SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Product name : DuPont™ Vertisan™ Fungicide
Tradename/Synonym : DPX-LEM17 200 g/L EC
                   : DPX-LEM17 20 EC Fungicide
                   : PENTHIOPYRAD (RS)-N-[2-(1,3-dimethylbutyl)thiophen-3-yl]-1-methyl-3-
                   : trifluoromethyl-1H-pyrazole-4-carboxamide
Product Use : Fungicide
Restrictions on use : Do not use product for anything outside of the above specified uses
Manufacturer/Supplier : DuPont
                       : 4417 Lancaster Pike
                       : Wilmington, DE 19805, USA
Product Information : 1-800-441-7515 (outside the U.S. 1-302-774-1000)
Medical Emergency : 1-800-441-3637 (outside the U.S. 1-302-774-1139)
Transport Emergency : CHEMTREC: +1-800-424-9300 (outside the U.S. +1-703-527-3887)

SECTION 2. HAZARDS IDENTIFICATION

Product hazard category

- Flammable liquids Category 4
- Serious eye damage/eye irritation Category 2B
- Skin sensitisation Category 1
Label content

Pictogram:

Signal word: Warning

Hazardous warnings:
- Combustible liquid.
- May cause an allergic skin reaction.
- Causes eye irritation.

Hazardous prevention measures:
- Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
- Wash skin thoroughly after handling.
- Contaminated work clothing should not be allowed out of the workplace.
- Wear protective gloves/ eye protection/ face protection.
- IF ON SKIN: Wash with plenty of soap and water.
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
- If skin irritation or rash occurs: Get medical advice/ attention.
- If eye irritation persists: Get medical advice/ attention.
- Wash contaminated clothing before reuse.
- In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
- Store in a well-ventilated place. Keep cool.
- Dispose of contents/ container to an approved waste disposal plant.

Other hazards
No applicable data available.
SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penthiopyrad</td>
<td>183675-82-3</td>
<td>20.6 %</td>
</tr>
<tr>
<td>Substituted Fatty Amide</td>
<td></td>
<td>10 - 15 %</td>
</tr>
<tr>
<td>Substituted Fatty Amide</td>
<td></td>
<td>15 - 20 %</td>
</tr>
<tr>
<td>Ethoxylated Alkyl Ether</td>
<td></td>
<td>20 - 25 %</td>
</tr>
<tr>
<td>Other Ingredients</td>
<td></td>
<td>19.4 - 34.4 %</td>
</tr>
</tbody>
</table>

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

SECTION 4. FIRST AID MEASURES

General advice : Have the product container or label with you when calling a poison control center or doctor, or going for treatment. For medical emergencies involving this product, call toll free 1-800-441-3637. See Label for Additional Precautions and Directions for Use.

Inhalation : Move to fresh air. If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth, if possible. Call a poison control center or doctor for treatment advice.

Skin contact : Take off all contaminated clothing immediately. Rinse skin immediately with plenty of water for 15-20 minutes. Call a poison control center or doctor for treatment advice.
Eye contact: Hold eye open and rinse slowly and gently with water for 15-20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for treatment advice.

Ingestion: Call a poison control center or doctor for treatment advice. Have person sip a glass of water if able to swallow. DO NOT induce vomiting unless directed to do so by a physician or poison control center. Do not give anything by mouth to an unconscious person.

Most important symptoms/effects, acute and delayed: No applicable data available.

Protection of first-aiders: No applicable data available.

Notes to physician: No applicable data available.

SECTION 5. FIREFIGHTING MEASURES

Suitable extinguishing media: Water spray, Dry chemical, Carbon dioxide (CO2), Foam

Unsuitable extinguishing media: High volume water jet, (contamination risk)

Specific hazards: Hazardous combustion products: Carbon oxides Nitrogen oxides (NOx) sulphur oxides Fluorinated compounds

Special protective equipment for firefighters: Wear full protective clothing and self-contained breathing apparatus.

Further information: Prevent fire extinguishing water from contaminating surface water or the ground water system. Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. (on small fires) If area is heavily exposed to fire and if conditions permit, let fire burn itself out since water may increase the area contaminated. Cool containers/tanks with water spray.
SECTION 6. ACCIDENTAL RELEASE MEASURES

NOTE: Review FIRE FIGHTING MEASURES and HANDLING (PERSONNEL) sections before proceeding with clean-up. Use appropriate PERSONAL PROTECTIVE EQUIPMENT during clean-up.

Safeguards (Personnel): Control access to area. Keep people away from and upwind of spill/leak. Ventilate spill area. Take precautionary measures against static discharges. Avoid contact with skin, eyes and clothing. Use personal protective equipment. Refer to protective measures listed in sections 7 and 8.

Environmental precautions: Prevent material from entering sewers, waterways, or low areas.

Spill Cleanup: Clean-up methods - small spillage Soak up with inert absorbent material. Sweep up and shovel into suitable containers for disposal.

Clean-up methods - large spillage Prevent further leakage or spillage. Contain spillage, soak up with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and transfer to a container for disposal according to local / national regulations (see section 13). Large spills should be collected mechanically (remove by pumping) for disposal. Collect leaking liquid in sealable (metal/plastic) containers. Collect and contain contaminated absorbent and dike material for disposal.

Accidental Release Measures: Never return spills in original containers for re-use. Dispose of in accordance with local regulations.

SECTION 7. HANDLING AND STORAGE

Handling (Personnel): Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove clothing/PPE immediately if material gets inside. Wash thoroughly and put on clean clothing. Remove personal protective equipment immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.

Handling (Physical Aspects): Keep away from heat and sources of ignition.

Dust explosion class: No applicable data available.

Storage: Do not contaminate water, other pesticides, fertilizer, food or feed in storage. Store product in original container only in a location inaccessible to children and pets. Keep in properly labelled containers. Keep in a dry, cool and well-
ventilated place. Avoid extreme heat or cold. Keep container closed when not in use. Keep locked up or in an area accessible only to qualified or authorised persons. Keep out of the reach of children. Observe label precautions.

Storage period : No applicable data available.

Storage temperature : No applicable data available.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering controls : When handlers use closed systems, enclosed cabs, or aircraft in a manner that meets the requirements listed in the Worker Protection Standard (WPS) for agricultural pesticides [40 CFR 170.240 (d)(4-6)], the handler PPE requirements may be reduced or modified as specified in the WPS.

Personal protective equipment

Skin and body protection : Mixers, loaders, applicators and other handlers must wear:
- Long sleeved shirt and long pants
- Shoes plus socks
- Protective eyewear
- Goggles, face shield, or safety glasses.

Personal protective equipment required for early entry:
- Coveralls
- Shoes plus socks
- Chemical resistant gloves made of any waterproof material
- Protective eyewear
- Goggles, face shield, or safety glasses.

Protective measures : Follow manufacturer’s instructions for cleaning/maintaining PPE. If no such instructions for washables exist, use detergent and hot water. Keep and wash PPE separately from other laundry.

Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. Use this product in accordance with its label.

Exposure Guidelines

Exposure Limit Values

Penthiopyrad
- No applicable data available.
Substituted Fatty Amide
   No applicable data available.

Ethoxylated Alkyl Ether
   No applicable data available.

### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td></td>
</tr>
<tr>
<td>Physical state</td>
<td>liquid</td>
</tr>
<tr>
<td>Form</td>
<td>liquid</td>
</tr>
<tr>
<td>Color</td>
<td>light yellow</td>
</tr>
<tr>
<td>Odor</td>
<td>like fruit</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No applicable data available.</td>
</tr>
<tr>
<td>pH</td>
<td>5.8 at 10 g/l</td>
</tr>
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<td>Melting point/range</td>
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<tr>
<td>Boiling point/boiling range</td>
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<tr>
<td>Flash point</td>
<td>190 °F</td>
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<tr>
<td>Method</td>
<td>Pensky-Martens closed cup - PMCC</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No applicable data available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No applicable data available.</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>No applicable data available.</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>No applicable data available.</td>
</tr>
<tr>
<td>Vapour Pressure</td>
<td>No applicable data available.</td>
</tr>
</tbody>
</table>
### Vapour density
- **Type:** No applicable data available.

### Specific gravity (Relative density)
- **Value:** 0.9681

### Water solubility
- **Type:** Emulsifiable

### Solubility(ies)
- **Type:** No applicable data available.

### Partition coefficient: n-octanol/water
- **Type:** No applicable data available.

### Auto-ignition temperature
- **Type:** No applicable data available.

### Ignition temperature
- **Value:** 482 °F

### Decomposition temperature
- **Type:** No applicable data available.

### Viscosity, kinematic
- **Type:** No applicable data available.

### Viscosity, dynamic
- **Type:** No applicable data available.

### Oxidizing Substance
- **Type:** The product is not oxidizing.

### SECTION 10. STABILITY AND REACTIVITY

#### Reactivity
- **Type:** No applicable data available.

#### Chemical stability
- **Type:** Stable at normal temperatures and storage conditions.

#### Possibility of hazardous reactions
- **Type:** No applicable data available.

#### Conditions to avoid
- - Protect from frost.
- - Heat direct sunlight.

#### Incompatible materials
- **Type:** No applicable data available.

#### Hazardous decomposition products
- **Type:** Carbon oxides, Nitrogen oxides (NOx), sulphur oxides, Fluorinated compounds

### SECTION 11. TOXICOLOGICAL INFORMATION
Inhalation 4 h LC50: > 4.89 mg/l, Rat
Dermal LD50: > 5,000 mg/kg, Rat
Oral LD50: > 5,000 mg/kg, Rat
Skin irritation: No skin irritation, Rabbit
Minimal effects that do not meet the threshold for classification.
Eye irritation: Mild eye irritation, Rabbit
Sensitisation: May cause sensitisation by skin contact., Mouse

Penthiopyrad
Repeated dose toxicity: No toxicological effects warranting significant target organ toxicity classification were seen below the recommended guidance values for classification. The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.

Oral
multiple species
- Reduced body weight gain, Liver effects, Thyroid effects, Spleen effects, Gallbladder effects, Liver enlargement, Immune system effects, altered blood chemistry, altered hematology, Organ weight changes, Decreased spleen weight, Increased liver weight

Carcinogenicity: Not classifiable as a human carcinogen.
The following effects occurred at levels of exposure that significantly exceed those expected under labeled usage conditions.
A slight increased incidence in tumors was observed in animal studies.
Liver
Thyroid

Mutagenicity: Animal testing did not show any mutagenic effects.
Did not cause genetic damage in cultured bacterial cells.
Genetic damage in cultured mammalian cells was observed in one laboratory test but was not observed in others.

Reproductive toxicity: No toxicity to reproduction
Teratogenicity: No toxicity to reproduction
The following effects occurred at levels of exposure that significantly
Exceed those expected under labeled usage conditions. Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity.

<table>
<thead>
<tr>
<th>Substance</th>
<th>Repeated dose toxicity</th>
<th>Mutagenicity</th>
<th>Teratogenicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substituted Fatty Amide</td>
<td>Ingestion</td>
<td>Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Has not been tested in animals. Information given is based on data obtained from similar substances.</td>
<td>Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity. Information given is based on data obtained from similar substances.</td>
</tr>
<tr>
<td>Rat</td>
<td>- 91 d</td>
<td>LOAEL: 200 mg/kg Method: OECD Test Guideline 409 Liver effects, altered blood chemistry, Information given is based on data obtained from similar substances.</td>
<td></td>
</tr>
<tr>
<td>Substituted Fatty Amide</td>
<td>Ingestion</td>
<td>Mutagenicity</td>
<td>Teratogenicity</td>
</tr>
<tr>
<td>Dog</td>
<td>- 13 Weeks</td>
<td>Mutagenicity</td>
<td>Teratogenicity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Animal testing did not show any mutagenic effects. Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Has not been tested in animals. Information given is based on data obtained from similar substances.</td>
<td>Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity. Information given is based on data obtained from similar substances.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mutagenicity</td>
<td>Teratogenicity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mutagenicity</td>
<td>Teratogenicity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Animal testing did not show any mutagenic effects. Tests on bacterial or mammalian cell cultures did not show mutagenic effects. Has not been tested in animals. Information given is based on data obtained from similar substances.</td>
<td>Animal testing showed effects on embryo-fetal development at levels equal to or above those causing maternal toxicity. Information given is based on data obtained from similar substances.</td>
</tr>
<tr>
<td>Ethoxylated Alkyl Ether</td>
<td>Oral</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
No toxicologically significant effects were found.

Dermal Rat
No toxicologically significant effects were found.

Reproductive toxicity : No toxicity to reproduction
Animal testing showed no reproductive toxicity.

Teratogenicity : Animal testing showed no developmental toxicity.

Carcinogenicity
The carcinogenicity classifications for this product and/or its ingredients have been determined according to HazCom 2012, Appendix A.6. The classifications may differ from those listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or those found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition).

None of the components present in this material at concentrations equal to or greater than 0.1% are listed by IARC, NTP, or OSHA, as a carcinogen.

SECTION 12. ECOLOGICAL INFORMATION

Aquatic Toxicity

DuPont™ Vertisan™ Fungicide

96 h LC50 : Pimephales promelas (fathead minnow) 0.32 mg/l

48 h EC50 : Daphnia magna (Water flea) 1.2 mg/l

Penthiopyrad

72 h EbC50 : Pseudokirchneriella subcapitata (green algae) > 1.5 mg/l

Substituted Fatty Amide

72 h NOEC : Pseudokirchneriella subcapitata (green algae) 1.8 mg/l OECD Test Guideline 201
Information given is based on data obtained from similar substances.

35 d : NOEC Pimephales promelas (fathead minnow) 0.71 mg/l OECD Test Guideline 210

21 d : NOEC Daphnia magna (Water flea) 0.079 mg/l OECD Test
Guideline 211

Substituted Fatty Amide

72 h ErC50 : Pseudokirchneriella subcapitata (green algae) 16.06 mg/l OECD Test Guideline 201
Information given is based on data obtained from similar substances.

72 h NOEC : Pseudokirchneriella subcapitata (green algae) 1.8 mg/l OECD Test Guideline 201
Information given is based on data obtained from similar substances.

21 d : NOEC Daphnia magna (Water flea) 1.3 mg/l OECD Test Guideline 211
Information given is based on data obtained from similar substances.

Ethoxylated Alkyl Ether

96 h ErC50 : Pseudokirchneriella subcapitata (green algae) 1.4 mg/l

Environmental Fate

Substituted Fatty Amide

Biodegradability : rapidly biodegradable OECD Test Guideline 301
Readily biodegradable
Information given is based on data obtained from similar substances.

Bioaccumulation : Bioaccumulation is unlikely.

Substituted Fatty Amide

Biodegradability : Not rapidly biodegradable OECD Test Guideline 301D
Readily biodegradable
Information given is based on data obtained from similar substances.

Bioaccumulation : Bioaccumulation is unlikely.

Ethoxylated Alkyl Ether

Biodegradability : 90 %
Readily biodegradable

Additional ecological information : Environmental Hazards: This product is toxic to fish. For Terrestrial Uses: Do not apply directly to water, or to areas where surface water is present, or to intertidal areas below the mean high water mark. Do not contaminate water when cleaning equipment or disposing of equipment washwaters or rinsate. Drift and runoff may be hazardous to aquatic organisms in water adjacent to treated areas. See product
SECTION 13. DISPOSAL CONSIDERATIONS

Waste disposal methods - Product: Do not contaminate water, food or feed by disposal. Wastes resulting from the use of this product must be disposed of on site or at an approved waste disposal facility.

Waste disposal methods - Container: Refer to the product label for instructions. Do not transport if this container is damaged or leaking.

In the event of a major spill, fire or other emergency, call 1-800-441-3637 day or night.

Contaminated packaging: No applicable data available.

SECTION 14. TRANSPORT INFORMATION

<table>
<thead>
<tr>
<th>IATA_C</th>
<th>UN number</th>
<th>Proper shipping name</th>
<th>Class</th>
<th>Packing group</th>
<th>Labelling No.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>3082</td>
<td>Environmentally hazardous substance, liquid, n.o.s. (Penthiopyrad)</td>
<td>9</td>
<td>III</td>
<td>9MI</td>
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</table>

<table>
<thead>
<tr>
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<tbody>
<tr>
<td></td>
<td>3082</td>
<td>ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (Penthiopyrad)</td>
<td>9</td>
<td>III</td>
<td>9</td>
</tr>
</tbody>
</table>

Marine pollutant: yes (Penthiopyrad)

Not regulated by DOT/49 CFR unless shipped in bulk package or by water.
SECTION 15. REGULATORY INFORMATION

Other regulations : This Safety Data Sheet is for a pesticide product registered by the US Environmental Protection Agency (USEPA) and is therefore also subject to certain labeling requirements under US pesticide law (FIFRA). These requirements differ from the classification criteria and hazard information required by OSHA for safety data sheets, and for workplace labels of non-pesticide chemicals. The following is the mandatory hazard information required by USEPA on the pesticide label:

WARNING!

Causes substantial but temporary eye injury. Do not get in eyes or on clothing. Wear goggles, face shield or safety glasses. Prolonged or frequently repeated skin contact may cause allergic reactions in some individuals. May be harmful if swallowed. Wash hands thoroughly with soap and water after handling and before eating, drinking, chewing gum, using tobacco, or using the toilet. Remove and wash contaminated clothing before re-use. This product is toxic to fish. This product is toxic to: Aquatic invertebrates

SARA 313 Regulated Chemical(s) : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

EPA Reg. No. : 352-836
In the United States this product is regulated by the US Environmental Protection Agency (EPA) under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA). It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Read and follow all label directions. This product is excluded from listing requirements under EPA/TSCA.

California Prop. 65 : Chemicals known to the State of California to cause cancer, birth defects or any other harm: none known

SECTION 16. OTHER INFORMATION

™ Trademark of E.I. du Pont de Nemours and Company.

Revision Date : 09/21/2015
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 given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Significant change from previous version is denoted with a double bar.