

## MATERIAL SAFETY DATA SHEET

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME(S):** NUVAN® Pro Strips; NUVAN® Large Pro Strip; ALCO® Small NO-PEST STRIP; AMVAC Small INSECT STRIP; ALCO® Small PEST STRIP; SWAT PEST STRIP; ALCO® Large NO-PEST STRIP; AMVAC Large INSECT STRIP; ALCO® Large PEST STRIP; AMVAC Insect Strip; AMVAC Small Pro Strip; AMVAC Large Pro Strip

**GENERAL USE:** Insecticide

**PRODUCT DESCRIPTION:** Yellow plastic strip with a mild chemical odor

**EPA Registration Number(s):** 5481-338; 5481-344; 5481-348; 5481-531; 5481-532; 5481-533; 5481-334; 5481-553; 5481-554

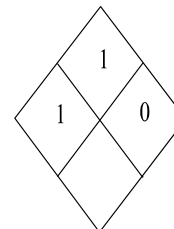
**HEALTH CANADA Reg. No.:** Not registered in Canada

**MSDS No.:** 194\_15

**MSDS Revision Date:** 16 June, 2008

**MANUFACTURER:**  
AMVAC CHEMICAL CORPORATION  
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**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	WT %	CAS No.
2,2-Dichlorovinyl dimethyl phosphate (DDVP, DICHLORVOS)	18.6% - 20%	62-73-7
Other Ingredients	80% - 81.4%	

#### OSHA HAZARDOUS COMPONENTS (29 CFR1910.1200)

COMPONENT	HAZARD	OSHA PEL*	ACGIH TLV*
2,2-Dichlorovinyl dimethyl phosphate (DDVP)	POISON Cholinesterase inhibitor; Possible carcinogen	1.0 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>

\* Exposure Limits 8 hrs. TWA (ppm)

3. HAZARDS IDENTIFICATION

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**EMERGENCY OVERVIEW:**

**CAUTION: Contains a Cholinesterase Inhibitor. Repeated inhalation or skin contact with Dichlorvos (DDVP) may, without symptoms, progressively increase susceptibility to Dichlorvos (DDVP) poisoning.**

**May be Toxic to fish, birds, and other wildlife when exposed to large quantities of strips.**

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POTENTIAL HEALTH EFFECTS

**ROUTE(S) OF ENTRY:** Under normal use conditions the amount of DDVP given off by the product described in this MSDS is not sufficient to cause ingestion, skin, eye or inhalation hazards. However, under extreme conditions this product may be fatal if sufficient DDVP is absorbed through the eye or skin, is ingested or is inhaled. Overexposure may produce acute cholinesterase depression.

**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.

**SIGNS OF CHRONIC OVEREXPOSURE:** Repeated exposures to small doses of DDVP 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 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). **CARE SHOULD BE EXERCISED IN HANDLING DDVP AND ITS FORMULATIONS.**

**MEDICAL CONDITIONS POTENTIALLY 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.

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#### **4. FIRST AID MEASURES**

**DDVP IS A CHOLINESTERASE INHIBITOR. A PHYSICIAN SHOULD BE CONTACTED IN ALL CASES OF SUSPECTED OVEREXPOSURE TO DDVP AND ITS FORMULATIONS.**

**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:** Induce vomiting immediately by giving two glasses of water and sticking a finger down the throat. 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. If skin irritation develops, contact a physician immediately.

**ATTENTION: EXAMINING PHYSICIAN - Special medical Considerations:**

This product contains an Organophosphate (OP) Insecticide. However, it is the opinion of the manufacturer/supplier, and their Occupational Medical consultant, that any significant exposure to this OP Insecticide is highly unlikely. Based upon the formulation of the pest strip, the individual's contact with the OP is extremely limited by design. Therefore, the examining Physician should exercise prudent judgment in determining the causation of the patient's symptoms - taking care to not overlook multiple other etiologies of the patient's symptoms. In the USA and other countries, contact your local or national poison control center for more information. If it is established that OP poisoning has occurred, the following steps are recommended.

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 gm 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. If victim is alert, Syrup of Ipecac (2 tablespoons in adults, 1 tablespoon in small children) followed by water (2 glasses for adults, 1 glass for children) is indicated. If symptoms such as loss of gag reflex, convulsions, or unconsciousness occur before emesis, gastric lavage should be considered following intubation with a cuffed endotracheal tube.

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## **5. FIRE FIGHTING MEASURES**

### **FLAMMABLE PROPERTIES**

Flash Point: Not applicable

Autoignition Temperature: Not available

Flammable Limits:

Lower flammable limit: None established

Upper flammable limit: None established

Flammability: This is a combustible solid that will support fire if it is preheated (NFPA rating = 1)

### **EXPLOSIVITY**

Mechanical Impact: Not explosive

Static Discharge: Will not occur

**HAZARDOUS COMBUSTION PRODUCTS:** This product will emit toxic fumes when burned, including hydrogen chloride 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 full face respirators..

**EXTINGUISHING MEDIA:** Dry chemical, carbon dioxide, foam, water fog.

**FIRE FIGHTING INSTRUCTIONS:** Evacuate the area. Use self-contained breathing apparatus. Water spray and fog may be helpful in reducing flame intensity and absorbing irritating fumes. Treated area should be diked to prevent runoff.

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## **6. ACCIDENTAL RELEASE MEASURES**

**GENERAL:** Clean up spilled strips immediately. Strips that have been dropped should be picked up for reuse or disposal. If the strips are in their foil packages no safety equipment is required. Simply pick up the strips and store until ready to use.

**SMALL SPILL:** For a single unwrapped strip no special protective measures are required. Either rehang the strip or dispose of it according to the procedure listed under waste disposal. Be sure to wash thoroughly with soap and water after handling the strip.

**LARGE SPILL:** Use personal protective equipment (section 8) to prevent contact with the unwrapped strips. Pick up the spilled strips and place them into closed containers. Clean up the area by treating it with dilute ammonia or caustic solution (5% solution). Prevent runoff from getting into local water supplies. Absorb the wash liquid on solid absorbent such as Kitty Litter, and place the waste into a sealed container for disposal.

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## 7. HANDLING AND STORAGE

**HANDLING:** Avoid contact with skin, eyes, or clothing. Wash hands, face and arms before eating or handling food. Store in original unopened container, away from foodstuffs and feed. Avoid areas of extreme heat. Keep away from small children.

**STORAGE:** Store in original unopened package until ready to use. Keep away from heat and store away from children, foodstuffs, and feed.

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## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**ENGINEERING CONTROLS:** General ventilation is sufficient for use of this product. During manufacture of this product sufficient ventilation is required to keep exposures to levels below the TLV.

**RESPIRATORY PROTECTION:** A properly FIT-TESTED NIOSH/MSHA approved respirator fitted with organic vapor cartridges is required during manufacture of this product if the ventilation is insufficient to keep exposures below the TLV. Under homeowner use conditions no respiratory protection is required.

**SKIN PROTECTION:** Impervious, usually rubber or nitrile, gloves are required for prolonged or repeated exposures to this product. Production workers should wear long-sleeved shirt and long pants; waterproof gloves; and shoes plus socks. Follow manufacturer's instructions for cleaning/ maintaining personal protection equipment (PPE). If no such instructions are available, use detergent and hot water. Keep and wash PPE separately from other laundry. Do not reuse contaminated clothing until it has been laundered properly. Always wash hands, face and arms with soap and water after using pesticides before smoking, eating, drinking or going to the toilet. Shower after work each day. Homeowners and other users of individual strips should wear gardening gloves or other chemical resistant gloves when handling the strips. Wash thoroughly after handling the strips.

**EYE PROTECTION:** Eye protection is not needed for ordinary use of this product. Safety glasses with sideshields are required for prolonged or repeated exposures to this product.

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## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>PHYSICAL STATE:</b>	Solid
<b>APPEARANCE:</b>	Yellow plastic strip
<b>ODOR:</b>	Mild chemical odor
<b>ODOR THRESHOLD:</b>	Not available
<b>BOILING POINT:</b>	Not applicable
<b>FREEZING/MELTING POINT:</b>	Not available
<b>SPECIFIC GRAVITY:</b>	1.26 g/cm <sup>3</sup>
<b>DENSITY:</b>	68.66 lb/ft <sup>3</sup>
<b>VAPOR PRESSURE (mm/Hg):</b>	0.01

9. **PHYSICAL AND CHEMICAL PROPERTIES, cont'd**

VAPOR DENSITY:	Heavier than air
PERCENT VOLATILE BY VOL:	18.6%
SOLUBILITY IN WATER:	Negligible
SOLUBILITY (Other):	This product is soluble in aromatic solvents
PARTITION COEFFICIENT (O/W):	Not applicable
pH:	Not applicable
EVAPORATION RATE:	10 to 100 mg/day of DDVP

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10. **STABILITY AND REACTIVITY**

**CHEMICAL STABILITY (Conditions to avoid):** Stable under normal use and storage conditions.

**INCOMPATIBILITY:** Strong acids, oxidizers, and strong bases.

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

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

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11. **TOXICOLOGICAL INFORMATION**

**GENERAL:** The following information is available for the finished product(\*) or for the technical material:

<b>INGESTION:</b>	Oral LD <sub>50</sub> (rat):	679/382 (male/female) mg/kg*
<b>INHALATION:</b>	Inhalation LC <sub>50</sub> (rat):	> 200 mg/m <sup>3</sup> (1 hr, nose only)*
<b>DERMAL:</b>	Skin LD <sub>50</sub> (rabbit):	27400 mg/kg (intact abdominal skin)*
<b>IRRITATION:</b>	Eye irritation:	Irritant
	Skin irritation:	Irritant
<b>SENSITIZATION:</b>	Skin sensitization: (guinea pig)	Possible Sensitizer

**TERATOGENICITY:** No evidence of teratogenicity in laboratory animals exposed to DDVP technical.

**MUTAGENICITY:** No clear evidence of *in vivo* mutagenicity activity in mammalian assay systems from exposure to DDVP.

**CARCINOGENICITY:** Two laboratory studies have shown a low incidence of forestomach tumors in the mouse and mononuclear cell leukemia in the F344 rat. EPA under its 1999 proposed Guidelines for Carcinogen Risk Assessment has classified DDVP 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). **CARE SHOULD BE EXERCISED IN HANDLING DDVP AND ITS FORMULATIONS.**

**11. TOXICOLOGICAL INFORMATION, cont'd**

**REPRODUCTIVE TOXICITY:** Reproductive effects to DDVP have only been seen at a dose level which produced a generalized toxicity in the rat.

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

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**12. ECOLOGICAL INFORMATION**

**GENERAL:** This product may be toxic to fish, birds, and other wildlife when large quantities of strips are involved.

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**13. DISPOSAL CONSIDERATIONS**

**GENERAL:** As a household waste, the spent strip should be wrapped in paper, placed in a sealed plastic bag, and put into the trash. If large numbers of strips are to be discarded the local authorities or the EPA should be contacted to find out the current regulations.

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**14. TRANSPORTATION INFORMATION**

<b>DOT CLASS:</b>	9
<b>UN NUMBER:</b>	UN3077
<b>IATA CLASS (air):</b>	9
<b>IMDG CLASS (sea):</b>	9
<b>ADR CLASS (road):</b>	9
<b>PACKING GROUP:</b>	III
<b>MARINE POLLUTANT:</b>	Yes
<b>HAZARD LABEL(s):</b>	Class 9
<b>PROPER SHIPPING NAME(s):</b>	Environmentally Hazardous Substances, Solid, N.O.S. (20% Dichlorvos)
<b>REPORTABLE QUANTITY:</b>	No

**PACKAGING**

**GENERAL DESCRIPTION** Individual foil pouches; Case quantities of pouches packed in fiberboard box.

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**Note:** This product is not regulated when shipped by air or ground in non-bulk packaging. When shipped by vessel or in bulk packaging this product is regulated according to the data shown.

**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.

**EUROPEAN UNION REGULATIONS:** This product is subject to all European Union Regulations for the use of pesticides. Read and follow all label directions.

**SARA TITLE III DATA**

**Section 311 & 312 Hazard Categories:**

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

**Section 302 Extremely Hazardous Substances:**

DDVP (CAS No. 62-73-7) - TPQ 1000 lbs

**Section 313 Toxic Chemicals:** DDVP (CAS No. 62-73-7)

**CERCLA/EHS Reportable Quantities (RQ):** DDVP - 10 lbs; Product - 50 lbs

**STATE REGULATIONS:**

**CALIFORNIA (Proposition 65):** This product contains a chemical known to the State of California to cause cancer: DDVP

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**16. OTHER INFORMATION**

**MSDS STATUS:**

**Date This Revision: 16 June, 2008**

**Date Previous Revision: 27 May, 2008**

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

**REASONS FOR REVISION:** Subsequent review of the transportation information after the previous revision was completed resulted in changes in the transportation information.

**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.



**AMVAC CHEMICAL CORPORATION**  
**NUVAN® PRO STRIPS; ALCO® SMALL NO-PEST STRIP**  
**AMVAC LARGE PRO STRIP**

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

**ABBREVIATIONS:**

ACGIH	-	American Conference of Governmental Industrial Hygienists
CERCLA	-	Comprehensive Environmental Response, Compensation, and Liability Act
EPA	-	Environmental Protection Agency
FIFRA	-	Federal Insecticide, Fungicide, and Rodenticide Act
IARC	-	International Agency for Research on Cancer
NTP	-	National Toxicology Program
OSHA	-	Occupational Safety and Health Administration
SARA	-	Superfund Amendments and Reauthorization Act
TSCA	-	Toxic Substances Control Act

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