

## MATERIAL SAFETY DATA SHEET

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** DIBROM® CONCENTRATE; DIBROM® 14  
CONCENTRATE (HIGH FLASH)

**GENERAL USE:** Insecticide

**PRODUCT DESCRIPTION:** Off-white to straw yellow liquid with a sharp, pungent odor

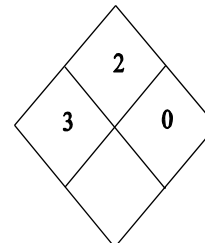
**EPA Registration Number:** 5481-480

**MSDS No.:** 260\_8

**Current Revision Date:** 23 October 2003

**MANUFACTURER:**  
AMVAC CHEMICAL CORPORATION  
4100 E. Washington Blvd.  
Los Angeles, CA 90023-4406  
Ph: 323-264-3910  
FAX: 323-268-1028

**EMERGENCY TELEPHONE NUMBERS:**  
**MANUFACTURER:** 323-264-3910  
**TRANSPORTATION (24 HOURS)**  
**CHEMTREC:** 800-424-9300  
**OTHER (24 HOURS)**  
**AMVAC:** 323-264-3910



### 2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	Naled	DDVP	Naphthalene
<b>Synonyms</b>	1,2-Dibromo-2,2-dichloroethyl dimethylphosphate; DIBROM®	2,2-Dichloroethyl dimethylphosphate; DICHLORVOS	
<b>CAS Number</b>	300-76-5	62-73-7	91-20-3
<b>Hazard</b>	Poison; Corrosive	Poison, Possible carcinogen	Possible Carcinogen
<b>Wt%, Typical</b>	87.4%	less than 2%	less than 1%
<b>Exposure Limits</b>	OSHA PEL: 3 mg/m <sup>3</sup> ACGIH TLV: 0.1 mg/m <sup>3</sup>	OSHA PEL: 1 mg/m <sup>3</sup> ACGIH TLV 0.1 mg/m <sup>3</sup>	OSHA PEL: 10 ppm ACGIH PEL: 10 ppm ACGIH STEL: 15 ppm

DIBROM is a Registered Trademark of AMVAC Chemical Corporation.

3. HAZARDS IDENTIFICATION

---

**EMERGENCY OVERVIEW:**

**DANGER! POISON! CORROSIVE! An off-white to straw yellow liquid with a sharp, pungent odor that causes irreversible eye and skin damage. May be fatal if swallowed, inhaled or absorbed through skin and eyes. Is a cholinesterase inhibitor. Rapidly absorbed through skin. Repeated inhalation or skin contact may, without symptoms, progressively increase susceptibility to organophosphate (including Naled) poisoning. May be an aspiration hazard. May cause an allergic reaction.**

**Product is combustible.**

**Toxic to fish, birds, and other wildlife.**

---

POTENTIAL HEALTH EFFECTS

**ROUTE(S) OF ENTRY:** May be fatal if swallowed, inhaled or absorbed through skin and eyes. May produce acute cholinesterase depression. May cause corrosive destruction of the skin, mucous membranes and the eyes.

**SIGNS OF ACUTE OVEREXPOSURE:** Acute cholinesterase depression may be evidenced by headache, nausea, vomiting, diarrhea, abdominal cramps, excessive sweating, salivation and tearing, constricted pupils, blurred vision, tightness in chest, weakness, muscle twitching and confusion; in extreme cases, unconsciousness, convulsions, severe respiratory depression and death may occur.

This product is expected to be corrosive to the eyes. The degree of injury will depend on the amount and duration of the contact and the speed and thoroughness of the first aid treatment. Expected adverse health effects resulting from direct exposure to the eye may include pain, tears, swelling, redness, blurred vision, irreversible eye damage and possibly blindness.

This product is expected to be corrosive to the skin. The degree of injury will depend on the amount and duration of the contact and the speed and thoroughness of the first aid treatment. The expected adverse health effects resulting from a direct exposure to the skin may include pain or a feeling of heat, discoloration, swelling, blistering, and irreversible tissue damage.

This product is expected to be corrosive to the digestive tract, and, if ingested, may cause nausea, vomiting and diarrhea.

This product is expected to be corrosive to the respiratory tract, and, if inhaled, may cause symptoms that include nasal discharge, sore throat, coughing, bronchitis, pulmonary edema, and difficulty in breathing.

### 3. HAZARDS IDENTIFICATION, cont'd

**SIGNS OF CHRONIC OVEREXPOSURE:** Repeated exposures to small doses of Naled and other organophosphates may lower the cholinesterase to levels where the above symptoms of acute overexposure are observed.

**CARCINOGENICITY:** EPA under its 1999 proposed Guidelines for Carcinogen Risk Assessment has classified DDVP, an impurity in Naled, as having "suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential." IARC lists DDVP (Dichlorvos) as being possibly carcinogenic to humans (Group 2B). Based on the results of testing in mice, the IARC has recently classified Naphthalene, a component of the solvent used for this formulation, as being possibly carcinogenic to humans (Group 2B). **CARE SHOULD BE EXERCISED IN HANDLING THIS FORMULATION.**

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:** Preexisting conditions which lower cholinesterase levels increase vulnerability to cholinesterase depression. These include: (for plasma) genetic cholinesterase deficiency; advanced liver disease; chronic alcoholism; malnutrition; dermatomyositis; existing toxicity from exposure to carbon disulfide; benzalkonium salts, organic mercury compounds, ciguatoxins or solanines; and (for RBC) hemolytic anemias.

---

### 4. FIRST AID MEASURES

**DIBROM® 14 CONCENTRATE (High Flash) CONTAINS A CHOLINESTERASE INHIBITOR (NALED). A PHYSICIAN SHOULD BE CONTACTED IN ALL CASES OF EXPOSURE TO NALED AND ITS FORMULATIONS. THIS PRODUCT IS CORROSIVE TO EYES AND SKIN.**

**EYES:** Immediately flush the eyes with copious amounts of clear, cool running water for a minimum of 15 minutes. Hold the eyelids apart during the flushing to ensure rinsing of the entire surface of the eyes and lids with water. Contact a physician immediately. If there will be a delay in getting medical attention, rinse the eyes for at least another 15 minutes.

**INHALATION:** Remove victim to fresh air. If breathing has ceased, clear the victim's airway and start mouth-to-mouth artificial respiration. If breathing is difficult, give oxygen. Contact a physician immediately.

**INGESTION:** DO NOT induce vomiting. If victim is conscious, administer an 8 oz. glass of water containing 2 tbsp. activated charcoal. Have person lie on their left side to slow down absorption of the ingested material. Never give anything by mouth to an unconscious person. Contact a physician immediately.

**SKIN:** Immediately flush all affected areas with large amounts of clear water for at least 15 minutes. Remove contaminated clothing. Do not attempt to neutralize with chemical agents. Wash clothing before reuse. Contact a physician immediately.

#### 4. FIRST AID MEASURES, cont'd

**NOTE TO PHYSICIANS: This is an Organophosphate (OP) Insecticide.** Do not wait for laboratory confirmation to treat patients with strong clinical evidence of poisoning. In the USA and other countries, contact your local or national poison control center for more information.

**Do Not** handle the patient without the following protective equipment in place: chemical resistant gloves and apron (preferably nitrile). Remove contaminated clothing and do not reuse without thorough cleaning with detergent and hot water. Dispose of heavily contaminated clothing, including shoes, as a hazardous waste.

Establish airway and oxygenation. IV Atropine sulfate is the antidote of choice. Moderately severe poisoning: use 0.4-2.0 mg in adults or 0.05 mg/kg in children. Repeat every 15 minutes until atropinization is achieved. Severe poisoning may require larger doses. Cholinergic toxicity may recur as atropinization wears off; monitor patient closely. Draw blood for RBC and plasma cholinesterase. In addition, Pralidoxime (2-PAM) is indicated during the first 36 hours in severe poisonings. Slow IV administration (no less than 2 minutes) of 1 g in adults or 20-50 mg/kg in children may be repeated in 1 to 2 hours if muscle weakness, twitching, and/or respiratory depression persist. Avoid morphine, aminophylline, phenothiazines, reserpine, furosemide and ethacrynic acid.

Bathe and shampoo contaminated skin and hair. If ingested, empty stomach. Due to the presence of aromatic solvents, gastric lavage should be considered following intubation with a cuffed endotracheal tube to prevent aspiration of vomitus. Activated charcoal is useful to further limit absorption.

---

#### 5. FIRE FIGHTING MEASURES

##### **FLAMMABLE PROPERTIES**

Flash Point: 151°F (closed cup)

Autoignition Temperature: No data available

Flammable Limits:

Lower flammable limit: No data available

Upper flammable limit: No data available

Flammability: This is a combustible liquid that will burn when heated (NFPA rating = 2)

##### **EXPLOSIVITY**

Mechanical Impact: Not explosive

Static Discharge: Will not occur

**HAZARDOUS COMBUSTION PRODUCTS:** This product will emit toxic fumes when burned, including hydrogen chloride, hydrogen bromide, phosphorous oxides and carbon monoxide. Vapors of the unburned product may also be hazardous. Contact with the fumes and vapors should be avoided by staying upwind and by wearing impervious clothing and positive pressure self-contained breathing apparatus.

**EXTINGUISHING MEDIA:** Foam, dry chemical, carbon dioxide, water spray (fog).

5. **FIRE FIGHTING MEASURES, cont'd**

**FIRE FIGHTING INSTRUCTIONS:** Evacuate nonessential personnel from the area. Keep upwind. Wear self-contained breathing apparatus and impervious clothing, including gloves and eye protection. Clean all clothing before reuse.

---

6. **ACCIDENTAL RELEASE MEASURES**

**GENERAL:** Evacuate personnel and thoroughly ventilate the area. Use adequate ventilation and air-supplied respirators, as well as impervious clothing and safety goggles. Keep bystanders upwind and away from the spill.

**SMALL SPILL:** Cover with nonflammable absorbent (clay, sand, oil dry, kitty litter, etc.) to absorb the liquid. Sweep into an open plastic drum. Decontaminate the area and equipment with dilute alkali or ammonia (less than 5% solution) and detergent. Flush the area with water. Absorb and sweep into the same open plastic drum. Close the drum and dispose of as a hazardous waste.

**LARGE SPILL:** Dike the spill to prevent contamination of local water sources. Siphon the majority of the liquid into drums for use or disposal, depending on the circumstances. Clean the area as described for a small spill.

---

7. **HANDLING AND STORAGE**

**HANDLING:** Prevent skin contact. Do not breathe fumes. Wear appropriate personal protective equipment (See Section 8). Wash thoroughly and change clothes after handling. Keep product away from food drink, cosmetics, and tobacco products. See product label for more detailed handling procedures.

**STORAGE:** Do not contaminate water, food or feed by storage or disposal. Store product in a cool, dry, locked place out of reach of children. Store in original container.

---

8. **EXPOSURE CONTROLS/PERSONAL PROTECTION**

**ENGINEERING CONTROLS:** A well-ventilated area is recommended for handling DIBROM® 14 Concentrate. Use of mechanical or local exhaust systems is recommended.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION, cont'd

**RESPIRATORY PROTECTION:** When respiratory protection is required, or concentrations may exceed the PEL, use a NIOSH/MSHA approved air-purifying respirator equipped with organic vapor cartridges or canisters. For emergency and other conditions where the exposure limit may be greatly exceeded, use an approved positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

**SKIN PROTECTION:** Chemical resistant gloves (preferably nitrile), body covering clothing that has long sleeves and long pants, and chemical resistant shoes or boots, are required to prevent skin contamination. A chemical resistant apron is required when there is a risk of spillage or splashing. Wear clean clothes daily. Wash well with soap and water after handling this product. See the label for more specific instructions.

**EYE PROTECTION:** Safety glasses should be worn whenever working with chemicals. Goggles or a faceshield are required if there is a chance of splashing.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State:</b>	Liquid
<b>Appearance:</b>	An off-white to straw yellow color
<b>Odor:</b>	Sharp, pungent, with overtones of aromatic solvent
<b>Odor Threshold:</b>	No data available
<b>Boiling Point:</b>	320°F/160°C
<b>Freezing/Melting Point:</b>	60°F/15°C
<b>Specific Gravity:</b>	1.794 to 1.831
<b>Density:</b>	14.97 to 15.28 lb/gal
<b>Vapor Pressure (mm/Hg):</b>	10 mm Hg @ 100°F
<b>Vapor Density:</b>	Heavier than air
<b>Percent Volatile by Vol:</b>	5%
<b>Solubility in Water:</b>	0.2%
<b>Solubility (Other):</b>	This product is soluble in aromatic hydrocarbons, chlorinated hydrocarbons, ketones, and esters
<b>Partition Coefficient (O/W):</b>	Approx. 100 (a.i.) at ambient temperatures
<b>pH:</b>	Not available
<b>Evaporation Rate:</b>	Not available

---

## 10. STABILITY AND REACTIVITY

**CHEMICAL STABILITY (Conditions to avoid):** This product is stable under normal use and storage conditions. It may be photochemically reactive.

## 10. STABILITY AND REACTIVITY, cont'd

**INCOMPATIBILITY:** Unstable in the presence of iron or alkaline media. Corrosive to iron, aluminum and magnesium. Hydrolyzes slowly under neutral or acid conditions.

**HAZARDOUS DECOMPOSITION PRODUCTS:** Heating product to decomposition will cause emission of acrid smoke and fumes of hydrogen chloride, hydrogen bromide, phosphorous oxides, carbon oxides and unknown organic compounds.

**HAZARDOUS POLYMERIZATION:** This product will not polymerize.

## 11. TOXICOLOGICAL INFORMATION

The following information is available for Naled technical and two related formulations, DIBROM® 8 and DIBROM® 14:

<b>INGESTION:</b>	Oral LD <sub>50</sub> (rat):	92/191 mg/kg (female/male)(Naled Technical)
<b>INHALATION:</b>	Inhalation LC <sub>50</sub> (rat):	1520 mg/m <sup>3</sup> , 4 hr (DIBROM® 8)
<b>DERMAL:</b>	Skin LD <sub>50</sub> (rabbit):	360/390 mg/kg (female/male) Naled Technical
<b>IRRITATION:</b>	Eye irritation:	Corrosive (DIBROM® 14) Toxicity Category I
	Skin irritation:	Corrosive (DIBROM® 14) Toxicity Category I
<b>SENSITIZATION:</b>	Skin sensitization:	Weak Skin Sensitizer (Naled Technical)
	(guinea pig)	

**CORROSIVENESS (DOT):** A study run with Naled Technical showed that Naled Technical is considered noncorrosive by DOT criteria when applied to the intact skin of albino rabbits.

**TERATOGENICITY:** Maternal toxicity in rats was observed at 40 mg/kg/day (body weight loss, tremors, painful or difficult breathing, and decreased activity) using Naled Technical (a.i.). No developmental effects were observed at this dose level. The maternal NOEL was 10 mg/kg/day. The developmental NOEL was 40 mg/kg/day.

**REPRODUCTIVE TOXICITY:** In a two-generation rat reproduction study with Naled Technical (a.i.), a decrease in male body weight gain was observed at 18 mg/kg/day; however, no effects on reproduction were found in adult animals. Decreases in offspring survival, number of pups born and decreased pup weights were noted at 18 mg/kg/day. The NOEL for both adults and offspring was 6 mg/kg/day.

**MUTAGENICITY:** No evidence of mutagenicity activity from *in vitro* and *in vivo* tests, using Naled Technical (a.i.).

**CARCINOGENICITY:** No evidence of carcinogenicity in laboratory animals with Naled Technical. However, EPA under its 1999 proposed Guidelines for Carcinogen Risk Assessment has classified DDVP, an impurity in Naled, as having "suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential." Based on the results of testing in mice, the IARC has recently classified Naphthalene, a component of the solvent used for this formulation, as being possibly carcinogenic to humans (Group 2B).

**TOXICOLOGICALLY SYNERGISTIC PRODUCTS:** No data available.

**12. ECOLOGICAL INFORMATION**

This product is toxic to fish, birds, and other wildlife. Keep out of any body of water. Do not contaminate water when disposing of equipment washwaters or wastes.

---

**13. DISPOSAL CONSIDERATIONS**

**Waste Disposal:** Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture or rinsate is a violation of Federal law. If these wastes cannot be disposed by use according to label instructions, contact your nearest State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA regional office for guidance. Open dumping is prohibited.

**Container Disposal:** Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of container in a sanitary landfill or by incineration, or, if allowed by State and local authorities, by burning. If burned, stay out of smoke. Contact the State or local authorities to determine the current regulations.

---

**14. TRANSPORTATION INFORMATION**

DOT Class:	6.1
CANADA Shipping Class:	6.1
ADR Class (road):	6.1
AUSTRALIAN Shipping Class:	6 Subsection 111
UN Number:	UN3018
IMDG Class (sea):	6.1
IATA Class (air):	6.1
Marine Pollutant:	Yes
Packing Group:	III
Hazard Label(s):	TOXIC
Proper Shipping Name(s):	Organophosphorus pesticides, liquid, toxic (Naled)
Reportable Quantity:	Yes
(DOT, 172.101, Appendix A)	

**PACKAGING**

General description: 5 gallon , 15 gallon, 30 gallon, and 60 gallon polyethylene drums

---



**15. REGULATORY INFORMATION**

**U.S. FEDERAL REGULATIONS:**

This product is registered under EPA/FIFRA Regulations. It is a violation of Federal Law to use this product in any manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

**CANADIAN REGULATIONS:**

This product is not registered under the Pest Control Product Act of Canada.

**EUROPEAN UNION REGULATIONS:**

This product is not registered in the European Union.

**AUSTRALIAN REGULATIONS:**

This product is undergoing registration in Australia. It is a violation of Australian Law to use this product in any manner inconsistent with its labeling.

**SARA TITLE III DATA**

**Section 311 & 312 Hazard Categories:**

Immediate Health Hazard: Yes  
Delayed Health Hazard: Yes  
Fire Hazard: Yes  
Reactive Hazard: No  
Sudden Pressure Release Hazard: No

**Section 302 Extremely Hazardous Substances:** DDVP (Dichlorvos, 62-73-7)

**Section 313 Toxic Chemicals:** Naled (300-76-5); DDVP (Dichlorvos, 62-73-7); Naphthalene (91-20-3)

**CERCLA/EHS Reportable Quantities:** DDVP (Dichlorvos) - 10 lbs; Naled - 10 lbs;  
Naphthalene -100 lbs; Product (calc'd) - 11 lbs

**STATE REGULATIONS:**

**CALIFORNIA (Proposition 65):** This product contains chemicals known to the State of California to cause cancer - DDVP, Naphthalene.

---

**16. OTHER INFORMATION**

**MSDS Status:**

**Date This Revision:** 23 October 2003

**Date Previous Revision:** 5/02/02

**Person Responsible for Preparation:** Gary A. Braden

**Reasons for Revision:** Annual review. New information has been added in section 2, 3, and 15.

**16. OTHER INFORMATION, cont'd**

**DISCLAIMER:**

This information is provided for the limited guidance to the user. While AMVAC believes that the information is, as of the date hereof, reliable, it is the user's responsibility to determine the suitability of the information for its purposes. The user is advised not to construe the information as absolutely complete since additional information may be necessary or desirable when particular, exceptional, or variable conditions or circumstances exist (like combinations with other materials), or because of applicable regulations. No express or implied warranty of merchantability or fitness for a particular purpose or otherwise is made hereunder with respect to the information or the product to which the information relates.

**ABBREVIATIONS:**

a.i.	-	active ingredient
ACGIH	-	American Conference of Governmental Industrial Hygienists
ADR	-	Mark used to indicate European Approval for the Transport of Dangerous Goods by Road
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
DOT	-	Department of Transportation (USA)
EPA	-	Environmental Protection Agency
FIFRA	-	Federal Insecticide, Fungicide, and Rodenticide Act
IARC	-	International Agency for Research on Cancer
IATA	-	International Air Transport Association
IMDG	-	International Maritime Dangerous Goods
NTP	-	National Toxicology Program
SARA	-	Superfund Amendments and Reauthorization Act
TSCA	-	Toxic Substances Control Act

---

This is the last page of this MSDS. There should be 10 pages.