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**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifiers**

Product name : 18:1 CY5 CARDIOLIPIN

Product Number : 810388C  
Brand : Avanti

**1.2 Relevant identified uses of the substance or mixture and uses advised against**

Identified uses : Laboratory chemicals, Synthesis of substances

**1.3 Details of the supplier of the safety data sheet**

Company : Avanti Polar Lipids, INC  
700 Industrial Park Drive  
Alabaster, AL 35007 United  
States of America

Telephone : (205) 663-2494  
Fax : (205) 663-0756

**1.4 Emergency telephone**

Emergency Phone # : +1 703-741-5970 / 1800-424-9300(CHEMTREC)

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**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Acute toxicity, Oral (Category 4), H302  
Acute toxicity, Inhalation (Category 3), H331  
Skin irritation (Category 2), H315  
Eye irritation (Category 2A), H319  
Carcinogenicity (Category 2), H351  
Reproductive toxicity (Category 2), H361  
Specific target organ toxicity - single exposure (Category 3), Central nervous system, H336  
Specific target organ toxicity - repeated exposure, Oral (Category 1), Liver, Kidney, H372  
Short-term (acute) aquatic hazard (Category 3), H402

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

Pictogram



Signal word

Danger

|                            |  |
|----------------------------|--|
| Hazard statement(s)        |  |
| H302                       | Harmful if swallowed.  |
| H315                       | Causes skin irritation.  |
| H319                       | Causes serious eye irritation.   |
| H331                       | Toxic if inhaled.  |
| H336                       | May cause drowsiness or dizziness.   |
| H351                       | Suspected of causing cancer.   |
| H361                       | Suspected of damaging fertility or the unborn child.   |
| H372                       | Causes damage to organs (Liver, Kidney) through prolonged or repeated exposure if swallowed.                                     |
| H402                       | Harmful to aquatic life.   |
| Precautionary statement(s) |  |
| P201                       | Obtain special instructions before use.  |
| P202                       | Do not handle until all safety precautions have been read and understood.  |
| P260                       | Do not breathe dust/ fume/ gas/ mist/ vapors/ spray.   |
| P264                       | Wash skin thoroughly after handling.   |
| P270                       | Do not eat, drink or smoke when using this product.  |
| P271                       | Use only outdoors or in a well-ventilated area.  |
| P273                       | Avoid release to the environment.  |
| P280                       | Wear protective gloves/ protective clothing/ eye protection/ face protection.  |
| P301 + P312 + P330         | IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.  |
| P302 + P352                | IF ON SKIN: Wash with plenty of soap and water.  |
| P304 + P340 + P311         | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.                         |
| P305 + P351 + P338         | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| P308 + P313                | IF exposed or concerned: Get medical advice/ attention.  |
| P332 + P313                | If skin irritation occurs: Get medical advice/ attention.  |
| P337 + P313                | If eye irritation persists: Get medical advice/ attention.   |
| P362                       | Take off contaminated clothing and wash before reuse.  |
| P403 + P233                | Store in a well-ventilated place. Keep container tightly closed.   |
| P405                       | Store locked up.   |
| P501                       | Dispose of contents/ container to an approved waste disposal plant.  |

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

| Component           |                       | Classification  | Concentration    |
|---------------------|-----------------------|---|------------------|
| <b>Chloroform</b>   |                       |   |                  |
| CAS-No.             | 67-66-3               | Acute Tox. 4; Acute Tox. 3; Skin Irrit. 2; Eye Irrit. 2A; Carc. 2; Repr. 2; STOT SE 3; STOT RE 1; Aquatic Acute 3; H302, H331, H315, H319, H351, H361, H336, H372, H402 | >= 90 - <= 100 % |
| EC-No.              | 200-663-8             |   |                  |
| Index-No.           | 602-006-00-4          |   |                  |
| Registration number | 01-2119486657-20-XXXX | Concentration limits: 20 %: STOT SE 3, H336;  |                  |

| ethanol             |                       |   |               |
|---------------------|-----------------------|---|---------------|
| CAS-No.             | 64-17-5               | Flam. Liq. 2; Eye Irrit. 2A; H225, H319 | ≥ 0.1 - < 1 % |
| EC-No.              | 200-578-6             | Concentration limits:                   |               |
| Index-No.           | 603-002-00-5          | ≥ 50 %: Eye Irrit. 2A, H319;            |               |
| Registration number | 01-2119457610-43-XXXX |   |               |

For the full text of the H-Statements mentioned in this Section, see Section 16.

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## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

First aider needs to protect himself. Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

#### If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Foam Carbon dioxide (CO<sub>2</sub>) Dry powder

#### Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

### 5.2 Special hazards arising from the substance or mixture

Carbon oxides

Hydrogen chloride gas

Mixture with combustible ingredients.

Development of hazardous combustion gases or vapours possible in the event of fire.

### 5.3 Advice for firefighters

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

## **5.4 Further information**

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## **SECTION 6: Accidental release measures**

### **6.1 Personal precautions, protective equipment and emergency procedures**

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

### **6.2 Environmental precautions**

Do not let product enter drains.

### **6.3 Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up carefully with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

### **6.4 Reference to other sections**

For disposal see section 13.

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

#### **Advice on safe handling**

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

#### **Hygiene measures**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

For precautions see section 2.2.

### **7.2 Conditions for safe storage, including any incompatibilities**

#### **Storage conditions**

Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

#### **Storage stability**

Recommended storage temperature  
-20 °C

Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

### **7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

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## **SECTION 8: Exposure controls/personal protection**

### **8.1 Control parameters**

#### **Ingredients with workplace control parameters**

| Component  | CAS-No. | Value  | Control parameters       | Basis   |
|------------|---------|--|--------------------------|---|
| Chloroform | 67-66-3 | TWA  | 10 ppm                   | USA. ACGIH Threshold Limit Values (TLV)   |
|            | Remarks | Confirmed animal carcinogen with unknown relevance to humans |                          |   |
|            |         | ST   | 2 ppm<br>9.78 mg/m3      | USA. NIOSH Recommended Exposure Limits  |
|            |         | Potential Occupational Carcinogen                            |                          |   |
|            |         | C  | 50 ppm<br>240 mg/m3      | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants        |
|            |         | PEL  | 2 ppm<br>9.78 mg/m3      | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |
| ethanol    | 64-17-5 | TWA  | 1,000 ppm<br>1,900 mg/m3 | USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000                           |
|            |         | TWA  | 1,000 ppm<br>1,900 mg/m3 | USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants        |
|            |         | STEL   | 1,000 ppm                | USA. ACGIH Threshold Limit Values (TLV)   |
|            |         | Confirmed animal carcinogen with unknown relevance to humans |                          |   |
|            |         | TWA  | 1,000 ppm<br>1,900 mg/m3 | USA. NIOSH Recommended Exposure Limits  |
|            |         | PEL  | 1,000 ppm<br>1,900 mg/m3 | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |

## 8.2 Exposure controls

### Appropriate engineering controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

### Personal protective equipment

#### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

#### Skin protection

required

#### Body Protection

protective clothing

#### Respiratory protection

required when vapours/aerosols are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

#### Control of environmental exposure

Do not let product enter drains.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

|   |                   |
|---|-------------------|
| a) Appearance                                   | Form: liquid      |
| b) Odor   | No data available |
| c) Odor Threshold                               | No data available |
| d) pH   | No data available |
| e) Melting point/freezing point                 | No data available |
| f) Initial boiling point and boiling range      | No data available |
| g) Flash point                                  | ( )Not applicable |
| h) Evaporation rate                             | No data available |
| i) Flammability (solid, gas)                    | No data available |
| j) Upper/lower flammability or explosive limits | No data available |
| k) Vapor pressure                               | No data available |
| l) Vapor density                                | No data available |
| m) Relative density                             | No data available |
| n) Water solubility                             | No data available |
| o) Partition coefficient: n-octanol/water       | No data available |
| p) Autoignition temperature                     | No data available |
| q) Decomposition temperature                    | No data available |
| r) Viscosity                                    | No data available |
| s) Explosive properties                         | No data available |
| t) Oxidizing properties                         | No data available |

### 9.2 Other safety information

No data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

no information available

## **10.5 Incompatible materials**

Strong oxidizing agents

## **10.6 Hazardous decomposition products**

In the event of fire: see section 5

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# **SECTION 11: Toxicological information**

## **11.1 Information on toxicological effects**

### **Mixture**

#### **Acute toxicity**

Symptoms: Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Symptoms: Possible symptoms:, mucosal irritations

Dermal: No data available

No data available

#### **Skin corrosion/irritation**

Mixture causes skin irritation.

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

Mixture causes serious eye irritation.

#### **Respiratory or skin sensitization**

No data available

#### **Germ cell mutagenicity**

### **Carcinogenicity**

Evidence of a carcinogenic effect.

IARC: 1 - Group 1: Carcinogenic to humans (ethanol)

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Chloroform)

NTP: No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

#### **Reproductive toxicity**

Suspected of damaging the unborn child.

Suspected of damaging fertility.

#### **Specific target organ toxicity - single exposure**

Mixture may cause drowsiness or dizziness.

Acute oral toxicity - Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.

Acute inhalation toxicity - Possible symptoms:, mucosal irritations

#### **Specific target organ toxicity - repeated exposure**

Mixture causes damage to organs through prolonged or repeated exposure. - Liver, Kidney

#### **Aspiration hazard**

No data available

## **11.2 Additional Information**

RTECS: Not available

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

## **Components**

### **Chloroform**

#### **Acute toxicity**

LD50 Oral - Rat - male - 908 mg/kg

(OECD Test Guideline 401)

Dermal: No data available

No data available

#### **Skin corrosion/irritation**

Skin - Rabbit

Result: Irritating to skin. - 24 h

Remarks: (ECHA)

Drying-out effect resulting in rough and chapped skin.

Skin - Rabbit

Result: slight irritation

Remarks: (IUCLID)

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

Eyes - Rabbit

Result: Irritating to eyes.

Remarks: (ECHA)

(Regulation (EC) No 1272/2008, Annex VI)

#### **Respiratory or skin sensitization**

Maximization Test - Guinea pig

Result: negative

(Regulation (EC) No. 440/2008, Annex, B.6)

#### **Germ cell mutagenicity**

Ames test

Escherichia coli/Salmonella typhimurium

Result: negative

(ECHA)

unscheduled DNA synthesis assay

Liver

Result: negative

(ECHA)

OECD Test Guideline 474

Rat - male and female - Red blood cells (erythrocytes)

Result: negative

OECD Test Guideline 486

Rat - male - Liver cells

Result: negative

Mouse - female

Result: negative

(ECHA)

#### **Carcinogenicity**

Suspected of causing cancer.



**Reproductive toxicity**

Suspected of damaging the unborn child.

**Specific target organ toxicity - single exposure**

May cause drowsiness or dizziness.

**Specific target organ toxicity - repeated exposure**

Oral - Causes damage to organs through prolonged or repeated exposure. - Liver, Kidney

**Aspiration hazard**

No data available

**ethanol****Acute toxicity**

LD50 Oral - Rat - male and female - 10,470 mg/kg

(OECD Test Guideline 401)

LC50 Inhalation - Rat - male and female - 4 h - 124.7 mg/l

(OECD Test Guideline 403)

Dermal: No data available

No data available

**Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation - 24 h

(OECD Test Guideline 404)

**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: Causes serious eye irritation.

(OECD Test Guideline 405)

**Respiratory or skin sensitization**

Maximization Test - Guinea pig

Result: negative

(OECD Test Guideline 406)

Remarks: (in analogy to similar products)

**Germ cell mutagenicity**

Ames test

Salmonella typhimurium

Result: negative

In vitro mammalian cell gene mutation test

mouse lymphoma cells

Result: negative

OECD Test Guideline 478

Mouse - male

Result: Positive results were obtained in some in vivo tests.

**Carcinogenicity****Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

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## SECTION 12: Ecological information

### 12.1 Toxicity

#### Mixture

No data available

### 12.2 Persistence and degradability

No data available

### 12.3 Bioaccumulative potential

No data available

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Other adverse effects

No data available

#### Components

##### Chloroform

|                   |   |
|-------------------|---|
| Toxicity to algae | static test ErC50 - Chlamydomonas reinhardtii (green algae) - 13.3 mg/l - 72 h<br>Remarks: (ECHA) |
|-------------------|---|

|                      |                 |
|----------------------|-----------------|
| Toxicity to bacteria | Remarks: (ECHA) |
|----------------------|-----------------|

##### ethanol

|                  |  |
|------------------|--|
| Toxicity to fish | flow-through test LC50 - Pimephales promelas (fathead minnow) - 15,300 mg/l - 96 h<br>(US-EPA) |
|------------------|--|

|   |   |
|---|---|
| Toxicity to daphnia and other aquatic invertebrates | static test LC50 - Ceriodaphnia dubia (water flea) - 5,012 mg/l - 48 h<br>Remarks: (ECHA) |
|---|---|

|                   |   |
|-------------------|---|
| Toxicity to algae | static test ErC50 - Chlorella vulgaris (Fresh water algae) - 275 mg/l - 72 h<br>(OECD Test Guideline 201) |
|-------------------|---|

|                      |   |
|----------------------|---|
| Toxicity to bacteria | static test IC50 - activated sludge - > 1,000 mg/l - 3 h<br>(OECD Test Guideline 209) |
|----------------------|---|

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Waste material must be disposed of in accordance with the national and local No mixing with other waste. Handle uncleaned containers like the product See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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**SECTION 14: Transport information****DOT (US)**

UN number: 1888    Class: 6.1    Packing group: III  
Proper shipping name: ChloroformSOLUTION

Reportable Quantity (RQ): 10 lbs

Reportable Quantity (RQ): 10 lbs

Poison Inhalation Hazard: No

**IMDG**

UN number: 1888    Class: 6.1    Packing group: III    EMS-No: F-A, S-A  
Proper shipping name: CHLOROFORMSOLUTION

**IATA**

UN number: 1888    Class: 6.1    Packing group: III  
Proper shipping name: ChloroformSOLUTION

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**SECTION 15: Regulatory information****SARA 302 Components**

|            |                    |                             |
|------------|--------------------|-----------------------------|
| Chloroform | CAS-No.<br>67-66-3 | Revision Date<br>2008-11-03 |
|------------|--------------------|-----------------------------|

**SARA 313 Components**

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

|            |                    |                             |
|------------|--------------------|-----------------------------|
| Chloroform | CAS-No.<br>67-66-3 | Revision Date<br>2008-11-03 |
|------------|--------------------|-----------------------------|

**Reportable Quantity** : D022 lbs

**Massachusetts Right To Know Components**

No components are subject to the Massachusetts Right to Know Act.

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**SECTION 16: Other information****Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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Version: 8.0

Revision Date: 11/09/2020

Print Date: 01/06/2022