

# SAFETY DATA SHEET

## Vitaflo™-280C

Version 1.6      Revision Date: 10/26/2015      MSDS Number: 400000004577      Country: US  
Language: Z8

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### SECTION 1. IDENTIFICATION

Product name : Vitaflo™-280C

Product code : 400000004577

#### Manufacturer or supplier's details

Company: MacDermid Agricultural Solutions, Inc  
245 Freight St  
Waterbury, CT  
United States of America  
06702  
Telephone : +1 800 423 8569

Prepared by sds.request@arysta.com

Further information for the material safety data sheet :  
sds.request@arysta.com

#### 1.4 Emergency telephone

Emergency telephone: Agriphar Crop Solutions: +1 800 423 8569(24 hours) 800-424-9300  
For additional emergency telephone numbers see section 16 of the  
Safety Data Sheet.

#### Recommended use of the chemical and restrictions on use

Recommended use : Fungicide

Restrictions on use : Agriculture, For professional users only.

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### SECTION 2. HAZARDS IDENTIFICATION

#### GHS Classification

Acute toxicity (Inhalation) : Category 2

Skin irritation : Category 2

Skin sensitization : Category 1

Specific target organ  
systemic toxicity - repeated : Category 2

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exposure (Oral)

Acute aquatic toxicity : Category 1

Chronic aquatic toxicity : Category 1

### GHS Label element

Hazard pictograms :



Signal Word : Danger

Hazard Statements : H315 Causes skin irritation.  
H317 May cause an allergic skin reaction.  
H330 Fatal if inhaled.  
H373 May cause damage to organs through prolonged or repeated exposure if swallowed.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary Statements : **Prevention:**  
P260 Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.  
P264 Wash skin thoroughly after handling.  
P271 Use only outdoors or in a well-ventilated area.  
P272 Contaminated work clothing must not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves.  
P284 Wear respiratory protection.  
**Response:**  
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.  
P304 + P340 + P310 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/ physician.  
P314 Get medical advice/ attention if you feel unwell.  
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.  
P362 Take off contaminated clothing and wash before reuse.  
P391 Collect spillage.  
**Storage:**  
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
P405 Store locked up.  
**Disposal:**  
P501 Dispose of contents/ container to an approved waste disposal plant.

### Other hazards

None known.

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## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

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Substance / Mixture : Mixture

Chemical nature : Carboxin - 1.45 lbs/gal  
Thiram - 147 gm/L

Carboxin - 174 gm/L  
Thiram - 147 gm/L

### Hazardous ingredients

Chemical Name	CAS-No.	Concentration (% w/w)
carboxin	5234-68-4	>= 10 - < 20
ethane-1,2-diol	107-21-1	>= 10 - < 20
Distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0	>= 10 - < 20
thiram	137-26-8	>= 10 - < 20
sodium 2-[methyloleoylamino]ethane-1-sulphonate	137-20-2	>= 1 - < 5

### SECTION 4. FIRST AID MEASURES

If inhaled : 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 CENTER or doctor/ physician.

In case of skin contact : Remove contaminated clothing and shoes.  
Rinse immediately with plenty of water for at least 15 minutes.  
Call a POISON CENTER or doctor/ physician.

In case of eye contact : Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes.  
Remove contact lenses, if present, after the first 5 minutes, then continue rinsing eye.  
Call a POISON CENTER or doctor/ physician.

If swallowed : Call a physician or poison control center immediately.  
Have person sip a glass of water if able to swallow.  
If swallowed, DO NOT induce vomiting unless directed to do so by medical personnel.  
Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed : irritant effects  
Sensitization  
Symptoms may be delayed.  
Causes skin irritation.  
May cause an allergic skin reaction.  
Fatal if inhaled.  
May cause damage to organs through prolonged or repeated exposure if swallowed.

Notes to physician : The first aid procedure should be established in consultation with the doctor responsible for industrial medicine.

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### SECTION 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media : Extinguishing media - large fires  
Alcohol-resistant foam  
(on small fires)  
Carbon dioxide (CO<sub>2</sub>)  
Dry chemical  
Water spray
- Unsuitable extinguishing media : Water spray jet
- Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
- Further information : Do not discharge extinguishing waters into streams, rivers and lakes.
- Special protective equipment for fire-fighters : Body covering protective clothing, full "turn-out" gear.  
Self-contained breathing apparatus (EN 133)
- 

### SECTION 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions, protective equipment and emergency procedures : Wear suitable protective equipment.  
Avoid contact with skin and eyes.
- Environmental precautions : Prevent leaks and prevent soil / water pollution caused by leaks.
- Methods and materials for containment and cleaning up : Absorb on inert material such as sand, earth, vermiculite.  
Collect for disposal.  
Dam up.  
Large spills should be collected mechanically (remove by pumping) for disposal.  
Pump excess material into suitable container (metal drums, metal tank, or such).  
  
In accordance with local and national regulations.
- 

### SECTION 7. HANDLING AND STORAGE

- Advice on safe handling : Do not eat, drink or smoke when using this product.  
Avoid contact with skin, eyes and clothing.  
Avoid inhalation of vapor or mist.  
Use with adequate ventilation.  
Wash thoroughly after handling.  
Wash thoroughly after handling.
- Conditions for safe storage : Keep in a dry, cool place.
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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

## Ingredients with workplace control parameters

Ingredients	CAS-No.	Value type (Form of exposure)	Control parameters / Permissible concentration	Basis
ethane-1,2-diol	107-21-1	C	50 ppm 125 mg/m <sup>3</sup>	OSHA P0
		C	100 mg/m <sup>3</sup>	ACGIH
		C (Aerosol only)	100 mg/m <sup>3</sup>	ACGIH
Distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0	TWA (Mist)	5 mg/m <sup>3</sup>	OSHA Z-1
		TWA (Inhalable fraction)	5 mg/m <sup>3</sup>	ACGIH
		TWA	5 mg/m <sup>3</sup>	OSHA P0
		TWA (Mist)	5 mg/m <sup>3</sup>	NIOSH REL
		ST (Mist)	10 mg/m <sup>3</sup>	NIOSH REL
		TWA (Mist)	5 mg/m <sup>3</sup>	OSHA P0
thiram	137-26-8	TWA (Inhalable fraction and vapor)	0.05 mg/m <sup>3</sup>	ACGIH
		TWA	5 mg/m <sup>3</sup>	OSHA Z-1
		TWA	5 mg/m <sup>3</sup>	OSHA P0
		TWA	5 mg/m <sup>3</sup>	NIOSH REL

## Hazardous components without workplace control parameters

Ingredients	CAS-No.
carboxin	5234-68-4
sodium 2-[methyloleoylamino]ethane-1-sulphonate	137-20-2

## Personal protective equipment

Respiratory protection : In the absence of engineering controls sufficient to maintain airborne concentrations below recommended occupational exposure limit values, appropriate respiratory protection should be utilized.

A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant a respirator's use.

Hand protection

Remarks : Impervious gloves

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Eye protection : Safety glasses with side-shields

Skin and body protection : Preventive skin protection

Hygiene measures : Do not store near food, feed or fertilizers.  
Do not contaminate ponds, lakes, streams, or any source of water.

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### SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : liquid

Color : light pink

Odor : mild, sweet

Odor Threshold : No data available

pH : ca. 7.8

Melting point/range : -20 °C

: No data available

Flash point : No data available

Evaporation rate : No data available

Upper explosion limit : No data available

Lower explosion limit : No data available

Vapor pressure : No data available

Relative vapor density : No data available

Relative density : 1.090 - 1.140 (25 °C)

Density : ca. 1.117 g/cm<sup>3</sup>

Solubility(ies)

    Water solubility : No data available

    Solubility in other solvents : No data available

Partition coefficient: n-octanol/water : No data available

Autoignition temperature : No data available

Decomposition temperature : No data available

Viscosity

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Viscosity, dynamic : No data available  
Viscosity, kinematic : No data available  
Self-Accelerating decomposition temperature (SADT) : Method: No information available.

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### SECTION 10. STABILITY AND REACTIVITY

Possibility of hazardous reactions : Hazardous polymerization does not occur.  
Incompatible materials : Oxidizing agents  
Strong acids and strong bases  
Hazardous decomposition products : Burning produces obnoxious and toxic fumes.

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### SECTION 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity

##### Product:

Acute oral toxicity : LD50 (Rat): 4,587 mg/kg  
Remarks: The following toxicological data shown are those obtained from tests on products of similar composition.  
Acute inhalation toxicity : LC50 (Rat): > 1.0 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist  
Acute dermal toxicity : LD50 (Rat): > 2,000 mg/kg  
Remarks: The following toxicological data shown are those obtained from tests on products of similar composition.

##### Ingredients:

##### **carboxin:**

Acute oral toxicity : LD50 (Rat, male): 2,588 mg/kg  
Acute inhalation toxicity : LC50 (Rat, male and female): > 4.7 mg/l  
Exposure time: 4 h  
Assessment: The substance or mixture has no acute inhalation toxicity  
Remarks: An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.  
Acute dermal toxicity : LD50 (Rabbit, male and female): > 4,000 mg/kg

##### **ethane-1,2-diol:**

Acute oral toxicity : LD50 (Rat, female): 4,700 mg/kg

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Acute dermal toxicity : LD50 (Rabbit): 10,670 mg/kg

**thiram:**

Acute oral toxicity : LD50 (Rat, female): 1,800 mg/kg

Acute inhalation toxicity : LC50 (Rat, female): 3.46 mg/l  
Exposure time: 4 h  
Test atmosphere: dust/mist

Acute dermal toxicity : LD50 (Rabbit): > 2,000 mg/kg

### **Skin corrosion/irritation**

**Product:**

Species: Rabbit  
Result: Skin irritation

**Ingredients:**

**carboxin:**

Species: Rabbit  
Result: No skin irritation

**thiram:**

Species: Rabbit  
Result: No skin irritation

### **Serious eye damage/eye irritation**

**Product:**

Species: Rabbit  
Assessment: No eye irritation

**Ingredients:**

**carboxin:**

Species: Rabbit  
Result: slight irritation  
Assessment: No eye irritation

**thiram:**

Species: Rabbit  
Result: Irritating to eyes.  
Assessment: Irritating to eyes.

### **Respiratory or skin sensitization**

**Product:**

Species: Guinea pig  
Assessment: Did not cause sensitization on laboratory animals.  
Remarks: Information given is based on data obtained from similar substances.





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tation assay)  
Result: positive

: Species: Chinese hamster ovary cells  
Result: negative

: Species: Chinese hamster ovary cells  
Method: In Vitro mammalian Cell Gene Mutation Test  
Result: negative

Genotoxicity in vivo : Test Type: Mammalian bone marrow chromosome aberration test  
Species: Mouse  
Result: negative

Germ cell mutagenicity - Assessment : negative

### Carcinogenicity

#### Ingredients:

##### **carboxin:**

Species: Rat, (male)  
Application Route: Oral  
NOAEL: NOAEL (No observed adverse effect level): 0.82 mg/kg bw/day

Carcinogenicity - Assessment : negative

##### **Distillates (petroleum), solvent-dewaxed heavy paraffinic:**

Carcinogenicity - Assessment : Weight of evidence does not support classification as a carcinogen

##### **thiram:**

Species: Rat  
Application Route: Oral  
NOAEL: NOAEL (No observed adverse effect level): 1.5 mg/kg bw/day

Carcinogenicity - Assessment : negative

### IARC

Group 1: Carcinogenic to humans

Distillates (petroleum), solvent-dewaxed heavy paraffinic

64742-65-0

### OSHA

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

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### NTP

Known to be human carcinogen

Distillates (petroleum), solvent-dewaxed heavy paraffinic

64742-65-0

### Reproductive toxicity

#### Ingredients:

##### **carboxin:**

Effects on fertility : General Toxicity Parent: NOAEL (No observed adverse effect level): 1 mg/kg bw/day  
General Toxicity F1: No observed adverse effect level F1: 20 mg/kg bw/day  
Early Embryonic Development: No observed adverse effect level F2: 10 mg/kg bw/day

Effects on fetal development : Species: Rat  
General Toxicity Maternal: NOAEL (No observed adverse effect level): 10 mg/kg bw/day  
Teratogenicity: NOAEL (No observed adverse effect level): 90 mg/kg bw/day

Species: Rabbit  
General Toxicity Maternal: NOAEL (No observed adverse effect level): 75 mg/kg bw/day  
Teratogenicity: NOAEL (No observed adverse effect level): 75 mg/kg bw/day

Reproductive toxicity - Assessment : negative  
negative

##### **thiram:**

Effects on fertility : Species: Rat  
General Toxicity Parent: NOAEL (No observed adverse effect level): 2.3 mg/kg bw/day  
General Toxicity F1: No observed adverse effect level F1: 9 mg/kg bw/day  
Early Embryonic Development: No observed adverse effect level F2: 3 mg/kg bw/day

Effects on fetal development : Species: Rabbit  
General Toxicity Maternal: NOAEL (No observed adverse effect level): 10 mg/kg bw/day  
Teratogenicity: NOAEL (No observed adverse effect level): 10 mg/kg bw/day

Species: Rat  
Teratogenicity: NOAEL (No observed adverse effect level): 7.5 mg/kg bw/day

Reproductive toxicity - Assessment : negative  
negative

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### STOT-single exposure

#### Product:

Remarks: No data available

### Repeated dose toxicity

#### Ingredients:

##### **carboxin:**

Species: Rat, male  
NOAEL: 30 mg/kg  
Application Route: Dermal  
Exposure time: 28 d  
GLP: yes  
Target Organs: Kidney

Species: Rat, male  
NOAEL: 5.5 mg/kg  
Application Route: Oral  
Exposure time: 90 d  
GLP: yes  
Target Organs: Kidney

##### **thiram:**

Species: Rat  
NOAEL: 2.5 mg/kg  
Application Route: Oral  
Exposure time: 90 d  
Target Organs: Stomach

Species: Rabbit  
NOAEL: 300 mg/kg  
Application Route: Dermal  
Exposure time: 21 d

Species: Dog  
NOAEL: 2 mg/kg  
Application Route: Oral  
Exposure time: 90 d  
Target Organs: Liver

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## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Ingredients:

##### **carboxin:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 2.3 mg/l  
Exposure time: 96 h  
Test Type: flow-through test  
GLP: yes

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- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): > 57 mg/l  
Exposure time: 48 h  
Test Type: flow-through test  
GLP: yes
- Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 0.48 mg/l  
Exposure time: 5 d  
Test Type: static test
- Toxicity to fish (Chronic toxicity) : NOEC (Cyprinus carpio (Carp)): 0.32 mg/l  
Exposure time: 21 d  
GLP: yes
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : NOEC (Daphnia magna (Water flea)): 0.32 mg/l  
Exposure time: 17 d  
GLP: yes
- thiram:**
- Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.046 mg/l  
Exposure time: 96 h  
Test Type: static test
- Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.011 mg/l  
Exposure time: 48 h  
Test Type: static test
- Toxicity to algae : EC50 (Pseudokirchneriella subcapitata (green algae)): 0.065 mg/l  
Exposure time: 120 h  
Test Type: static test
- Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) : (Daphnia magna (Water flea)): 0.008 mg/l  
Exposure time: 21 d

### Persistence and degradability

#### Ingredients:

##### **carboxin:**

Biodegradability : Result: Not readily biodegradable.

##### **thiram:**

Biodegradability : Result: Not readily biodegradable.

### Bioaccumulative potential

#### Ingredients:

##### **carboxin:**

Partition coefficient: n-octanol/water : log Pow: 2.3

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**ethane-1,2-diol:**  
Partition coefficient: n-octanol/water : log Pow: -1.3

**thiram:**  
Partition coefficient: n-octanol/water : log Pow: 2.1

**Mobility in soil**  
No data available

### Other adverse effects

#### Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

#### Ingredients:

**carboxin:**  
Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

**thiram:**  
Results of PBT and vPvB assessment : This substance is not considered to be persistent, bioaccumulating and toxic (PBT).

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## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Dispose of waste in accordance with environmental legislation. The product should not be allowed to enter drains, water courses or the soil.

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## SECTION 14. TRANSPORT INFORMATION

### International Regulation

#### UNRTDG

UN number : UN 3082  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (carboxin, thiram)  
Class : 9  
Packing group : III

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Labels : 9

**IATA-DGR**

UN/ID No. : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (carboxin, thiram)

Class : 9

Packing group : III

Labels : Miscellaneous

Packing instruction (cargo aircraft) : 964

Packing instruction (passenger aircraft) : 964

**IMDG-Code**

UN number : UN 3082

Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (carboxin, thiram)

Class : 9

Packing group : III

Labels : 9

EmS Code : F-A, S-F

Marine pollutant : yes

### Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable for product as supplied.

### Domestic regulation

#### 49 CFR

< 7.7 Gallons/29.2 Liters : Not Regulated

≥ 7.7 Gallons/29.2 Liters and ≤ 119 Gallons/450 Liters : RQ,UN3082,ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID,N.O.S. (carboxin,thiram),9,III

> 119 Gallons/450 Liters : RQ,UN3082,ENVIRONMENTALLY HAZARDOUS SUBSTANCES, LIQUID,N.O.S. (carboxin,thiram),9,III, MARINE POLLUTANT

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## SECTION 15. REGULATORY INFORMATION

### EPCRA - Emergency Planning and Community Right-to-Know

#### CERCLA Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Component RQ (lbs)
Thiram	137-26-8	10	72

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### SARA 304 Extremely Hazardous Substances Reportable Quantity

Ingredients	CAS-No.	Component RQ (lbs)	Calculated product RQ (lbs)
ethylene oxide	75-21-8	10	*

\*: Calculated RQ exceeds reasonably attainable upper limit.

**SARA 311/312 Hazards** : Acute Health Hazard

**SARA 302** : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

carboxin	5234-68-4	15.2814 %
ethane-1,2-diol	107-21-1	14.0767 %
thiram	137-26-8	13.855 %

### Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

ethane-1,2-diol	107-21-1	14.0767 %
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This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

The following chemical(s) are listed under the U.S. Clean Air Act Section 111 SOCM Intermediate or Final VOC's (40 CFR 60.489):

ethane-1,2-diol	107-21-1	14.0767 %
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### Clean Water Act

The following Hazardous Substances are listed under the U.S. CleanWater Act, Section 311, Table 116.4A:

naphthalene	91-20-3	0.024 %
acetaldehyde	75-07-0	0.000 %

The following Hazardous Chemicals are listed under the U.S. CleanWater Act, Section 311, Table 117.3:

naphthalene	91-20-3	0.024 %
acetaldehyde	75-07-0	0.000 %

This product does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

### California Prop. 65

WARNING! This product contains a chemical known in the State of California to cause cancer.

Distillates (petroleum), solvent-dewaxed heavy paraffinic	64742-65-0
quartz (SiO <sub>2</sub> ) (Fr = 100%)	14808-60-7
naphthalene	91-20-3
ethylene oxide	75-21-8
acetaldehyde	75-07-0
1,4-dioxane	123-91-1



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WARNING: This product contains a chemical known in the State of California to cause birth defects or other reproductive harm.

ethylene oxide      75-21-8

### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

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### FIFRA Hazard Information:

This chemical is a pesticide product registered by the United States Environmental Protection Agency and is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The pesticide label also includes other important information, including directions for use.

The hazard information required on the pesticide label is reproduced below.

### CAUTION

Causes moderate eye and skin irritation. Harmful if swallowed, inhaled or absorbed through skin. Do not get in eyes, on skin or on clothing. Because of possible unpleasant side effects, avoid alcoholic beverages for 24 hours before and after working with VITAFLO-280 or treated seed.

This pesticide is toxic to fish, aquatic invertebrates, oysters and shrimp. Do not apply directly to water, to areas where surface water is present, or to intertidal areas below mean high water mark. Drift and runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwater or rinsate.

Do not use or store near heat or open flame.

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## SECTION 16. OTHER INFORMATION

### Full text of other abbreviations

(Q)SAR - (Quantitative) Structure Activity Relationship; ASTM - American Society for the Testing of Materials; bw - Body weight; DIN - Standard of the German Institute for Standardisation; EC<sub>x</sub> - Concentration associated with x% response; EL<sub>x</sub> - Loading rate associated with x% response; EmS - Emergency Schedule; ErC<sub>x</sub> - Concentration associated with x% growth rate response; GHS - Globally Harmonized System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC<sub>50</sub> - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organization; ISO - International Organisation for Standardization; LC<sub>50</sub> - Lethal Concentration to 50 % of a test population; LD<sub>50</sub> - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of

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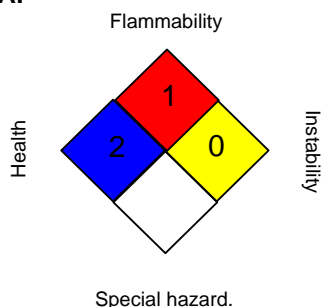
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Pollution from Ships; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; OECD - Organization for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; SADT - Self-Accelerating Decomposition Temperature; SDS - Safety Data Sheet; UN - United Nations; vPvB - Very Persistent and Very Bioaccumulative; DSL - Domestic Substances List (Canada); KECI - Korea Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); AICS - Australian Inventory of Chemical Substances; IECSC - Inventory of Existing Chemical Substances in China; ENCS - Existing and New Chemical Substances (Japan); ISHL - Industrial Safety and Health Law (Japan); PICCS - Philippines Inventory of Chemicals and Chemical Substances; NZIoC - New Zealand Inventory of Chemicals; TCSI - Taiwan Chemical Substance Inventory; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; DOT - Department of Transportation; EHS - Extremely Hazardous Substance; HMIS - Hazardous Materials Identification System; MSHA - Mine Safety and Health Administration; NFPA - National Fire Protection Association; RCRA - Resource Conservation and Recovery Act; RQ - Reportable Quantity; SARA - Superfund Amendments and Reauthorization Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; GLP - Good Laboratory Practice; ERG - Emergency Response Guide; NTP - National Toxicology Program; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods

### Further information

#### NFPA:



#### HMIS III:

HEALTH	2*
FLAMMABILITY	1
PHYSICAL HAZARD	0

0 = not significant, 1 = Slight,  
2 = Moderate, 3 = High  
4 = Extreme, \* = Chronic

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The information provided in this Material 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.

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### Carechem24 International Worldwide Coverage

#### Emergency Phone Number

<u>Europe:</u>	All European Countries	+44 (0) 1235 239 670
<u>Asia Pacific:</u>	East / South East Asia – Regional Number	+65 3158 1074
	Australia	+61 2801 44558
	New Zealand	+64 9929 1483
	China	+86 532 8388 9090
	China Taiwan	+86 10 5100 3039
	Japan	+81 345 789 341
	Indonesia	00780 3011 0293
	Malaysia	+60 3 6207 4347
	Thailand	001800 1 2066 6751
	Korea	+65 3158 1285 +82 (0)234 798 401
	Vietnam	+65 3158 1255
	India	+65 3158 1198 0800 100 7479
	Pakistan	+65 3158 1329
	Philippines	+65 31581203
	Sri Lanka	+65 3158 1195
	Emergency Phone Number	+65 3158 1200
<u>Middle East / Africa:</u>	Arabic speaking countries	+44 (0) 1235 239 671
	South Africa	+27 21 300 2732
	All other countries	+44 (0) 1235 239 670
<u>America</u>	United States of America and Canada	+1866 928 0789 +1 215 207 0061
<u>Latin America:</u>	Brazil	+55 11 3197 5891
	Mexico	+52 555 004 8763
	Chile	+56 225 829 336
	All other countries	+44 (0) 1235 239 670