLASS 9

**UN/NA No.:** 3082

**SECTION 14 NOTES:** \* Only For bulk shipment of Product. Product is Not Regulated by US DOT when shipped in containers less than bulk (i.e. 2.5 GA., 15 GA, or 60 GA). Freight description is Weed Killing Compound, NOI (NMF50320) (DO NOT STORE OR TRANSPORT AT TEMPERATURES BELOW 40 DEGREES)

### Section 15 - Regulatory Information

**Federal Regulations**

**Registration status:** TSCA, US released/exempt

**OSHA hazard category:** IARC 1, 2A or 2B carcinogen, NTP listed carcinogen, Chronic target organ effects reported.

<u>CERCLA RQ</u>	<u>CAS Number</u>	<u>Chemical name</u>
100 LBS	91-20-3	naphthalene

**SARA Title III (EPCRA 311/312):** Acute, Chronic

<u>SARA 313:</u>	<u>CAS Number</u>	<u>Chemical name</u>
	91-20-3	naphthalene
	40487-42-1	pendimethalin

**State Regulations****State RTK**

<u>CAS Number</u>	<u>Chemical name</u>	<u>State RTK</u>
91-20-3	naphthalene	MA, NJ, PA

**CA Proposition 65:** THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

### Section 16 - Other Information

**Refer to product label for EPA registration number.**

**Preparation Date:** March 6, 2008

**Prepared By:** D. M. Dunbar, R3 Ag Consulting, LLC

**Revision Date:** April 10, 2008

**Revision Notes:**

**NOTICE TO READER:** THE INFORMATION CONTAINED IN THIS MATERIAL SAFETY DATA SHEET (“MSDS”) RELATES ONLY TO THE SPECIFIC PRODUCT(S) DESIGNATED HEREIN (THE “PRODUCT”). THE INFORMATION AND RECOMMENDATIONS CONTAINED HEREIN ARE BASED UPON DATA BELIEVED TO BE CURRENT AND CORRECT AS OF THE DATE OF THIS MSDS, AND OBTAINED FROM SOURCES THAT ARE BELIEVED TO BE RELIABLE. HOWEVER, THIS INFORMATION IS FURNISHED WITHOUT WARRANTY, REPRESENTATIONS OR LICENSE OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO ACCURACY, CORRECTNESS OR COMPLETENESS, AND NEITHER (WESTERN FARM SERVICE, INC.) NOR ITS MARKETING AFFILIATES (EACH, A “SELLER”) ASSUME ANY LEGAL RESPONSIBILITY FOR USE OR RELIANCE UPON SAME.

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