

# Material Safety Data Sheets, Carver Hall RM 284

FISHER SCIENTIFIC -- DODECYL SODIUM SULFATE, BP166-5 -- 6810-00N075642

===== Product Identification =====

Product ID:DODECYL SODIUM SULFATE, BP166-5

MSDS Date:06/12/1995

FSC:6810

NIIN:00N075642

MSDS Number: CCWSB

=== Responsible Party ===

Company Name:FISHER SCIENTIFIC

Address:1 REAGENT LANE

City:FAIRLAWN

State:NJ

ZIP:07410

Country:US

Info Phone Num:201-796-7100

Emergency Phone Num:800-424-9300 (CHEMTREC)

CAGE:1B464

=== Contractor Identification ===

Company Name:FISHER SCIENTIFIC CO. CHEMICAL MFG DIV

Address:1 REAGENT LANE

Box:City:FAIRLAWN

State:NJ

ZIP:07410-2802

Country:US

Phone:201-796-7100

CAGE:1B464

===== Composition/Information on Ingredients =====

Ingred Name:SULFURIC ACID, MONODODECYL ESTER, SODIUM SALT; (SODIUM LAURYL SULFATE)

CAS:151-21-3

RTECS #:WT1050000

Fraction by Wt: 100%

OSHA PEL:N/K

ACGIH TLV:N/K

===== Hazards Identification =====

LD50 LC50 Mixture:LD50:(ORAL,RAT) 1288 MG/KG

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:ACUTE:EYE:CAUSES BURNS. SKIN:CAUSES BURNS. MAY CAUSE SKIN SENSITIZATION, AN ALLERGIC REACTION, WHICH BECOMES EVIDENT UPON RE-EXPOSURE TO THIS MATERIAL. INGESTION:MAY CAUSE SEVERE DIGESTIVE TRACT IRRITATION WITH ABDOMINAL PAIN, NAUSEA, VOMITING & DIARRHEA. MAY CAUSE BURNS TO DIGESTIVE TRACT. INHALATION:(EFTS OF OVEREXP)

Explanation of Carcinogenicity:NOT RELEVANT.

Effects of Overexposure:HLTH HAZ:DUST IS IRRITATING TO RESPIRATORY TRACT. CHRONIC:PROLONGED OR REPEATED SKIN CONTACT MAY CAUSE DEFATTING AND DERMATITIS.

Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

===== First Aid Measures =====

# Material Safety Data Sheets, Carver Hall RM 284

First Aid:EYES:IMMED FLUSH W/PLENTY OF WATER FOR @ LST 15 MINS,  
OCCASNLY LIFTING UPPER & LOWER LIDS. GET MED AID IMMED. SKIN:GET  
MED AID. IMMED FLUSH W/PLENTY OF SOAP & WATER FOR @ LST 15 MINS  
WHILE REMOVING CO NTAMD CLTHG & SHOES. DESTROY CONTAMD SHOES.  
INGEST:IF VICTIM IS CONSCIOUS & ALERT, GIVE 2-4 CUPFULS OF  
MILK/WATER. NEVER GIVE ANYTHING BY MOUTH TO UNCON PERSON. GET MED  
AID IMMED. INHAL: (SUPDAT)

===== Fire Fighting Measures =====

Extinguishing Media:USE WATER, DRY CHEMICAL, CHEMICAL FOAM, OR  
ALCOHOL-RESISTANT FOAM.  
Fire Fighting Procedures:USE NIOSH APPROVED SCBA & FULL PROTECTIVE  
EQUIPMENT .  
Unusual Fire/Explosion Hazard:THIS MATERIAL IN SUFFICIENT QUANTITY AND  
REDUCED PARTICLE SIZE IS CAPABLE OF CREATING A DUST EXPLOSION.

===== Accidental Release Measures =====

Spill Release Procedures:VACUUM OR SWEEP UP MATERIAL AND PLACE INTO A  
SUITABLE DISPOSAL CONTAINER. AVOID GENERATING DUSTY CONDITIONS.  
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

===== Handling and Storage =====

Handling and Storage Precautions:KEEP AWAY FROM HEAT, SPARKS, & FLAME.  
KEEP AWAY FROM HEAT & FLAME. STORE IN COOL, DRY PLACE. STORE IN  
TIGHTLY CLOSED CONTAINER.  
Other Precautions:KEEP FROM CONT W/OXIDIZING MATLS. USE W/ADEQ VENT.  
MINIMIZE DUST GENERATION & ACCUM. GROUND & BOND CNTNRS WHEN  
TRANSFERRING MATL. DO NOT GET ON SKIN OR IN EYES. AVOID INGESTION &  
INHALATION.

===== Exposure Controls/Personal Protection =====

Respiratory Protection:FOLLOW THE OSHA RESIRATOR REGULATIONS FOUND IN  
29CFR 1010.134. ALWAYS USE A NIOSH-APPROVED RESPIRATOR WHEN  
NECESSARY.  
Ventilation:USE ADEQUATE VENTILATION TO KEEP AIRBORNE CONCENTRATIONS  
LOW.  
Protective Gloves:IMPERVIOUS GLOVES .  
Eye Protection:ANSI APPRVD CHEM WORKERS GOGGS (SUPDAT)  
Other Protective Equipment:ANSI APPRVD EYE WASH & DELUGE SHOWER . WEAR  
APPROP PROT CLOTHING TO PREVENT SKIN EXPOSURE.  
Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.  
Supplemental Safety and Health  
PH:8-10 FOR 1% SOLUTION. FIRST AID PROC:REMOVE FROM EXPOS TO FRESH AIR  
IMMED. IF NOT BRTHG, GIVE ARTF RESP. IF BRTHG IS DFCLT, GIVE OXYG.  
GET MED AID. NOTES TO PHYS:TREAT SYMPTOMATICALLY & SUPPORTIVEL Y.  
EYE PROT:& FULL LENGTH FACESHIELD .

===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:>399F,>204C  
Vapor Pres:NEGLIGIBLE  
Spec Gravity:0.40

# Material Safety Data Sheets, Carver Hall RM 284

pH:SUPDAT

Evaporation Rate & Reference:NEGLIGIBLE

Solubility in Water:10% IN WATER

Appearance and Odor:WHITE TO CREAM-COLORED CRYSTALS, FLAKES OR POWDER.  
MILD ODOR.

## ===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZING AGENTS, MINERAL ACIDS.

Stability Condition to Avoid:IMCOMPATIBLE MATERIALS, IGNITION SOURCES,  
TEMPERATURES ABOVE 50C.

Hazardous Decomposition Products:CARBON MONOXIDE, OXIDES OF SULFUR,  
CARBON DIOXIDE.

## ===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF IN A MANNER CONSISTENT WITH FEDERAL,  
STATE, AND LOCAL REGULATIONS.

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assume responsibility for the suitability of this information to their  
particular situation.

# Material Safety Data Sheet

## Acrylamide

ACC# 90858

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Acrylamide

**Catalog Numbers:** BP170-100, BP170-5, BP170-500, BP200, BP200-A, BP201, O1065-500, O1066-100

**Synonyms:** Acrylic amide; Ethylenecarboxamide; 2-Propenamide.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
79-06-1	Acrylamide	100.0	201-173-7

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: white solid.

**Warning!** Acrylamide may cause nervous system damage. Acrylamide caused cancer and male reproductive disorders in laboratory animal tests. Acrylamide may polymerize explosively if heated to 183°F (84°C). Acrylamide may form explosive dust-air mixtures. Harmful if swallowed, inhaled, or absorbed through the skin. Causes eye irritation. May cause allergic skin reaction. Cancer suspect agent. Light sensitive. Air sensitive.

**Target Organs:** Eyes, nervous system, reproductive system, skin.

#### Potential Health Effects

**Eye:** Causes eye irritation. Acrylamide can be absorbed through the eyes and overexposure will produce the signs and symptoms of neurotoxicity described below.

## Material Safety Data Sheets, Carver Hall RM 284

**Skin:** May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Acrylamide is readily absorbed through unbroken skin and can cause nervous system effects (neurotoxicity). These effects can result from a single overexposure but are more likely after repeated exposures to small amounts over a period of days or weeks. Signs and symptoms of overexposure include increased sweating of the hands and feet, numbness, tingling and weakness in the extremities, unsteady gait and decreased reflexes. If the exposure route is dermal, the symptoms may be preceded by peeling and redness of the skin at the areas of exposure, normally the hands and feet.

**Ingestion:** Harmful if swallowed. May cause central, peripheral, and autonomic nervous system effects. Central nervous system effects, which appear to predominate in acute cases, are characterized by abnormal fatigue, memory difficulties, and dizziness. Peripheral neuropathy symptoms, which are more common with repeated low-dose exposure or following a latency period of up to several weeks after acute exposure can include: muscular weakness, paresthesia, numbness in hands, feet, lower legs, and lower arms, unsteadiness, and difficulties in walking and standing. Autonomic nervous system involvement is indicated by excessive sweating, peripheral vasodilation and difficulties in micturation and defecation.

**Inhalation:** Acrylamide tends to sublime (go directly from solid to vapor form) which may lead to inhalation exposure. Acrylamide can be absorbed through the lungs and overexposure will produce the signs and symptoms of neurotoxicity described above.

**Chronic:** Prolonged or repeated skin contact may cause dermatitis. May cause cancer according to animal studies. Adverse reproductive effects have been reported in animals. Prolonged or repeated exposure affects the nervous system.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Either acute or chronic exposure may lead to weak or absent reflexes, positive Romberg's sign, loss of vibration and position senses and numbness and tingling of the limbs. An early sign of toxic effects is peeling of the skin of the fingertips.

**Antidote:** Pyridoxine (vitamin B6), pyruvate, and N-acetylcysteine have been used to reduce the toxicity of acrylamide in experimental studies, but are unproven.

### Section 5 - Fire Fighting Measures

**General Information:** Pyridoxine (vitamin B6), pyruvate, and N-acetylcysteine have been used to reduce the toxicity of acrylamide in experimental studies, but are unproven. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH

## Material Safety Data Sheets, Carver Hall RM 284

(approved or equivalent), and full protective gear. Use water spray to keep fire-exposed containers cool. Dust can be an explosion hazard when exposed to heat or flame. Combustible solid. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or chemical foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** 240 deg C ( 464.00 deg F)

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 2; Instability: 2

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Remove all sources of ignition. Isolate area and deny entry. Provide ventilation.

### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Keep away from heat, sparks and flame. Do not ingest or inhale. Use only in a chemical fume hood.

**Storage:** Keep away from heat, sparks, and flame. Do not store in direct sunlight. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from acids. Do not store near alkaline substances. Keep away from polymerization catalysts. Should not be exposed to temperatures above 122°F (50°C).

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Utilize a closed system process where feasible.

**Exposure Limits**

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
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## Material Safety Data Sheets, Carver Hall RM 284

Acrylamide	0.03 mg/m <sup>3</sup> TWA (inhalable fraction and vapor); Skin - potential significant contribution to overall exposure by the cutaneous route	0.03 mg/m <sup>3</sup> TWA 60 mg/m <sup>3</sup> IDLH	0.3 mg/m <sup>3</sup> TWA
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**OSHA Vacated PELs:** Acrylamide: 0.03 mg/m<sup>3</sup> TWA

**Personal Protective Equipment**

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### Section 9 - Physical and Chemical Properties

**Physical State:** Solid

**Appearance:** white

**Odor:** Odorless.

**pH:** Not available.

**Vapor Pressure:** .007 mm Hg @ 25 deg C

**Vapor Density:** 2.45 (air=1)

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** 125 deg C @ 25 mmHg

**Freezing/Melting Point:** 83 - 85 deg C

**Decomposition Temperature:** 84 deg C

**Solubility:** Soluble.

**Specific Gravity/Density:** 1.122 @ 30°C

**Molecular Formula:** C<sub>3</sub>H<sub>5</sub>NO

**Molecular Weight:** 71.08

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable. However may polymerize explosively if heated to the melting point. May polymerize on exposure to light.

**Conditions to Avoid:** Light, ignition sources, moisture, exposure to air, heat.

**Incompatibilities with Other Materials:** Metals, oxidizing agents, reducing agents, acids, bases, peroxides.

**Hazardous Decomposition Products:** Carbon monoxide, oxides of nitrogen, carbon dioxide, ammonia and/or derivatives, hydrogen gas.

**Hazardous Polymerization:** May occur.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 79-06-1: AS3325000

**LD50/LC50:**

CAS# 79-06-1:

Draize test, rabbit, eye: 100 mg/24H Moderate;

Draize test, rabbit, skin: 50 mg/3D Mild;

Draize test, rabbit, skin: 500 mg/24H Mild;

Oral, mouse: LD50 = 107 mg/kg;

Oral, rabbit: LD50 = 150 mg/kg;

Oral, rat: LD50 = 124 mg/kg;

Skin, rabbit: LD50 = 1680 uL/kg;

Skin, rat: LD50 = 400 mg/kg;

**Carcinogenicity:**

CAS# 79-06-1:

- **ACGIH:** A3 - Confirmed animal carcinogen with unknown relevance to humans
- **California:** carcinogen, initial date 1/1/90
- **NTP:** Suspect carcinogen
- **IARC:** Group 2A carcinogen

**Epidemiology:** ACGIH calls acrylamide a confirmed animal carcinogen with unknown relevance to humans. An epidemiological study involving 8854 workers, 2293 exposed to acrylamide, did not show any significant increase in cancer mortality related to acrylamide exposure.

**Teratogenicity:** See actual entry in RTECS for complete information.

**Reproductive Effects:** Adverse reproductive effects have occurred in experimental animals.

**Mutagenicity:** See actual entry in RTECS for complete information.

**Neurotoxicity:** Neurotoxic effects have occurred in humans.

**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** No data available. No information available.

**Environmental:** No information available.

**Physical:** Log P(oct): -1.24

**Other:** No information available.

## Section 13 - Disposal Considerations



## Material Safety Data Sheets, Carver Hall RM 284

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:**

CAS# 79-06-1: waste number U007.

### Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	CHEMICAL KITS	ACRYLAMIDE, SOLID
<b>Hazard Class:</b>	9	6.1
<b>UN Number:</b>	UN3316	UN2074
<b>Packing Group:</b>	II	III

### Section 15 - Regulatory Information

#### US FEDERAL

##### TSCA

CAS# 79-06-1 is listed on the TSCA inventory.

##### Health & Safety Reporting List

CAS# 79-06-1: Effective 10/4/82, Sunset 10/4/92

##### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

##### Section 12b

None of the chemicals are listed under TSCA Section 12b.

##### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

##### CERCLA Hazardous Substances and corresponding RQs

CAS# 79-06-1: 5000 lb final RQ; 2270 kg final RQ

##### SARA Section 302 Extremely Hazardous Substances

CAS# 79-06-1: 1000 lb lower threshold TPQ; 10000 lb upper threshold TP Q

##### SARA Codes

CAS # 79-06-1: immediate, delayed, sudden release of pressure, reactive.

##### Section 313

This material contains Acrylamide (CAS# 79-06-1, 100.0%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

##### Clean Air Act:

CAS# 79-06-1 is listed as a hazardous air pollutant (HAP).

## Material Safety Data Sheets, Carver Hall RM 284

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 79-06-1 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

### **California Prop 65**

#### **The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:**

WARNING: This product contains Acrylamide, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: CAS# 79-06-1: 0.2 æg/day NSRL

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

T

#### **Risk Phrases:**

R 20/21 Harmful by inhalation and in contact with skin.

R 25 Toxic if swallowed.

R 36/38 Irritating to eyes and skin.

R 43 May cause sensitization by skin contact.

R 45 May cause cancer.

R 46 May cause heritable genetic damage.

R 48/23/24/25 Toxic : danger of serious damage to health by prolonged exposure through inhalation, contact with skin and if swallowed.

R 62 Possible risk of impaired fertility.

#### **Safety Phrases:**

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 53 Avoid exposure - obtain special instructions before use.

### **WGK (Water Danger/Protection)**

CAS# 79-06-1: 3

### **Canada - DSL/NDSL**

CAS# 79-06-1 is listed on Canada's DSL List.

### **Canada - WHMIS**

This product has a WHMIS classification of D1B, D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

CAS# 79-06-1 is listed on the Canadian Ingredient Disclosure List.

# Material Safety Data Sheets, Carver Hall RM 284

FISHER SCIENTIFIC, CHEMICAL DIV. --  
TRIS(HYDROXYMETHYL)AMINOMETHANE,T370500 -- 6810-00N008680

=====  
Product Identification  
=====

Product ID:TRIS (HYDROXYMETHYL) AMINOMETHANE, T370500  
MSDS Date:04/27/1986  
FSC:6810  
NIIN:00N008680  
MSDS Number: BGSSN  
=== Responsible Party ===  
Company Name:FISHER SCIENTIFIC, CHEMICAL DIV.  
Address:1 REAGENT LANE  
City:FAIRLAWN  
State:NJ  
ZIP:07410-2802  
Info Phone Num:201-796-7100  
Emergency Phone Num:201-796-7100 (GASTON L. PILLORI)  
CAGE:1B464

==== Contractor Identification ====  
Company Name:FISHER SCIENTIFIC CO. CHEMICAL MFG DIV  
Address:1 REAGENT LANE  
Box:City:FAIRLAWN  
State:NJ  
ZIP:07410-2802  
Country:US  
Phone:201-796-7100  
CAGE:1B464

=====  
Composition/Information on Ingredients  
=====

Ingred Name:TRIS (HYDROXYMETHYL) AMINOMETHANE  
CAS:77-86-1  
RTECS #:TY2900000  
Fraction by Wt: 100%  
Other REC Limits:N/K  
OSHA PEL:N/K  
ACGIH TLV:N/K

=====  
Hazards Identification  
=====

LD50 LC50 Mixture:LD50 1210 MG/KG IV-MOUSE  
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO  
Health Hazards Acute and Chronic:SKIN: PROLONGED CONTACT MAY CAUSE  
DERMAT. EYES: PROLONGED CONTACT MAY CAUSE CONJUNCTIVITIS.  
Explanation of Carcinogenicity:NONE  
Effects of Overexposure:INHAL: MAY CAUSE COUGHING & IRRIT OF MUCOUS  
MEMBRANES. SKIN: MAY CAUSE IRRIT & PAIN. EYES: MAY CAUSE IRRIT,  
REDNESS, & PAIN. INGEST: MAY CAUSE GI IRRIT, NAUSEA, VOMITING, &  
DIARRHEA.  
Medical Cond Aggravated by Exposure:N/K

=====  
First Aid Measures  
=====

# Material Safety Data Sheets, Carver Hall RM 284

First Aid:INHAL:REMOVE TO FRESH AIR IMMED. IF NOT BRTHING, GIVE ARTF  
RESP. KEEP PERSON WARM & CALM. GET MD ATTN. SKIN: REMOVE CONTAM  
CLTHING & SHOES IMMED. WASH CONTAM AREA W/ SOAP & LG AMTS WATER FOR  
AT LEAST 15-20 MIN. GET MD ATTN. EYES: WASH IMMED W/ LG AMTS  
WATER, LIFTING UPPER & LOWER LIDS, FOR AT LEAST 15-20 MIN. GET MD  
ATTN. INGEST: GIVE 2-4 GLASSES H\*2O. INDUCE VMITING W/ FINGER. GET  
MD ATTN IMMED.

## ===== Fire Fighting Measures =====

Flash Point:SEE SUPP DATA  
Lower Limits:N/K  
Upper Limits:  
Extinguishing Media:DRY CHEM,CO:2,H\*2O SPARAY OR ALCOHOL FOAM . FOR  
LARGER FIRES USE H\*2O SPRAY,FOG OR ALCOHOL FOAM.  
Fire Fighting Procedures:MOVE CONTAINER FROM FIRE AREA IF POSS. AVOID  
BREATHING VAPORS OR DUSTS. KEEP UPWIND. FIREFIGHTERS USE NIOSH/MSHA  
APPROVED SCBA & FULL PROT EQUIP .  
Unusual Fire/Explosion Hazard:MAY BURN BUT DOES NOT IGNITE EASILY. USE  
NIOSH/MSHA APPROVED SCBA AND FULL PROTECTIVE EQUIP .

## ===== Accidental Release Measures =====

Spill Release Procedures:DO NOT TOUCH SPIILED MATL. STOP SPILL OR LEAK  
IF CAN W/O RISK. SML SPILL: TAKE UP W/ SAND OR OTHER ABSORB MATL &  
PUT IN DISPOSAL CNTNR. LG SPILL: DIKE FAR AHEAD OF SPILL FOR LATER  
DISPOSAL. KEEP UNNEC PEOPLE AWAY. ISOLATE AREA. VENTIL BEFORE  
REENTRY.  
Neutralizing Agent:N/K

## ===== Handling and Storage =====

Handling and Storage Precautions:N/K  
Other Precautions:N/K

## ===== Exposure Controls/Personal Protection =====

Respiratory Protection:HIGH LEVELS:SUPPLIED-AIR RESPIRATOR W/FULL  
FACEPIECE.SCBA W/FULL FACEPIECE. FIREFIGHTING:SCBA W/ FULL  
FACEPIECE.  
Ventilation:PROVIDE LOCAL EXHST OR GEN DILUTION VENTIL SYSTEM. CONSULT  
LOCAL SFTY/HLTH AUTHORITY IF ADDL GUIDANCE NEC .  
Protective Gloves:TO PREVENT CONTACT WITH SUBSTANCE.  
Eye Protection:CHEM WORK GOGGLES W/FACESHIELD  
Other Protective Equipment:EYE-WASH FOUNTAIN IN THE IMMED WORK AREA FOR  
EMER USE.  
Work Hygienic Practices:N/K  
Supplemental Safety and Health  
PH OF SUBSTANCE IN 0.1M AQ SOLN IS 10.36. FLASHPOINT:PRODUCT DOES NOT  
HAVE A FLASHPOINT BECAUSE IT IS A DRY PRODUCT BUT IF IT IS HEATED  
HIGH ENOUGH IT IS COMBUSTIBLE (MFR)

## ===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:426F,219C  
Melt/Freeze Pt:M.P/F.P Text:340F,171C

# Material Safety Data Sheets, Carver Hall RM 284

Decomp Temp:Decomp Text:N/K  
Vapor Pres:N/K  
Vapor Density:N/K  
Evaporation Rate & Reference:N/K  
Solubility in Water:80G/100CC @ 68F,20C  
Appearance and Odor:WHITE CRYSTALLINE SOLID

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES  
CORROSIVE TO AL, COPPER, & BRASS.  
Stability Condition to Avoid:MAY BURN BUT DOES NOT IGNITE EASILY  
Hazardous Decomposition Products:N/K (FP B/ORNL)

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSAL MUST BE IN ACCORDANCE W/ FEDERAL,  
STATE, & LOCAL REGULATIONS .

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assume responsibility for the suitability of this information to their  
particular situation.

# Material Safety Data Sheet

## Glycine

ACC# 10490

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Glycine

**Catalog Numbers:** S80028, S93253, BP381-1, BP381-5, BP381-500, G45-12, G45-212, G4512LC, G46-1, G46-12KG, G46-500, G48-12, G48-200LB, G48-212, G48-500

**Synonyms:** Aminoacetic acid; Aminoethanoic acid; Gly.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
56-40-6	Glycine	>98	200-272-2

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: white crystals.

**Caution!** May be absorbed through intact skin. May cause eye and skin irritation. May cause respiratory tract irritation.

**Target Organs:** No data found.

#### Potential Health Effects

**Eye:** May cause eye irritation.

**Skin:** May cause skin irritation. Low hazard for usual industrial handling. May be absorbed through the skin.

**Ingestion:** Ingestion of large amounts may cause gastrointestinal irritation. Low hazard for usual industrial handling.

## Material Safety Data Sheets, Carver Hall RM 284

**Inhalation:** May cause respiratory tract irritation. Low hazard for usual industrial handling.

**Chronic:** No information found.

### Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid if irritation develops or persists. Wash clothing before reuse. Flush skin with plenty of soap and water.

**Ingestion:** Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Dusts at sufficient concentrations can form explosive mixtures with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 1; Flammability: 1; Instability: 0

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container.

Clean up spills immediately, observing precautions in the Protective Equipment section.

Avoid generating dusty conditions. Provide ventilation.

### Section 7 - Handling and Storage

## Material Safety Data Sheets, Carver Hall RM 284

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid breathing dust.

**Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Glycine	none listed	none listed	none listed

**OSHA Vacated PELs:** Glycine: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

### Section 9 - Physical and Chemical Properties

**Physical State:** Crystals

**Appearance:** white

**Odor:** odorless

**pH:** 4.0 (1.4% sol.)

**Vapor Pressure:** Negligible.

**Vapor Density:** Not available.

**Evaporation Rate:** Negligible.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 232 - 236 deg C

**Decomposition Temperature:** 232 deg C

**Solubility:** Soluble.

**Specific Gravity/Density:** 1.1607 (water=1)



# Material Safety Data Sheets, Carver Hall RM 284

**Molecular Formula:**C2H5NO2

**Molecular Weight:**75.07

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Dust generation, excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents.

**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 56-40-6: MB7600000

**LD50/LC50:**

CAS# 56-40-6:

Oral, mouse: LD50 = 4920 mg/kg;

Oral, rat: LD50 = 7930 mg/kg;

Glycine is a non-essential amino acid for human development. It is the only amino acid with no asymmetric carbon.

**Carcinogenicity:**

CAS# 56-40-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** No information found

**Mutagenicity:** No information found

**Neurotoxicity:** Major inhibitory neurotransmitter.

**Other Studies:**

## Section 12 - Ecological Information

No information available.

## Section 13 - Disposal Considerations

## Material Safety Data Sheets, Carver Hall RM 284

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

### Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	Not regulated as a hazardous material	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

### Section 15 - Regulatory Information

#### US FEDERAL

##### TSCA

CAS# 56-40-6 is listed on the TSCA inventory.

##### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

##### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

##### Section 12b

None of the chemicals are listed under TSCA Section 12b.

##### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

##### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

##### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

**Section 313** No chemicals are reportable under Section 313.

##### Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

##### Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

## Material Safety Data Sheets, Carver Hall RM 284

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 56-40-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

Not available.

#### **Risk Phrases:**

#### **Safety Phrases:**

S 22 Do not breathe dust.

S 24/25 Avoid contact with skin and eyes.

### **WGK (Water Danger/Protection)**

CAS# 56-40-6: 0

### **Canada - DSL/NDSL**

CAS# 56-40-6 is listed on Canada's DSL List.

### **Canada - WHMIS**

This product has a WHMIS classification of Not controlled..

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

# Material Safety Data Sheet

## Acrylamide/Bisacrylamide

ACC# 61027

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Acrylamide/Bisacrylamide

**Catalog Numbers:** BP1406-1, BP1408-1, BP1410-1

**Synonyms:** None known.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Water	60	231-791-2
79-06-1	Acrylamide	<40	201-173-7
110-26-9	Methylenediacrylamide	<3	203-750-9

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: colorless liquid.

**Warning!** Acrylamide may cause nervous system damage. Acrylamide caused cancer and male reproductive disorders in laboratory animal tests. Harmful if swallowed, inhaled, or absorbed through the skin. Causes eye irritation. May cause allergic skin reaction. Cancer suspect agent. Light sensitive. Air sensitive. Keep refrigerated. (Store below 4°C/39°F.) Hazardous polymerization may occur.

**Target Organs:** Eyes, nervous system, reproductive system, skin.

#### Potential Health Effects

## Material Safety Data Sheets, Carver Hall RM 284

**Eye:** Causes eye irritation. Acrylamide can be absorbed through the eyes and overexposure will produce the signs and symptoms of neurotoxicity described below.

**Skin:** May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. Acrylamide is readily absorbed through unbroken skin and can cause nervous system effects (neurotoxicity). These effects can result from a single overexposure but are more likely after repeated exposures to small amounts over a period of days or weeks. Signs and symptoms of overexposure include increased sweating of the hands and feet, numbness, tingling and weakness in the extremities, unsteady gait and decreased reflexes. If the exposure route is dermal, the symptoms may be preceded by peeling and redness of the skin at the areas of exposure, normally the hands and feet.

**Ingestion:** Harmful if swallowed. May cause central, peripheral, and autonomic nervous system effects. Central nervous system effects, which appear to predominate in acute cases, are characterized by abnormal fatigue, memory difficulties, and dizziness. Peripheral neuropathy symptoms, which are more common with repeated low-dose exposure or following a latency period of up to several weeks after acute exposure can include: muscular weakness, paresthesia, numbness in hands, feet, lower legs, and lower arms, unsteadiness, and difficulties in walking and standing. Autonomic nervous system involvement is indicated by excessive sweating, peripheral vasodilation and difficulties in micturation and defecation.

**Inhalation:** Acrylamide tends to sublime (go directly from solid to vapor form) which may lead to inhalation exposure. Acrylamide can be absorbed through the lungs and overexposure will produce the signs and symptoms of neurotoxicity described above.

**Chronic:** Prolonged or repeated skin contact may cause dermatitis. May cause cancer according to animal studies. Adverse reproductive effects have been reported in animals. Prolonged or repeated exposure affects the nervous system.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Either acute or chronic exposure may lead to weak or absent reflexes, positive Romberg's sign, loss of vibration and position senses and numbness and tingling of the limbs. An early sign of toxic effects is peeling of the skin of the fingertips.

**Antidote:** Pyridoxine (vitamin B6), pyruvate, and N-acetylcysteine have been used to reduce the toxicity of acrylamide in experimental studies, but are unproven.

### Section 5 - Fire Fighting Measures

**General Information:** Pyridoxine (vitamin B6), pyruvate, and N-acetylcysteine have been

## Material Safety Data Sheets, Carver Hall RM 284

used to reduce the toxicity of acrylamide in experimental studies, but are unproven. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Use water spray to keep fire-exposed containers cool. Dust can be an explosion hazard when exposed to heat or flame. Combustible solid. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Fight fire from maximum distance or use unmanned hose holders or monitor nozzles.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or chemical foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 2; Instability: 2

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Remove all sources of ignition. Isolate area and deny entry. Provide ventilation.

### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Keep away from heat, sparks and flame. Do not ingest or inhale. Use only in a chemical fume hood.

**Storage:** Keep away from heat, sparks, and flame. Do not store in direct sunlight. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep refrigerated. (Store below 4°C/39°F.) Keep away from acids. Do not store near alkaline substances. Keep away from polymerization catalysts. Should not be exposed to temperatures above 122°F (50°C).

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Utilize a closed system process where feasible.

**Exposure Limits**

## Material Safety Data Sheets, Carver Hall RM 284

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Water	none listed	none listed	none listed
Acrylamide	0.03 mg/m <sup>3</sup> TWA (inhalable fraction and vapor); Skin - potential significant contribution to overall exposure by the cutaneous route	0.03 mg/m <sup>3</sup> TWA 60 mg/m <sup>3</sup> IDLH	0.3 mg/m <sup>3</sup> TWA
Methylenediacylamide	none listed	none listed	none listed

**OSHA Vacated PELs:** Water: No OSHA Vacated PELs are listed for this chemical.  
Acrylamide: 0.03 mg/m<sup>3</sup> TWA Methylenediacylamide: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** colorless

**Odor:** none reported

**pH:** Not available.

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** Not available.

**Decomposition Temperature:** Not available.

**Solubility:** Soluble in water

**Specific Gravity/Density:** Not available.

**Molecular Formula:** Mixture

**Molecular Weight:** Not available

## Section 10 - Stability and Reactivity

**Chemical Stability:** May polymerize on exposure to light.

**Conditions to Avoid:** Light, ignition sources, moisture, exposure to air, heat.

## Material Safety Data Sheets, Carver Hall RM 284

**Incompatibilities with Other Materials:** Metals, oxidizing agents, reducing agents, acids, bases, peroxides.

**Hazardous Decomposition Products:** Carbon monoxide, oxides of nitrogen, carbon dioxide, ammonia and/or derivatives, hydrogen gas.

**Hazardous Polymerization:** May occur.

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 7732-18-5: ZC0110000

**CAS#** 79-06-1: AS3325000

**CAS#** 110-26-9: AS3678000

**LD50/LC50:**

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

CAS# 79-06-1:

Draize test, rabbit, eye: 100 mg/24H Moderate;

Draize test, rabbit, skin: 50 mg/3D Mild;

Draize test, rabbit, skin: 500 mg/24H Mild;

Oral, mouse: LD50 = 107 mg/kg;

Oral, rabbit: LD50 = 150 mg/kg;

Oral, rat: LD50 = 124 mg/kg;

Skin, rabbit: LD50 = 1680 uL/kg;

Skin, rat: LD50 = 400 mg/kg;

CAS# 110-26-9:

Oral, mouse: LD50 = 380 mg/kg;

Oral, rat: LD50 = 390 mg/kg;

**Carcinogenicity:**

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 79-06-1:

- **ACGIH:** A3 - Confirmed Animal Carcinogen with Unknown Relevance to Humans
- **California:** carcinogen, initial date 1/1/90
- **NTP:** Suspect carcinogen
- **IARC:** Group 2A carcinogen

CAS# 110-26-9: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** ACGIH calls acrylamide a confirmed animal carcinogen with unknown relevance to humans. An epidemiological study involving 8854 workers, 2293 exposed to acrylamide, did not show any significant increase in cancer mortality related to acrylamide exposure.



## Material Safety Data Sheets, Carver Hall RM 284

**Teratogenicity:** See actual entry in RTECS for complete information.

**Reproductive Effects:** Adverse reproductive effects have occurred in experimental animals.

**Mutagenicity:** See actual entry in RTECS for complete information.

**Neurotoxicity:** Neurotoxic effects have occurred in humans.

**Other Studies:**

### Section 12 - Ecological Information

**Ecotoxicity:** No data available. No information available.

**Environmental:** No information available.

**Physical:** Log P(oct): -1.24

**Other:** No information available.

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:**

CAS# 79-06-1: waste number U007.

### Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	ACRYLAMIDE SOLUTION	ACRYLAMIDE SOLUTION
<b>Hazard Class:</b>	6.1	6.1
<b>UN Number:</b>	UN3426	UN3426
<b>Packing Group:</b>	III	III

### Section 15 - Regulatory Information

**US FEDERAL**

# Material Safety Data Sheets, Carver Hall RM 284

## **TSCA**

CAS# 7732-18-5 is listed on the TSCA inventory.

CAS# 79-06-1 is listed on the TSCA inventory.

CAS# 110-26-9 is listed on the TSCA inventory.

## **Health & Safety Reporting List**

CAS# 79-06-1: Effective 10/4/82, Sunset 10/4/92

## **Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

## **Section 12b**

None of the chemicals are listed under TSCA Section 12b.

## **TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

## **CERCLA Hazardous Substances and corresponding RQs**

CAS# 79-06-1: 5000 lb final RQ; 2270 kg final RQ

## **SARA Section 302 Extremely Hazardous Substances**

CAS# 79-06-1: 1000 lb lower threshold TPQ; 10000 lb upper threshold TPQ

## **SARA Codes**

CAS # 79-06-1: immediate, delayed, sudden release of pressure, reactive.

CAS # 110-26-9: immediate, delayed, reactive.

## **Section 313**

This material contains Acrylamide (CAS# 79-06-1, <40%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

## **Clean Air Act:**

CAS# 79-06-1 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

## **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

## **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

## **STATE**

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 79-06-1 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 110-26-9 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

## **California Prop 65**

WARNING: This product contains Acrylamide, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: CAS# 79-06-1: 0.2 µg/day NSRL

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

T

#### **Risk Phrases:**

R 20/21 Harmful by inhalation and in contact with skin.

R 25 Toxic if swallowed.

## Material Safety Data Sheets, Carver Hall RM 284

- R 36/38 Irritating to eyes and skin.
- R 43 May cause sensitization by skin contact.
- R 45 May cause cancer.
- R 46 May cause heritable genetic damage.
- R 48/23/24/25 Toxic : danger of serious damage to health by prolonged exposure through inhalation, contact with skin and if swallowed.
- R 62 Possible risk of impaired fertility.

### **Safety Phrases:**

- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
- S 53 Avoid exposure - obtain special instructions before use.

### **WGK (Water Danger/Protection)**

- CAS# 7732-18-5: No information available.
- CAS# 79-06-1: 3
- CAS# 110-26-9: 2

### **Canada - DSL/NDSL**

- CAS# 7732-18-5 is listed on Canada's DSL List.
- CAS# 79-06-1 is listed on Canada's DSL List.
- CAS# 110-26-9 is listed on Canada's DSL List.

### **Canada - WHMIS**

This product has a WHMIS classification of D1B, D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

- CAS# 79-06-1 is listed on the Canadian Ingredient Disclosure List.

# Material Safety Data Sheets, Carver Hall RM 284

NATIONAL DIAGNOSTICS INC -- COOMASIE BLUE R-250, HS-604 -- 6810-00N067402

=====  
Product Identification  
=====

Product ID:COOMASIE BLUE R-250, HS-604  
MSDS Date:09/02/1987  
FSC:6810  
NIIN:00N067402  
MSDS Number: CBFTJ  
=== Responsible Party ===  
Company Name:NATIONAL DIAGNOSTICS INC  
Address:1013-1017 KENNEDY BLVD  
City:MANVILLE  
State:NJ  
ZIP:08835  
Country:US  
Info Phone Num:201-722-8600; 800-526-3867  
Emergency Phone Num:201-722-8600; 800-526-3867  
CAGE:58215

==== Contractor Identification ===  
Company Name:NATIONAL DIAGNOSTICS INC  
Address:1013-1017 KENNEDY BLVD  
Box:City:MANVILLE  
State:NJ  
ZIP:08835  
Country:US  
CAGE:58215

=====  
Composition/Information on Ingredients  
=====

Ingred Name:BLUE DYE COMPONENT; (ACID BLUE 83, C.I. #42660, COOMASSIE  
BRILLIANT BLUE R-250)  
OSHA PEL:N/K  
ACGIH TLV:N/K

=====  
Hazards Identification  
=====

LD50 LC50 Mixture:NONE SPECIFIED BY MANUFACTURER.  
Routes of Entry: Inhalation:NO Skin:YES Ingestion:NO  
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO  
Health Hazards Acute and Chronic:NO SPECIFIC ACUTE HAZARDS ARE KNOWN.  
ANY MATERIAL, HOWEVER, THAT GETS INTO THE EYES OR ON THE SKIN MAY  
BE IRRITATING.  
Explanation of Carcinogenicity:NOT RELEVANT  
Effects of Overexposure:SEE HEALTH HAZARDS.  
Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

=====  
First Aid Measures  
=====

First Aid:INHALATION:REMOVE TO FRESH AIR. GET MEDICAL ATTENTION.  
INGESTION:GET IMMEDIATE MEDICAL ATTENTION. SKIN:WASH WITH SOAP AND  
WATER. IF IRRITATION DEVELOPS, GET MEDICAL ATTENTION.  
EYES:IMMEDIATELY FLUSH W ITH LARGE AMOUNTS OF WATER FOR AT LEAST15  
MINUTES AND THEN GET MEDICAL ATTENTION.

=====  
Fire Fighting Measures  
=====

# Material Safety Data Sheets, Carver Hall RM 284

Extinguishing Media:WATER, DRY CHEMICAL, CO\*2, FOAM.

Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:PROD IS PRDCED TO MIN DUSTING, BUT SINCE MOST ORG PRODS AS DUSTS CAN FORM EXPLO MIX W/AIR, HNDL TO AVOID DUSTING CNDTNS. PROD NOT CONSIDERED FIRE HAZ, (SUPDAT)

## ===== Accidental Release Measures =====

Spill Release Procedures:SWEEP UP SPILL AND FLUSH REMAINDER WITH WATER. FOLLOW ALL PRECAUTIONS FOR HANDLING THIS PRODUCT WHEN DEALING WITH SPILLS.

Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

## ===== Handling and Storage =====

Handling and Storage Precautions:STORE WITH CONTAINER CLOSED IN A DRY PLACE AWAY FROM EXCESSIVE HEAT AND OPEN FLAME.

Other Precautions:NONE SPECIFIED BY MANUFACTURER.

## ===== Exposure Controls/Personal Protection =====

Respiratory Protection:APPROPRIATE NIOSH/MSHA APPROVED RESPIRATOR FOR DUST SHOULD BE WORN IF NEEDED.

Ventilation:USE OF LOCAL VENTILATION IS SUGGESTED WHEN USING THIS PRODUCT. GOOD GENERAL VENTILATION, HOWEVER, IS ACCEPTABLE.

Protective Gloves:IMPERMEABLE RUBBER OR PLASTIC GLOVES.

Eye Protection:ANSI APPROVED CHEM WORKERS GOGGS .

Other Protective Equipment:ANSI APPROVED EMERGENCY EYE WASH AND DELUGE SHOWER . WEAR A RUBBER OR PLASTIC APRON.

Work Hygienic Practices:NONE SPECIFIED BY MANUFACTURER.

Supplemental Safety and Health

SOL IN H\*2O:APPROXIMATELY 0.6 G/100 ML @ 25C. EXPLO HAZS:BUT MAY BURN OR SMOLDER IF IGNITED.

## ===== Physical/Chemical Properties =====

Solubility in Water:SUPP DATA

Appearance and Odor:LIGHT VIOLET-GRAY POWDER; FAINTLY SWEET ODOR.

## ===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

NONE SPECIFIED BY MANUFACTURER.

Stability Condition to Avoid:NONE SPECIFIED BY MANUFACTURER.

Hazardous Decomposition Products:LIKE ANY OTHER ORG PROD COMBUST WILL PRDCE CO\*2 AND MAY PRDCE CO. OXIDES OF NITROGEN & SULFUR MAY ALSO BE PRDCED.

## ===== Disposal Considerations =====

Waste Disposal Methods:WASTE MATERIAL MAY BE DUMPED OR INCINERATED UNDER CONDITIONS WHICH MEET ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL CONTROL REGULATIONS.

Disclaimer (provided with this information by the compiling agencies): This information is formulated for use by elements of the Department

## Material Safety Data Sheets, Carver Hall RM 284

of Defense. The United States of America in no manner whatsoever, expressly or implied, warrants this information to be accurate and disclaims all liability for its use. Any person utilizing this document should seek competent professional advice to verify and assume responsibility for the suitability of this information to their particular situation.

# Material Safety Data Sheets, Carver Hall RM 284

## GAF CHEMICALS CORP -- IGEPAL CO-630 SURFACTANT -- 6850-00N010136

=====  
Product Identification  
=====

Product ID:IGEPAL CO-630 SURFACTANT  
MSDS Date:12/01/1988  
FSC:6850  
NIIN:00N010136  
MSDS Number: CBVQH  
=== Responsible Party ===  
Company Name:GAF CHEMICALS CORP  
Address:1361 ALPS RD  
City:WAYNE  
State:NJ  
ZIP:07470  
Country:US  
Info Phone Num:201-628-3000  
Emergency Phone Num:800-228-5635;800-424-9300 (CHEMTREC)  
CAGE:46575  
=== Contractor Identification ===  
Company Name:GAF CHEMICALS CORP, SUB OF GAF CORP  
Address:1361 APLS RD  
Box:City:WAYNE  
State:NJ  
ZIP:07470  
Country:US  
Phone:201-628-3341  
CAGE:46575

=====  
Composition/Information on Ingredients  
=====

Ingred Name:GLYCOLS, POLYETHYLENE, MONO (NONYLPHENYL) ETHER;  
(POLY (OXY-1,2-ETHANEDIYL), ALPHA (NONYLPHENYL)-OMEGA HYDROXY-)  
CAS:9016-45-9  
RTECS #:MD0900000  
OSHA PEL:N/K  
ACGIH TLV:N/K

Ingred Name:ETHYLENE OXIDE (SARA 302/313) (CERCLA)  
CAS:75-21-8  
RTECS #:KX2450000  
Fraction by Wt: <0.0002%  
OSHA PEL:1 PPM  
ACGIH TLV:1 PPM  
EPA Rpt Qty:10 LBS  
DOT Rpt Qty:10 LBS

Ingred Name:HNDLG/STOR PRECS: IN THIS PROD. RPTD EXPOS MAY BE HARMFUL.  
IF CONTROL PROCEDURES ARE FOLLOWED, AIR SPACE CONCS (ING 4)  
RTECS #:9999999ZZ

Ingred Name:ING 3: SHOULD BE BELOW THE OSHA ESTABLISHED "ACTION LEVEL."  
RTECS #:9999999ZZ

Ingred Name:VENT: ARE BEING OPENED.  
RTECS #:9999999ZZ

# Material Safety Data Sheets, Carver Hall RM 284

Ingred Name:EYE PROT: & FULL LENGTH FACESHIELD .  
RTECS #:9999999ZZ

## ==== Hazards Identification =====

LD50 LC50 Mixture:LD50: (ORAL, RAT) 3000 MG/KG  
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES  
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO  
Health Hazards Acute and Chronic:INGEST:NO EFTS OF EXPOS EXPECTED.  
INHAL:IF MISTED, CAUSES IRRIT OF MUC MEMBS, NOSE, EYES & THROAT,  
COUGH, DFCLTY BRTHG. SKIN:NO EFTS OF EXPOS EXPECTED DUE TO CNTCT.  
MAY POSS CAUSE IRRIT/DERM IN SOME I NDIVIDUALS UPON PRLNGD CNTCT.  
EYES:CAUSES PAINFUL STINGING/BURNING OF EYES & LIDS. WATERING EYES,  
CONJ, (EFTS OF OVEREXP)  
Explanation of Carcinogenicity:NOT RELEVANT  
Effects of Overexposure:HLTH HAZ: OPAQUENESS OF CORNEA, POSS LEADING TO  
LOSS OF SIGHT. NTP LISTS ETHYLENE OXIDE (EO) IN 4TH ANNUAL RPT ON  
CARCINS REFERENCING IARC RPT PUBLISHED IN 1984. RPT STATES THERE IS  
SUFFICIENT EVID FO R CARCIN TO EXPERIMENTAL ANIMALS, HOWEVER, WHEN  
PROD IS HNDLD I/A/W OCCUP CTL PROCS NEITHER ACUTE NOR LONG TERM  
(SUPDAT)  
Medical Cond Aggravated by Exposure:NO DATA FOUND.

## ==== First Aid Measures =====

First Aid:INGEST:GEN PREC MEASURES SUGGEST INDUCING VOMIT IMMED BY  
GIVING 2 GLASSES OF WATER & STICKING FINGER DOWN THROAT. NEVER GIVE  
ANYTHING BY MOUTH TO UNCON PERSON. CALL MD. INHAL: REMOVE TO FRESH  
AIR. IF NOT BRTHG GIVE ARTF RESP, PREF MOUTH-TO-MOUTH. IF BRTHG IS  
DFCLT, GIVE OXYGEN. CALL MD. SKIN: FOR ALL FOREIGN MATLS, WASH  
AFTER EXPOS. EYES: IMMED FLUSH W/PLENTY OF WATER FOR AT LEAST 15  
MIN. CALL MD.

## ==== Fire Fighting Measures =====

Flash Point Method:PMCC  
Flash Point:>535F,>279C  
Extinguishing Media:USE MEDIA PROPER TO PRIMARY CAUSE OF FIRE.  
Fire Fighting Procedures:USE NIOSH/MSHA APPROVED SCBA AND FULL  
PROTECTIVE EQUIPMENT .  
Unusual Fire/Explosion Hazard:NONE KNOWN.

## ==== Accidental Release Measures =====

Spill Release Procedures:ABSORB WITH EARTH, SAND OR SIMILAR INERT  
MATERIAL AND DISPOSE OF WITH SOLID WASTE ACCORDING TO FEDERAL,  
STATE AND LOCAL REGULATIONS. FLUSH SPILL AREA WITH WATER.  
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

## ==== Handling and Storage =====

Handling and Storage Precautions:DO NOT GET IN EYES, WASH THORO AFTER  
HNDLG. AVOID BRTHG MIST. USE W/ADEQ VENT FOR MISTING OPERATIONS.  
EO, CANCER & REPRO HAZ, MAY BE PRESENT (ING 3)  
Other Precautions:PROT MEASURES DURING REPAIR/MAINT OF EQUIP:WASH EQUIP  
THORO W/STEAM OR WARM WATER UNTIL CLEAN. CHECK FOR FLAMMS W/"EXPLO  
METER" & ALSO CHECK OXYGEN LEVEL W/OXYGEN METER. IN ALL CASES



# Material Safety Data Sheets, Carver Hall RM 284

FOLLOW GOOD INDUS TRIAL SFTY PRACTS BEFORE ENTERING EQUIP.

## ===== ===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE NIOSH/MSHA APPROVED RESPIRATOR IF ADEQUATE VENTILATION CANNOT BE PROVIDED AT ANY TIME OR IF THERE IS A POSSIBILITY OF EXCESSIVE CONTACT WITH HEADSPACE ABOVE THE DRUM OR TANKWAGON.

Ventilation:TRACES OF EO COULD ACCUM IN HEADSPACE OF STORAGE/TRANSPORT VESSELS. USE W/ADEQ VENT ESP WHERE DRUMS/TANKWAGONS (ING 5)

Protective Gloves:IMPERVIOUS GLOVES .

Eye Protection:ANSI APPRVD CHEM WORKERS GOGGS (ING 6)

Other Protective Equipment:ANSI APPROVED EYE WASH & DELUGE SHOWER .

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health

PH OF SOLN: 5-9 10% SOLN IN DISTILLED WATER. % VOLAT: 0.50 WATER-MAX.

EFTS OF OVEREXP: HAZ FROM EO IS EXPECTED. EO APPEARS ON THE NAVY LIST OF OCCUP CHEM REPRO HAZS. SEEK CONSULTATION FROM APPROP HLTH PROFESSINALS CONCERNING LATEST HAZ LIST INFO & SAFE HANDLG & EXPOS INFO .

## ===== ===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:>392F,>200C

Vapor Pres:NOT VOLAT

Vapor Density:NOT VOLAT

Spec Gravity:1.06 (H\*20=1)

pH:SUPDAT

Evaporation Rate & Reference:NOT VOLATILE

Solubility in Water:SOLUBLE

Appearance and Odor:FREE FLOWING, SLIGHTLY VISCOUS LIQUID; AROMATIC ODOR.

Percent Volatiles by Volume:SUDPAT

## ===== ===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZING OR REDUCING AGENTS.

Stability Condition to Avoid:NONE KNOWN.

Hazardous Decomposition Products:ACRID SMOKE AND FUMES EMITTED WHEN HEATED TO DECOMPOSITION.

## ===== ===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF WITH LIQUID WASTE ACCORDING TO FEDERAL, STATE AND LOCAL REGULATIONS.

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# Material Safety Data Sheets, Carver Hall RM 284

DOW CHEMICAL CO -- METHOCEL A15-LV PREMIUM METHYLCELLULOSE, 53952 --  
6850-00N056376

===== Product Identification =====

Product ID:METHOCEL A15-LV PREMIUM METHYLCELLULOSE, 53952  
MSDS Date:02/10/1992  
FSC:6850  
NIIN:00N056376  
MSDS Number: BWFYC  
=== Responsible Party ===  
Company Name:DOW CHEMICAL CO  
Address:2030 DOW CNTR  
City:MIDLAND  
State:MI  
ZIP:48674  
Country:US  
Info Phone Num:517-636-4410  
Emergency Phone Num:517-636-4400  
CAGE:0BG07

=== Contractor Identification ===

Company Name:DOW CHEMICAL CO THE  
Address:1801 DOW CTR  
City:MIDLAND  
State:MI  
ZIP:48674-1801  
Country:US  
Phone:517-636-4400 / 800-258-2436  
CAGE:0BG07  
Company Name:DOW CHEMICAL U.S.A.  
City:MIDLAND  
State:MI  
ZIP:48674  
Country:US  
Phone:517-636-4400  
CAGE:71983

===== Composition/Information on Ingredients =====

Ingred Name:CELLULOSE, METHYL ETHER (1/2%); (METHYLCELLULOSE)  
CAS:9004-67-5  
RTECS #:FJ5959000  
Fraction by Wt: 85-99%  
OSHA PEL:N/K  
ACGIH TLV:N/K

Ingred Name:WATER  
CAS:7732-18-5  
RTECS #:ZC0110000  
Fraction by Wt: 1-10%  
OSHA PEL:N/K  
ACGIH TLV:N/K

# Material Safety Data Sheets, Carver Hall RM 284

Ingred Name:SODIUM CHLORIDE  
CAS:7647-14-5  
RTECS #:VZ4725000  
Fraction by Wt: 0.5-5%  
OSHA PEL:N/K  
ACGIH TLV:N/K

## ==== Hazards Identification =====

LD50 LC50 Mixture:LD50 (ORAL,RAT):>10,000 MG.KG.  
Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES  
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO  
Health Hazards Acute and Chronic:EYE:SOLID/DUST MAY CAUSE IRRIT/CORNEAL  
INJURY DUE TO MECH ACTION. SKIN:ESSENTIALLY NONIRRIT. SKIN  
ABSORPTION:SINGLE PRLNGD EXPOS IS NOT LIKELY TO RSLT IN MATL BEING  
ABSORBED THRU SKIN IN HARMFUL AMTS. INGEST:SINGLE DOSE ORAL TOX IS  
LOW. NOHAZS ANTICIPATED FROM INGEST INCIDENTAL TO INDUS EXPOS.(EFTS  
OF OVEREXPOS)  
Explanation of Carcinogenicity:NOT RELEVANT  
Effects of Overexposure:HLTH HAZS:INHAL:SINGLE EXPOS TO DUST IS NOT  
LIKELY TO BE HAZ.  
Medical Cond Aggravated by Exposure:NONE SPECIFIED BY MANUFACTURER.

## ==== First Aid Measures =====

First Aid:INGEST:CALL MD IMMEDIATELY . INHAL:REMOVE TO FRESH AIR.  
SUPPORT BREATHING (GIVE O\*2/ARTF RESP) . SKIN:FLUSH W/COPIOUS  
AMOUNTS OF WATER. CALL MD . EYES:IRRIGATE IMMEDIATELY WITH WATER  
FOR AT LEAST 15 MINUTES. MECHANICAL EFFECTS ONLY.

## ==== Fire Fighting Measures =====

Extinguishing Media:WATER FOG.  
Fire Fighting Procedures:WEAR NIOSH/MSHA APPROVED SCBA & FULL  
PROTECTIVE EQUIPMENT .  
Unusual Fire/Explosion Hazard:MINIMUM EXPLOSIVE DUST CONCENTRATION IS  
0.03 OZ/CU FT. SIMILAR TO FLOUR OR GRAIN DUSTS; KEEP CLOUDS OF SUCH  
DUST AWAY FROM POSSIBLE IGNITION SOURCES.

## ==== Accidental Release Measures =====

Spill Release Procedures:SWEEP UP IF POSSIBLE, OR DISCARD USING  
DISPOSAL METHOD.  
Neutralizing Agent:NONE SPECIFIED BY MANUFACTURER.

## ==== Handling and Storage =====

Handling and Storage Precautions:CELLULOSE ETHERS ARE WATER-SOLUBLE  
POLYMERS WHICH FORM AQUEOUS DISPERSIONS BY SWELLING & SUCCESSIVE  
HYDRATION OF THEIR STRUCTURAL LAYERS.  
Other Precautions:THERE IS NO SHARP SOL LIM. CAUTION:(1)UNDER CERTAIN  
CNDTNS A FINE DUST OF MATL IN AIR MAY CAUSE A DUST EXPLO WHEN EXPOS  
TO HEAT, SPARKS & OPEN FLAME. (2)IF MATL SPILLS AND GETS WET, COULD  
CAUSE SLIPPI NG HAZARD.

## ==== Exposure Controls/Personal Protection =====

# Material Safety Data Sheets, Carver Hall RM 284

Respiratory Protection:IN DUSTY ATMOSPHERES, USE NIOSH/MSHA APPROVED DUST RESPIRATOR.

Ventilation:PROVIDE GENERAL AND/OR LOCAL EXHAUST VENTILATION TO CONTROL AIRBORNE LEVELS BELOW THE EXPOSURE GUIDELINES.

Protective Gloves:IMPERVIOUS GLOVES .

Eye Protection:USE SAFETY GLASSES. IF THERE IS (SUPDAT)

Other Protective Equipment:NO PRECAUTIONS OTHER THAN CLEAN BODY-COVERING CLOTHING SHOULD BE NEEDED.

Work Hygienic Practices:USE REASONABLE CAUTION AND PERSONAL CLEANLINESS.

Supplemental Safety and Health

WASTE DISP METH:USE, HANDLING, TREATMENT, STORAGE, DISPOSAL AND TRANSPORTATION OF USED CHEMICALS. EYE PROT:A POTENTIAL FOR EXPOSURE TO PARTICLES WHICH COULD CAUSE MECHANICAL INJURY TO THE EYE, WEAR CH EMICAL GOGGLES.

## ===== Physical/Chemical Properties =====

Solubility in Water:SOLUBLE

Appearance and Odor:WHITE TO SLIGHTLY OFF-WHITE FREE-FLOWING POWDER. NO ODOR AVAILABLE.

## ===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

OXIDIZING MATERIAL.

Stability Condition to Avoid:AVOID DUST CLOUDS OR LAYERS.

Hazardous Decomposition Products:SAME AS WOOD OR PAPER.

## ===== Disposal Considerations =====

Waste Disposal Methods:PREF METH IS TO DISP IN LANDFILL. DISP CAN ALSO BE ACCOMPLISHED BY INCIN UNDER CONTROLLED CNDTNS TO ELIM DUST EXPLO. IN BOTH METHS, DISP TECHNIQUES SHOULD BE IN COMPLIANCE W/APPLIC FED, STATE & LOC LA WS & REGS REGARDING MANAGEMENT, (SUP DAT)

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# Material Safety Data Sheet

## Dodecyltrimethylammonium bromide

ACC# 07405

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Dodecyltrimethylammonium bromide

**Catalog Numbers:** AC409310000, AC409310250, AC409311000, EK1361211

**Synonyms:** 1-Dodecanaminium, N,N,N-trimethyl-, bromide; Quaternary ammonium compound; Cationic detergent.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
1119-94-4	Dodecyltrimethylammonium bromide	99	214-290-3

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: white to light yellow powder.

**Danger!** Causes severe eye irritation and possible injury. Harmful if swallowed, inhaled, or absorbed through the skin. Causes skin and respiratory tract irritation. Hygroscopic (absorbs moisture from the air).

**Target Organs:** Respiratory system, gastrointestinal system, eyes, skin.

#### Potential Health Effects

**Eye:** Causes severe eye irritation and possible burns.

**Skin:** Causes skin irritation. May cause skin burns. May be harmful if absorbed through the skin.

**Ingestion:** Harmful if swallowed. May cause irritation of the digestive tract and possible

## Material Safety Data Sheets, Carver Hall RM 284

burns. If ingested, concentrated solutions (> 7.5%) of quaternary ammonium compounds may result in corrosive burns of mouth, pharynx, and esophagus. (Meditext) After swallowing: CNS disorders, agitation, spasms, cardiovascular disorders, depressed respiration. (Merck)

**Inhalation:** Causes respiratory tract irritation. May be harmful if inhaled.

**Chronic:** No information found.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

**Ingestion:** If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Dust from this material can form explosive organic dust cloud.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 3; Flammability: 1; Instability: 0

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Do not let this chemical enter the environment.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Keep from contact with moist air and steam. Do not breathe dust. Do not get in eyes. Avoid contact with skin and clothing.

**Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Dodecyltrimethylammonium bromide	none listed	none listed	none listed

**OSHA Vacated PELs:** Dodecyltrimethylammonium bromide: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Powder

**Appearance:** white to light yellow

**Odor:** odorless

**pH:** Not available.

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

## Material Safety Data Sheets, Carver Hall RM 284

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 246 deg C (dec)

**Decomposition Temperature:** > 246 deg C

**Solubility:** Not available.

**Specific Gravity/Density:** Not available.

**Molecular Formula:** C<sub>15</sub>H<sub>34</sub>BrN

**Molecular Weight:** 308.34

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable at room temperature in closed containers under normal storage and handling conditions. Hygroscopic: absorbs moisture or water from the air.

**Conditions to Avoid:** Dust generation, moisture, excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents.

**Hazardous Decomposition Products:** Carbon monoxide, oxides of nitrogen, carbon dioxide, hydrogen bromide.

**Hazardous Polymerization:** Has not been reported

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 1119-94-4: BQ3195000

**LD50/LC50:**

Not available.

Oral, rat: LD50 = 200-1000 mg/kg. Dermal LDLo rabbit: 800 mg/kg (RTECS).

**Carcinogenicity:**

CAS# 1119-94-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information available.

**Teratogenicity:** No information available.

**Reproductive Effects:** No information available.

**Mutagenicity:** No information available.

**Neurotoxicity:** No information available.

**Other Studies:**

### Section 12 - Ecological Information

No information available.



## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	NOT REGULATED FOR DOMESTIC TRANSPORT	Environmentally Hazardous Substance, Sol
<b>Hazard Class:</b>	XCP	9
<b>UN Number:</b>		UN3077
<b>Packing Group:</b>		III

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 1119-94-4 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

#### SARA Codes

CAS # 1119-94-4: immediate.

**Section 313** No chemicals are reportable under Section 313.

#### Clean Air Act:

## Material Safety Data Sheets, Carver Hall RM 284

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 1119-94-4 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

XN N

#### **Risk Phrases:**

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R 37/38 Irritating to respiratory system and skin.

R 41 Risk of serious damage to eyes.

R 50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

#### **Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 39 Wear eye/face protection.

S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

### **WGK (Water Danger/Protection)**

CAS# 1119-94-4: No information available.

### **Canada - DSL/NDSL**

CAS# 1119-94-4 is listed on Canada's NDSL List.

### **Canada - WHMIS**

This product has a WHMIS classification of D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

# Material Safety Data Sheet

## Hexadecyltrimethylammonium bromide

ACC# 10815

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Hexadecyltrimethylammonium bromide

**Catalog Numbers:** AC227160000, AC227160100, AC227160250, AC227161000, AC227165000, NC9669840, O3042-500

**Synonyms:** Cetrimide; Cetrimonium bromide; Palmityltrimethylammonium bromide; N,N,N-Trimethyl-1-hexadecanaminium bromide; Cetyltrimethylammonium bromide; Cationic detergent; Quaternary ammonium compound.; CTABr

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
57-09-0	Hexadecyltrimethylammonium bromide	>99	200-311-3

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: white crystalline powder.

**Warning!** Harmful if swallowed. Causes eye, skin, and respiratory tract irritation. May cause allergic skin reaction. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. May cause cardiac disturbances. May cause central nervous system effects. May cause reproductive and fetal effects.

**Target Organs:** Central nervous system, respiratory system, cardiovascular system, eyes, skin.

#### Potential Health Effects

## Material Safety Data Sheets, Carver Hall RM 284

**Eye:** Causes eye irritation. May result in corneal injury. Severe eye injury results from exposure to 15% solution. (Micromedex)

**Skin:** Causes skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May be harmful if absorbed through the skin. Dermal necrosis following application of 12-17.5% solution and powder. (Micromedex)

**Ingestion:** Harmful if swallowed. May cause severe gastrointestinal tract irritation with nausea, vomiting and possible burns.

**Inhalation:** Causes respiratory tract irritation. May cause burns to the respiratory tract. May be harmful if inhaled. May cause cardiac abnormalities. May cause central nervous system effects characterized by apathy, mental confusion, blurred vision, and tremors.

**Chronic:** Repeated exposure may cause sensitization dermatitis.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid immediately.

**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

**Ingestion:** If swallowed, do NOT induce vomiting. Get medical aid immediately. If victim is fully conscious, give a cupful of water. Never give anything by mouth to an unconscious person.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Dusts at sufficient concentrations can form explosive mixtures with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:** Use water spray, dry chemical, or carbon dioxide.

**Flash Point:** Not applicable.

**Autoignition Temperature:** 290 deg C ( 554.00 deg F)

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 1; Instability: 0

### Section 6 - Accidental Release Measures

## Material Safety Data Sheets, Carver Hall RM 284

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Carefully scoop up and place into appropriate disposal container. Provide ventilation. Do not let this chemical enter the environment.

### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Do not breathe dust. Do not get in eyes. Avoid contact with skin and clothing.

**Storage:** Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Hexadecyltrimethylammonium bromide	none listed	none listed	none listed

**OSHA Vacated PELs:** Hexadecyltrimethylammonium bromide: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Nitrile or Neoprene gloves are recommended.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### Section 9 - Physical and Chemical Properties

## Material Safety Data Sheets, Carver Hall RM 284

**Physical State:** Crystalline powder

**Appearance:** white

**Odor:** weak odor

**pH:** 5 - 7 (10 g/l water (20°C))

**Vapor Pressure:** Negligible.

**Vapor Density:** Not available.

**Evaporation Rate:** Negligible.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 250 deg C (dec)

**Decomposition Temperature:** > 210 deg C

**Solubility:** 13 g/l water (20°C)

**Specific Gravity/Density:** Not available.

**Molecular Formula:** C<sub>19</sub>H<sub>42</sub>BrN

**Molecular Weight:** 364.45

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable. However, may decompose if heated. Hygroscopic: absorbs moisture or water from the air.

**Conditions to Avoid:** Dust generation, excess heat, exposure to moist air or water.

**Incompatibilities with Other Materials:** Strong oxidizing agents, strong bases.

**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, carbon dioxide, hydrogen bromide.

**Hazardous Polymerization:** Will not occur.

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 57-09-0: BQ7875000

**LD50/LC50:**

CAS# 57-09-0:

Draize test, rabbit, eye: 450 mg Severe;

Oral, rat: LD50 = 410 mg/kg;

**Carcinogenicity:**

CAS# 57-09-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information available.

**Teratogenicity:** Embryo or Fetus: Stunted fetus, ipr-mouse TDLo=35mg/kg. Specific

Developmental Abnormalities: Craniofacial and Musculoskeletal, ipr-mouse

TDLo=10500ug/kg.

**Reproductive Effects:** Fertility: Post-implantation mortality, ipr-mouse TDLo=35mg/kg.

**Mutagenicity:** No information available.

## Material Safety Data Sheets, Carver Hall RM 284

**Neurotoxicity:** No information available.

**Other Studies:**

### Section 12 - Ecological Information

No information available.

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

### Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	CORROSIVE SOLID, ACIDIC, ORGANIC, N.O.S.	CORROSIVE SOLID, ACIDIC, ORGANIC,
<b>Hazard Class:</b>	9	9
<b>UN Number:</b>	UN3077	UN3077
<b>Packing Group:</b>	III	III
<b>Additional Info:</b>		N.O.S.

### Section 15 - Regulatory Information

#### US FEDERAL

##### TSCA

CAS# 57-09-0 is listed on the TSCA inventory.

##### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

##### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

# Material Safety Data Sheets, Carver Hall RM 284

## **Section 12b**

None of the chemicals are listed under TSCA Section 12b.

## **TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

## **CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RQ.

## **SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

## **SARA Codes**

CAS # 57-09-0: immediate.

## **Section 313** No chemicals are reportable under Section 313.

## **Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

## **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

## **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

## **STATE**

CAS# 57-09-0 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

## **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

XN N

#### **Risk Phrases:**

R 22 Harmful if swallowed.

R 36/37/38 Irritating to eyes, respiratory system and skin.

R 50 Very toxic to aquatic organisms.

#### **Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 37/39 Wear suitable gloves and eye/face protection.

S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

### **WGK (Water Danger/Protection)**

CAS# 57-09-0: 3

### **Canada - DSL/NDSL**

CAS# 57-09-0 is listed on Canada's DSL List.

### **Canada - WHMIS**

This product has a WHMIS classification of D2B.

This product has been classified in accordance with the hazard criteria of the Controlled



## Material Safety Data Sheets, Carver Hall RM 284

Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

# Material Safety Data Sheet

## Glycerol

ACC# 96127

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Glycerol

**Catalog Numbers:** AC158920000, AC158920200, 15892-0010, 15892-0025, 15892-0250, G33-1, G33-1LC, G33-20, G33-200, G33-4, G33-4LC, G33-500, G33P-200, NC9581172

**Synonyms:** Glycerol; 1,2,3-Propanetriol; Glyceritol; Glycic Alcohol; 1,2,3-Trihydroxypropane; 1,2,3-Propanetriol

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
56-81-5	Glycerol	99.0	200-289-5

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: Clear liquid.

**Caution!** May cause eye, skin, and respiratory tract irritation. This is expected to be a low hazard for usual industrial handling.

**Target Organs:** None known.

#### Potential Health Effects

**Eye:** May cause eye irritation.

**Skin:** May cause skin irritation. Low hazard for usual industrial handling.

**Ingestion:** Ingestion of large amounts may cause gastrointestinal irritation. Low hazard for usual industrial handling. May cause headache.

## Material Safety Data Sheets, Carver Hall RM 284

**Inhalation:** Low hazard for usual industrial handling. Inhalation of a mist of this material may cause respiratory tract irritation.

**Chronic:** No information found.

### Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. If irritation develops, get medical aid.

**Skin:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists. Wash clothing before reuse.

**Ingestion:** Never give anything by mouth to an unconscious person. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water. Get medical aid if irritation or symptoms occur.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. Containers may explode when heated.

**Extinguishing Media:** Use water spray to cool fire-exposed containers. Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** 193 deg C ( 379.40 deg F)

**Autoignition Temperature:** 400 deg C ( 752.00 deg F)

**Explosion Limits, Lower:** 1.1

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 0; Flammability: 1; Instability: 0

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Avoid runoff into storm sewers and ditches which lead to waterways.

# Material Safety Data Sheets, Carver Hall RM 284

Clean up spills immediately, observing precautions in the Protective Equipment section. Remove all sources of ignition. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Wash clothing before reuse.

**Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. No special precautions indicated.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Glycerol	10 mg/m <sup>3</sup> TWA	none listed	15 mg/m <sup>3</sup> TWA (total); 5 mg/m <sup>3</sup> TWA (respirable fraction)

**OSHA Vacated PELs:** Glycerol: 10 mg/m<sup>3</sup> TWA (total dust); 5 mg/m<sup>3</sup> TWA (respirable fraction)

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to minimize contact with skin.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** Clear

## Material Safety Data Sheets, Carver Hall RM 284

**Odor:** faint odor

**pH:** Not available.

**Vapor Pressure:** 0.003 mbar @ 50 deg C

**Vapor Density:** 3.17 (H<sub>2</sub>O=1)

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** 290 deg C

**Freezing/Melting Point:** -6.7 deg C

**Decomposition Temperature:** 290 deg C

**Solubility:** Miscible in water. Insol. in chloroform,

**Specific Gravity/Density:** 1.4746

**Molecular Formula:** C<sub>3</sub>H<sub>8</sub>O<sub>3</sub>

**Molecular Weight:** 92.05

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable.

**Conditions to Avoid:** Incompatible materials, ignition sources, excess heat.

**Incompatibilities with Other Materials:** Not available.

**Hazardous Decomposition Products:** Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.

**Hazardous Polymerization:** Will not occur.

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 56-81-5: MA8050000

**LD50/LC50:**

CAS# 56-81-5:

Draize test, rabbit, eye: 126 mg Mild;

Draize test, rabbit, eye: 500 mg/24H Mild;

Draize test, rabbit, skin: 500 mg/24H Mild;

Inhalation, rat: LC50 = >570 mg/m<sup>3</sup>/1H;

Oral, mouse: LD50 = 4090 mg/kg;

Oral, rabbit: LD50 = 27 gm/kg;

Oral, rat: LD50 = 12600 mg/kg;

Skin, rabbit: LD50 = >10 gm/kg;

**Carcinogenicity:**

CAS# 56-81-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information available.

**Teratogenicity:** No information available.

**Reproductive Effects:** No information available.

# Material Safety Data Sheets, Carver Hall RM 284

**Mutagenicity:** No information available.

**Neurotoxicity:** No information available.

**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** No data available. Cas# 56-81-5:LC50 (96 Hr.) rainbow trout = 50-67 mg/L; 12 degrees CLC50 (96 Hr.) goldfish = >5000 mg/L

**Environmental:** No information available.

**Physical:** No information available.

**Other:** No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	Please contact Fisher Scientific for shipping information	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

## Section 15 - Regulatory Information

### US FEDERAL

TSCA

## Material Safety Data Sheets, Carver Hall RM 284

CAS# 56-81-5 is listed on the TSCA inventory.

### **Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

### **Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

### **Section 12b**

None of the chemicals are listed under TSCA Section 12b.

### **TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

### **CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RQ.

### **SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

### **SARA Codes**

CAS # 56-81-5: delayed.

**Section 313** No chemicals are reportable under Section 313.

### **Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 56-81-5 can be found on the following state right to know lists: Pennsylvania, Minnesota, Massachusetts.

### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

Not available.

#### **Risk Phrases:**

#### **Safety Phrases:**

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 28A After contact with skin, wash immediately with plenty of water

### **WGK (Water Danger/Protection)**

CAS# 56-81-5: 0

### **Canada - DSL/NDSL**

CAS# 56-81-5 is listed on Canada's DSL List.

# Material Safety Data Sheets, Carver Hall RM 284

## **Canada - WHMIS**

This product has a WHMIS classification of D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

## **Canadian Ingredient Disclosure List**



# Material Safety Data Sheet

## Urea

ACC# 24680

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Urea

**Catalog Numbers:** AC388050000, AC424580000, AC424580050, AC424581000, 42458-5000, BP169-10, BP169-212, BP169-500, NC9434904, NC9607829, NC9620384, NC9915662, U15-3, U15-50, U15-500, U16-3, U16-50, U16PD40KG, U16SAM1, U17-12, U17-212, U17-SAM1

**Synonyms:** Carbamide resin; Carbamimidic acid; Carbonyl diamide; Carbonyldiamine; Isourea

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
57-13-6	Urea	>98	200-315-5

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: white solid.

**Caution!** May cause eye, skin, and respiratory tract irritation.

**Target Organs:** None known.

#### Potential Health Effects

**Eye:** May cause eye irritation. Causes redness and pain.

**Skin:** May cause skin irritation. Causes redness and pain. May be harmful if absorbed through the skin.

## Material Safety Data Sheets, Carver Hall RM 284

**Ingestion:** Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause cardiac disturbances. May be harmful if swallowed.

**Inhalation:** May cause respiratory tract irritation. May be harmful if inhaled.

**Chronic:** Prolonged or repeated exposure may cause adverse reproductive effects.

### Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

**Ingestion:** Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or chemical foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 1; Flammability: 0; Instability: 0

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Provide ventilation.

### Section 7 - Handling and Storage

**Handling:** Use with adequate ventilation. Minimize dust generation and accumulation.

## Material Safety Data Sheets, Carver Hall RM 284

Avoid breathing dust, mist, or vapor. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.

**Storage:** Store in a cool, dry place. Store in a tightly closed container.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Urea	none listed	none listed	none listed

**OSHA Vacated PELs:** Urea: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

### Section 9 - Physical and Chemical Properties

**Physical State:** Solid

**Appearance:** white

**Odor:** ammonia-like

**pH:** 7.5-9.5 (10% aq. solution)

**Vapor Pressure:** 1.25 mm Hg @ 25 deg C

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** decomposes

**Freezing/Melting Point:** 131-135 deg C

**Decomposition Temperature:** Not available.

**Solubility:** Soluble.

**Specific Gravity/Density:** 1.335

**Molecular Formula:** CH<sub>4</sub>N<sub>2</sub>O

**Molecular Weight:** 60.06

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, dust generation, temperatures above 130°C.

**Incompatibilities with Other Materials:** Sodium hypochlorite, calcium hypochlorite, sodium nitrate, nitrosyl perchlorate, strong oxidizing agents, dichromates, liquid chlorine, nitrates, permanganates, chromyl chloride.

**Hazardous Decomposition Products:** Carbon monoxide, oxides of nitrogen, carbon dioxide, ammonia.

**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 57-13-6: YR6250000

**LD50/LC50:**

CAS# 57-13-6:

Oral, mouse: LD50 = 11 gm/kg;

Oral, rat: LD50 = 8471 mg/kg;

**Carcinogenicity:**

CAS# 57-13-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** Oral, rat: TDLo = 821 gm/kg/1Y-C (Tumorigenic - neoplastic by RTECS criteria - Blood - tumors and Blood - lymphoma, including Hodgkin's disease).; Oral, mouse: TDLo = 394 gm/kg/1Y-C (Tumorigenic - Carcinogenic by RTECS criteria - Blood - tumors and Blood - lymphoma, including Hodgkin's disease).

**Teratogenicity:** No information available.

**Reproductive Effects:** Intraplacental, woman: TDLo = 1400 mg/kg (female 16 week(s) after conception) Fertility - abortion.; Intraplacental, woman: TDLo = 1600 mg/kg (female 16 week(s) after conception) Fertility - abortion.

**Mutagenicity:** DNA Inhibition: Human, Lymphocyte = 600 mmol/L.; Cytogenetic Analysis: Human, Leukocyte = 50 mmol/L.; DNA Damage: Mouse, Lymphocyte = 628 mmol/L.; Mutation in Mammalian Somatic Cells: Mouse, Lymphocyte = 265 mmol/L.

**Neurotoxicity:** No information available.

**Other Studies:**

## Section 12 - Ecological Information

**Ecotoxicity:** Bacteria: *Phytobacterium phosphoreum*: EC50 = 23914 mg/L; 5 min; Microtox

## Material Safety Data Sheets, Carver Hall RM 284

test If released to water, urea can degrade readily through biotic hydrolysis as demonstrated by various screening studies. The presence of naturally-occurring phytoplankton increases the degradation rate because phytoplankton use urea as a nitrogen source and because urea is decomposed by phytoplankton photosynthesis. In phytoplankton-rich waters, degradation occurs much faster in sunlight than in the dark. Abiotic hydrolysis of urea occurs very slowly in relation to biotic hydrolysis.

**Environmental:** If released to the atmosphere, urea will degrade rapidly in the vapor-phase by reaction with photochemically produced hydroxyl radicals (half-life of 9.6 hr). If released to soil, urea is hydrolyzed to ammonium through soil urease activity (the basis of its use as a fertilizer). The rate of hydrolysis can be fast (24 hr); however, a number of variables (such as increasing the pellet size of the fertilizer) can decrease the degradation rate from days to weeks.

**Physical:** No information found.

**Other:** Do not empty into drains.

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

### Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	Not Regulated.	Not Regulated.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

### Section 15 - Regulatory Information

#### US FEDERAL

##### TSCA

CAS# 57-13-6 is listed on the TSCA inventory.

##### Health & Safety Reporting List

## Material Safety Data Sheets, Carver Hall RM 284

None of the chemicals are on the Health & Safety Reporting List.

### **Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

### **Section 12b**

None of the chemicals are listed under TSCA Section 12b.

### **TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

### **CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RQ.

### **SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

### **SARA Codes**

CAS # 57-13-6: immediate.

### **Section 313** No chemicals are reportable under Section 313.

### **Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 57-13-6 can be found on the following state right to know lists: Minnesota.

### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

Not available.

#### **Risk Phrases:**

#### **Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

#### **WGK (Water Danger/Protection)**

CAS# 57-13-6: 1

#### **Canada - DSL/NDSL**

CAS# 57-13-6 is listed on Canada's DSL List.

#### **Canada - WHMIS**

This product has a WHMIS classification of D2B, D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

#### **Canadian Ingredient Disclosure List**

# Material Safety Data Sheet

## Thiourea

ACC# 23420

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Thiourea

**Catalog Numbers:** T101-100, T101-212, T101-212LC, T101-500

**Synonyms:** Thiocarbamide; Thiourea; Isothiourea; Thiocarbonic acid diamide; Sulourea.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
62-56-6	Thiourea	>99	200-543-5

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: white crystals.

**Warning!** Harmful if swallowed. Causes respiratory tract irritation. May cause allergic skin reaction. Causes eye and skin irritation. May cause cancer based on animal studies. This substance has caused adverse reproductive and fetal effects in animals.

**Target Organs:** Blood, liver, bone marrow, thyroid, reproductive system.

#### Potential Health Effects

**Eye:** Causes eye irritation.

**Skin:** Causes skin irritation. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.

**Ingestion:** Harmful if swallowed. May cause severe irritation of the digestive tract. May cause anemia, leukopenia (reduction in the number of white blood cells in the blood), and

## Material Safety Data Sheets, Carver Hall RM 284

thrombocytopenia. May cause bone marrow depression.

**Inhalation:** May cause respiratory tract irritation.

**Chronic:** May cause cancer according to animal studies. May cause reproductive and fetal effects. Prolonged or repeated exposure may cause thyroid damage. Chronic exposure may cause liver damage. Laboratory experiments have resulted in mutagenic effects. Thiourea has an antithyroid effect and it is possible that fetal goiter might be produced by sufficient maternal exposure to this agent. Thiourea was teratogenic in rats exposed to a 0.2% solution as drinking water.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

**Skin:** In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical aid if symptoms occur. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Water runoff can cause environmental damage. Dike and collect water used to fight fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Dusts may be an explosion hazard if mixed with air at critical proportions and in the presence of an ignition source.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** Not available.

**Autoignition Temperature:** 440 deg C ( 824.00 deg F)

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 0; Instability: 0

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container.



## Material Safety Data Sheets, Carver Hall RM 284

Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Use only with adequate ventilation. Avoid breathing dust.

**Storage:** Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Thiourea	none listed	none listed	none listed

**OSHA Vacated PELs:** Thiourea: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

### Section 9 - Physical and Chemical Properties

**Physical State:** Crystals

**Appearance:** white

**Odor:** odorless

**pH:** Not available.

## Material Safety Data Sheets, Carver Hall RM 284

**Vapor Pressure:** 2.5 mm Hg @ 25 deg C

**Vapor Density:** 2.6

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Decomposes.

**Freezing/Melting Point:** 176 - 178 deg C

**Decomposition Temperature:** > 180 deg C

**Solubility:** Soluble.

**Specific Gravity/Density:** 1.405

**Molecular Formula:** CH<sub>4</sub>N<sub>2</sub>S

**Molecular Weight:** 76.12

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures. Polymerization may occur upon heating.

**Conditions to Avoid:** Mechanical shock, dust generation, excess heat.

**Incompatibilities with Other Materials:** Oxidizing agents, strong acids, strong bases, acrolein, nitric acid, hydrogen peroxide, acrylaldehyde.

**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, oxides of sulfur, carbon dioxide.

**Hazardous Polymerization:** May occur.

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 62-56-6: YU2800000

**LD50/LC50:**

CAS# 62-56-6:

Draize test, rabbit, eye: 14%;

Oral, rat: LD50 = 125 mg/kg;

**Carcinogenicity:**

CAS# 62-56-6:

- **ACGIH:** Not listed.
- **California:** carcinogen, initial date 1/1/88
- **NTP:** Suspect carcinogen
- **IARC:** Not listed.

**Epidemiology:** No data available.

**Teratogenicity:** Oral, rat: TDLo = 240 mg/kg (female 12 day(s) after conception) Specific

## Material Safety Data Sheets, Carver Hall RM 284

Developmental Abnormalities - Central Nervous System and musculoskeletal system.; Oral, rat: TDLo = 1400 mg/kg (female 16-22 day(s) after conception) Specific Developmental Abnormalities - endocrine system.

**Reproductive Effects:** Oral, rat: TDLo = 1 gm/kg (female 12 day(s) after conception) = Fertility - post-implantation mortality (e.g. dead and/or resorbed implants per total number of implants).; Oral, hamster: TDLo = 22400 mg/kg (female 10 week(s) pre-mating)

Maternal Effects - uterus, cervix, vagina and other effects.; Oral, domestic mammal: TDLo = 9 gm/kg (male 90 day(s) pre-mating) Paternal Effects - spermatogenesis (incl. genetic material, sperm morphology, motility, and count) and other effects on male

**Mutagenicity:** DNA Inhibition: Human, Fibroblast = 60 mmol/L.; DNA Inhibition: Human, Lymphocyte = 20 mmol/L.; DNA Inhibition: Human, HeLa cell = 140 mmol/L.;

Morphological Transformation: Rat, Embryo = 100 mg/L.; DNA Damage: Rat, Liver = 30 mmol/L.; Mutation in Mammalian Somatic Cells: Hamster, Lung = 10 mmol/L.

**Neurotoxicity:** No information found

**Other Studies:**

### Section 12 - Ecological Information

**Ecotoxicity:** Fish: Fathead Minnow: LC50 > 600 mg/L; 96 Hr; Unspecified Bacteria: *Phytobacterium phosphoreum*: EC50 = 3400 mg/L; 15 min; Microtox test Water flea *Daphnia*: LC50 = 1.8 mg/L; Unspecified; Unspecified If released to water, thiourea will react with hydroxyl radicals in sunlit natural waters with an estimated half-life of 171 days. Hydrolysis, volatilization, adsorption to sediments, and bioconcentration are not expected to be important aquatic fate processes. Thiourea appears to be generally resistant to aquatic biodegradation as demonstrated by various standard biodegradation tests.

**Environmental:** If released to soil, thiourea may degrade by both chemical and microbial degradation, although elevated levels of thiourea may suppress microflora activity for extended periods of time. In one soil degradation study, thiourea persisted for periods in excess of 15 weeks. It is expected to be highly mobile in soil and susceptible to leaching. If released to the atmosphere, thiourea may be associated with particulate matter suggesting potential importance of wet and dry deposition. Thiourea existing as free vapor-phase is expected to react with photochemically-produced hydroxyl radicals.

**Physical:** No information available.

**Other:** Testicular toxicity of thiourea has been demonstrated in fish exposed to concentrations of 300 ppm.

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:**

CAS# 62-56-6: waste number U219.

Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	TOXIC SOLIDS, ORGANIC, N.O.S.	TOXIC SOLIDS, ORGANIC, N.O.S.
<b>Hazard Class:</b>	6.1	6.1
<b>UN Number:</b>	UN2811	UN2811
<b>Packing Group:</b>	III	III

Section 15 - Regulatory Information

**US FEDERAL**

**TSCA**

CAS# 62-56-6 is listed on the TSCA inventory.

**Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

**Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

**Section 12b**

None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**

CAS# 62-56-6: 10 lb final RQ; 4.54 kg final RQ

**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 62-56-6: immediate, delayed.

**Section 313**

This material contains Thiourea (CAS# 62-56-6, >99%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

**Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

## Material Safety Data Sheets, Carver Hall RM 284

CAS# 62-56-6 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

### **California Prop 65**

**The following statement(s) is(are) made in order to comply with the California Safe Drinking Water Act:**

WARNING: This product contains Thiourea, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: CAS# 62-56-6: 10 µg/day NSRL

### **European/International Regulations**

**European Labeling in Accordance with EC Directives**

**Hazard Symbols:**

XN N

**Risk Phrases:**

R 22 Harmful if swallowed.

R 40 Limited evidence of a carcinogenic effect.

R 63 Possible risk of harm to the unborn child.

R 51/53 Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

**Safety Phrases:**

S 36/37 Wear suitable protective clothing and gloves.

S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

**WGK (Water Danger/Protection)**

CAS# 62-56-6: 2

**Canada - DSL/NDSL**

CAS# 62-56-6 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of D1B, D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

CAS# 62-56-6 is listed on the Canadian Ingredient Disclosure List.

# Material Safety Data Sheet

## Dithiothreitol

ACC# 13313

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Dithiothreitol

**Catalog Numbers:** AC165680000, AC165681000, AC327190000, AC327190010, AC327190500, AC409190000, AC409190010, AC409190050, 16568-0010, 16568-0050, 16568-0250, 32719-0100, BP172-25, BP172-5, EK1346774, EK1346782

**Synonyms:** DL-1,4-Dithiothreitol; Cleland's reagent; DTT; DL-1,4-Dimercapto-2,3-dihydroxybutane; threo-2,3-Dihydroxy-1,4-dithiolbutane; 2,3-Butanediol, 1,4-dimercapto-, (2R,3R)-rel-; (R\*,R\*)-1,4-dimercaptobutane-2,3-diol.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
3483-12-3	Dithiothreitol	>98	222-468-7

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: white crystalline powder.

**Warning!** Causes eye, skin, and respiratory tract irritation. Harmful if swallowed. Stench. Refrigerate upon arrival below 4°C/39°F.

**Target Organs:** Respiratory system, eyes, skin.

#### Potential Health Effects

**Eye:** Causes eye irritation.

**Skin:** Causes skin irritation. May be harmful if absorbed through the skin.

## Material Safety Data Sheets, Carver Hall RM 284

**Ingestion:** Harmful if swallowed. May cause irritation of the digestive tract. May cause central nervous system depression.

**Inhalation:** Causes respiratory tract irritation. May be harmful if inhaled.

**Chronic:** No information found.

### Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid.

**Skin:** In case of contact, flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid if irritation develops and persists. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Dusts at sufficient concentrations can form explosive mixtures with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** > 110 deg C (> 230.00 deg F)

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 1; Instability: 1

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container.

Clean up spills immediately, observing precautions in the Protective Equipment section.

Avoid generating dusty conditions. Provide ventilation. Approach spill from upwind.

### Section 7 - Handling and Storage

## Material Safety Data Sheets, Carver Hall RM 284

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Avoid use in confined spaces.

**Storage:** Storage under a nitrogen blanket has been recommended. Store in air tight containers. Refrigerate upon arrival below 4°C/39°F. Supplier recommends temperatures below -20°C for long-term storage.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Dithiothreitol	none listed	none listed	none listed
Deleted Registry Number. Use CAS 3483-12-3.	none listed	none listed	none listed

**OSHA Vacated PELs:** Dithiothreitol: No OSHA Vacated PELs are listed for this chemical. Deleted Registry Number. Use CAS 3483-12-3.: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### Section 9 - Physical and Chemical Properties

**Physical State:** Crystalline powder

**Appearance:** white

**Odor:** stench

**pH:** 5.1 (10g/l H<sub>2</sub>O)

**Vapor Pressure:** Not available.



## Material Safety Data Sheets, Carver Hall RM 284

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 38 - 43 deg C

**Decomposition Temperature:** Not available.

**Solubility:** Freely Soluble.

**Specific Gravity/Density:** Not available.

**Molecular Formula:** C<sub>4</sub>H<sub>10</sub>O<sub>2</sub>S<sub>2</sub>

**Molecular Weight:** 154.25

### Section 10 - Stability and Reactivity

**Chemical Stability:** Oxidizes when exposed to air. Material is only slightly hygroscopic. When stored at room temperature, DTT rapidly loses its reducing capability. DTT is not stable when stored in a solution form.

**Conditions to Avoid:** Light, dust generation, exposure to air, heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents.

**Hazardous Decomposition Products:** Carbon monoxide, oxides of sulfur, carbon dioxide.

**Hazardous Polymerization:** Has not been reported.

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 3483-12-3: EK1610000

**CAS#** 27565-41-9: X08576500

**LD50/LC50:**

Not available.

Not available.

Oral, rat: LD50 = 400 mg/kg. (Merck)

**Carcinogenicity:**

CAS# 3483-12-3: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 27565-41-9: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** No information found

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

### Section 12 - Ecological Information

# Material Safety Data Sheets, Carver Hall RM 284

No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	Aviation Regulated Solid, N.O.S.	Aviation Regulated Solid, N.O.S.
<b>Hazard Class:</b>	9	9
<b>UN Number:</b>	UN3335	UN3335
<b>Packing Group:</b>		

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 3483-12-3 is listed on the TSCA inventory.

CAS# 27565-41-9 is not listed on the TSCA inventory. It is for research and development use only.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

#### SARA Section 302 Extremely Hazardous Substances

# Material Safety Data Sheets, Carver Hall RM 284

None of the chemicals in this product have a TPQ.

## **SARA Codes**

CAS # 3483-12-3: immediate.

**Section 313** No chemicals are reportable under Section 313.

## **Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

## **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

## **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

## **STATE**

CAS# 3483-12-3 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 27565-41-9 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

## **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

XN

#### **Risk Phrases:**

R 22 Harmful if swallowed.

R 36/37/38 Irritating to eyes, respiratory system and skin.

#### **Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 37/39 Wear suitable gloves and eye/face protection.

#### **WGK (Water Danger/Protection)**

CAS# 3483-12-3: No information available.

CAS# 27565-41-9: No information available.

#### **Canada - DSL/NDSL**

CAS# 3483-12-3 is listed on Canada's DSL List.

CAS# 27565-41-9 is listed on Canada's DSL List.

#### **Canada - WHMIS**

This product has a WHMIS classification of D2B, D1B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

#### **Canadian Ingredient Disclosure List**

## Material Safety Data Sheet

Tetraethylammonium acetate tetrahydrate, 99%

ACC# 06199

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Tetraethylammonium acetate tetrahydrate, 99%

**Catalog Numbers:** AC194940000, AC194940250, AC194941000

**Synonyms:** Ethanaminium, N,N,N-triethyl-, acetate, tetrahydrate.

**Company Identification:**

Acros Organics N.V.  
One Reagent Lane  
Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01

**For emergencies in the US, call CHEMTREC:** 800-424-9300

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
67533-12-4	Tetraethylammonium acetate tetrahydrate	99	unlisted

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: colorless to white solid. Flash Point: 60 deg C.

**Caution!** May cause eye and skin irritation. May cause respiratory and digestive tract irritation. Hygroscopic (absorbs moisture from the air). The toxicological properties of this material have not been fully investigated.

**Target Organs:** No data found.

#### Potential Health Effects

**Eye:** May cause eye irritation.

**Skin:** May cause skin irritation.

**Ingestion:** May cause gastrointestinal irritation with nausea, vomiting and diarrhea. The toxicological properties of this substance have not been fully investigated.

**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.

**Chronic:** No information found.

## Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Dusts at sufficient concentrations can form explosive mixtures with air. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Containers may explode in the heat of a fire. Runoff from fire control or dilution water may cause pollution.

**Extinguishing Media:** In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Use agent most appropriate to extinguish fire.

**Flash Point:** 60 deg C ( 140.00 deg F)

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 1; Flammability: 1; Instability: 0

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

## Section 7 - Handling and Storage

## Material Safety Data Sheets, Carver Hall RM 284

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

**Storage:** Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from moisture.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local explosion-proof ventilation to keep airborne levels to acceptable levels.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Tetraethylammonium acetate tetrahydrate	none listed	none listed	none listed
Tetraethylammonium acetate anhydrous	none listed	none listed	none listed

**OSHA Vacated PELs:** Tetraethylammonium acetate tetrahydrate: No OSHA Vacated PELs are listed for this chemical. Tetraethylammonium acetate anhydrous: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### Section 9 - Physical and Chemical Properties

**Physical State:** Solid

**Appearance:** colorless to white

**Odor:** None reported.

**pH:** Not available.

**Vapor Pressure:** Not available.

## Material Safety Data Sheets, Carver Hall RM 284

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 42.00 - 46.00 deg C

**Decomposition Temperature:** Not available.

**Solubility:** soluble

**Specific Gravity/Density:** Not available.

**Molecular Formula:** C<sub>10</sub>H<sub>23</sub>NO<sub>2</sub>·4H<sub>2</sub>O

**Molecular Weight:** 261.35

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, ignition sources, dust generation, excess heat, temperatures above 65°C, strong oxidants, exposure to moist air or water.

**Incompatibilities with Other Materials:** Moisture, oxidizing agents.

**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, nitrogen gas, acetic acid.

**Hazardous Polymerization:** Has not been reported.

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 67533-12-4 unlisted.

**CAS#** 1185-59-7 unlisted.

**LD50/LC50:**

Not available.

Not available.

**Carcinogenicity:**

CAS# 67533-12-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 1185-59-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** No information found

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

### Section 12 - Ecological Information

# Material Safety Data Sheets, Carver Hall RM 284

No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	Not regulated as a hazardous material	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 67533-12-4 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).

CAS# 1185-59-7 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.



## Material Safety Data Sheets, Carver Hall RM 284

### **SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

### **SARA Codes**

CAS # 1185-59-7: immediate, fire.

**Section 313** No chemicals are reportable under Section 313.

### **Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 67533-12-4 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 1185-59-7 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

Not available.

#### **Risk Phrases:**

#### **Safety Phrases:**

S 16 Keep away from sources of ignition - No smoking.

S 24/25 Avoid contact with skin and eyes.

S 33 Take precautionary measures against static discharges.

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 9 Keep container in a well-ventilated place.

S 28A After contact with skin, wash immediately with plenty of water

### **WGK (Water Danger/Protection)**

CAS# 67533-12-4: No information available.

CAS# 1185-59-7: No information available.

### **Canada - DSL/NDSL**

CAS# 1185-59-7 is listed on Canada's NDSL List.

### **Canada - WHMIS**

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

# Material Safety Data Sheets, Carver Hall RM 284

## BIO-RAD LABORATORIES CLINICAL DIV -- 1610800 TEMED 5 ML -- 6850-00F054590

=====  
Product Identification  
=====

Product ID:1610800 TEMED 5 ML  
MSDS Date:01/22/1997  
FSC:6850  
NIIN:00F054590  
MSDS Number: CGHKX  
=== Responsible Party ===  
Company Name:BIO-RAD LABORATORIES CLINICAL DIV  
Address:2000 ALFRED NOBEL DR  
City:HERCULES  
State:CA  
ZIP:94547-5000  
Country:US  
Info Phone Num:510-724-7000/510-741-1000  
Emergency Phone Num:510-724-7000/510-741-1000  
CAGE:10987

==== Contractor Identification ====

Company Name:BIO-RAD LABORATORIES  
Address:3300 REGATTA BLVD  
Box:City:RICHMOND  
State:CA  
ZIP:94804  
Country:US  
Phone:415-232-7000  
CAGE:10987

=====  
Composition/Information on Ingredients  
=====

Ingred Name:N,N,N',N'-TETRAMETHYLETHYLENEDIAMINE  
CAS:110-18-9  
RTECS #:KV7175000

=====  
Hazards Identification  
=====

LD50 LC50 Mixture:ORAL LD50(RAT): 1580 MG/KG  
Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES  
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO  
Health Hazards Acute and Chronic:SKIN: CAUSTIC EFFECT. EYES: STRONG  
CAUSTIC EFFECT. INHALATION: WILL LEAD TO A STRONG CAUSTIC EFFECT TO  
THE MUCOUS MEMBRANE, MOUTH & THROAT. INGESTION: DANGER TO  
PERFORATION OF THE ESOPHAGUS & STOMACH. CAUSES BURNS.  
Explanation of Carcinogenicity:NONE  
Effects of Overexposure:SKIN: CAUSTIC EFFECT. EYES: STRONG CAUSTIC  
EFFECT. INHALATION: WILL LEAD TO A STRONG CAUSTIC EFFECT TO THE  
MUCOUS MEMBRANE, MOUTH & THROAT. INGESTION: DANGER TO PERFORATION  
OF THE ESOPHAGUS & STOMACH. CAUSES BURNS.

=====  
First Aid Measures  
=====

First Aid:INHALATION: REMOVE TO FRESH AIR. GIVE CPR & KEEP WARM. IF  
UNCONSCIOUS, PLACE PATIENT STABLY IN SIDE POSITION FOR  
TRANSPORTATION. SKIN: WASH W/WATER & SOAP & RINSE THOROUGHLY. EYES:

# Material Safety Data Sheets, Carver Hall RM 284

RINSE FOR SEVERAL MINS UNDER RUNNING WATER. INGESTION: DRINK  
COPIOUS AMOUNTS OF WATER & GIVE FRESH AIR. OBTAIN MEDICAL ATTENTION  
IN ALL CASES.

## ===== Fire Fighting Measures =====

Flash Point:69.8F  
Lower Limits:9.08  
Upper Limits:0.98  
Extinguishing Media:CO2, EXTINGUISHING POWDER/WATER SPRAY. LARGE FIRES:  
WATER SPRAY/ALCOHOL RESISTANT FOAM.  
Fire Fighting Procedures:USE WATER W/FULL JET & MOUNT RESPIRATORY  
PROTECTIVE DEVICE.

## ===== Accidental Release Measures =====

Spill Release Procedures:WEAR PROTECTIVE EQUIPMENT. EVACUATE AREA.  
PREVENT SEEPAGE INTO SEWAGE SYSTEM, WORKPITS & CELLARS. ABSORB  
W/LIQUID-BINDING MATERIAL. USE NEUTRALIZING AGENT.

## ===== Handling and Storage =====

Handling and Storage Precautions:STORE IN COOL, DRY CONDITIONS IN WELL  
SEALED RECEPTACLES. KEEP RECEPTACLES TIGHTLY SEALED. KEEP IGNITION  
SOURCES AWAY.  
Other Precautions:DON'T SMOKE. PROTECT AGAINST ELECTROSTATIC CHARGES.  
ENSURE GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE. AVOID CONTACT  
W/EYES & SKIN.

## ===== Exposure Controls/Personal Protection =====

Respiratory Protection:IN CASE OF BRIEF EXPOSURE/LOW POLLUTION USE  
RESPIRATORY FILTER DEVICE. IN CASE OF INTENSIVE/LONGER EXPOSURE USE  
RESPIRATORY PROTECTIVE DEVICE THAT IS INDEPENDENT OF CIRCULATING  
AIR.  
Ventilation:ADEQUATE  
Protective Gloves:SYNTHETIC  
Eye Protection:TIGHTLY SEALED GOGGLES  
Work Hygienic Practices:REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE  
REUSE. WASH HANDS BEFORE BREAKS & AT THE END OF WORK.  
Supplemental Safety and Health  
KEEP AWAY FROM FOODSTUFFS, BEVERAGES & FEED.

## ===== Physical/Chemical Properties =====

Boiling Pt:B.P. Text:244.4F  
Solubility in Water:MISCIBLE  
Appearance and Odor:LIGHT YELLOW FLUID W/AMINE-LIKE ODOR

## ===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

## ===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE OF IAW/FEDERAL, STATE & LOCAL  
REGULATIONS. MUSTN'T BE DISPOSED OF TOGETHER W/HOUSEHOLD GARBAGE.

## Material Safety Data Sheets, Carver Hall RM 284

DON'T ALLOW PRODUCT TO REACH SEWAGE SYSTEM. FLAMMABLE LIQUIDS  
UN2372.

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of Defense. The United States of America in no manner whatsoever,  
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assume responsibility for the suitability of this information to their  
particular situation.

# Material Safety Data Sheet

## Acetonitrile

ACC# 00170

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Acetonitrile

**Catalog Numbers:** AC149520000, AC149520010, AC149520025, AC149520050, AC149520250, AC149525000, AC167650000, AC258560000, AC258560010, AC258560025, AC258560051, AC268260000, AC268260010, AC268270000, AC268270010, AC325730000, AC325730010, AC325730025, AC326680000, AC326680010, AC326680025, AC326750000, AC326750010, AC326750025, AC326810000, AC326810010, AC326811000, AC326812500, AC364310000, AC364310010, AC364311000, AC364315000, AC400130000, AC400132500, AC423250000, AC423250010, AC423255000, AC610130040, AC61022019, AC61022019, AC61022050, AC61022115, AC61022115, AC61022200, AC61022200, AC610500190, AC610500500, AC610501150, AC610502000, AC610700190, AC610700500, AC610701150, AC610702000, 16765-0010, 16765-2500, 26826-0025, 26827-0025, 26827-0040, 61001-0040, 61022-0010, 61022-1000, 61096-1000, 61110-0500, 61514-0025, A21-1, A21-20, A21-200, A21-4, A21200LC, A21FB115, A21FB19, A21FB200, A21FB50, A21RB115, A21RS-50, A21RS115, A21RS19, A21RS200, A21RS28, A955-1, A955-4, A9931, A993RS-19, A996-1, A996-4, A9964LC, A996J1, A996N2-19, A996RS-115, A996RS-200, A996RS-28, A996RS-50, A996SK-4, A996SS-115, A996SS-19, A996SS-200, A996SS28, A996SS50, A998-1, A998-212, A998-4, A99818, A9984LC, A998J1, A998N1-19, A998N2-19, A998POP-50, A998RS-115, A998RS-19, A998RS-200, A998RS-28, A998RS-50, A998SK-1, A998SK-4, A998SS-115, A998SS-200, A998SS-28, A998SS-50, A999-4, BP1165-50, BP1170-4, BP1170-450, BP1170N1-19, BP1170N2-19, BP1170POP-200, BP1170POP-50, BP1170POP20, BP1170RS-115, BP1170RS-1350, BP1170RS-19, BP1170RS-200, BP1170RS-28, BP1170RS-50, BP1170SS-115, BP1170SS-1350, BP1170SS-200, BP1170SS-30, BP1170SS-50, BP2405-1, BP2405-4, BP2405SK-1, BP2405SK-4, BP2600-100, NC9173153, NC9229342, NC9234885, NC9239862, NC9445091, NC9574352, NC9585208, NC9638863, NC9647795, NC9677816, NC9708859, O1034-500, PS03490, PS03491

**Synonyms:** Cyanomethane; Ethanenitrile; Ethyl nitrile; Methyl cyanide; Methanecarbonitrile.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
75-05-8	Acetonitrile	100	200-835-2

## Section 3 - Hazards Identification

### EMERGENCY OVERVIEW

Appearance: clear, colorless liquid. Flash Point: 2 deg C.

**Warning! Flammable liquid and vapor.** Causes eye irritation. May be harmful if swallowed, inhaled, or absorbed through the skin. May cause skin and respiratory tract irritation. Metabolized to cyanide in the body, which may cause headache, dizziness, weakness, unconsciousness, convulsions, coma and possible death. May cause liver and kidney damage.

**Target Organs:** Kidneys, central nervous system, liver, respiratory system, cardiovascular system, eyes.

#### Potential Health Effects

**Eye:** Causes eye irritation. Lachrymator (substance which increases the flow of tears). May produce superficial reversible injury.

**Skin:** Causes mild skin irritation. If absorbed, causes symptoms similar to those of inhalation. May be harmful if absorbed through the skin. May be metabolized to cyanide which in turn acts by inhibiting cytochrome oxidase impairing cellular respiration. A Skin notation is recommended based upon the case report of child poisoning from dermal contact. A LD50 >2000 mg/kg was obtained in a well-conducted acute dermal toxicity study in rabbits.

**Ingestion:** May cause tissue anoxia, characterized by weakness, headache, dizziness, confusion, cyanosis (bluish skin due to deficient oxygenation of the blood), weak and irregular heart beat, collapse, unconsciousness, convulsions, coma and death. Metabolism may release cyanide, which may result in headache, dizziness, weakness, collapse, unconsciousness and possible death. Different animal species and individuals of the same species varied widely in susceptibility to acetonitrile in single-dose toxicity studies by various routes. The range of oral LD50 values for acetonitrile in mammals is between 140 - 6762 mg/kg body weight. Mouse and guinea pig seem to be the most sensitive species. In a well-conducted study in mice, the oral LD50 of acetonitrile was calculated to be 617 mg/kg.

**Inhalation:** May cause respiratory tract irritation. May cause lung damage. May be harmful if inhaled. Acetonitrile breaks down slowly in the body to release the cyanide ion. Exposure to very high concentrations of acetonitrile can result in cyanide poisoning. Symptoms are usually delayed several hours after exposure. Early symptoms include weakness, headache, giddiness, dizziness, confusion, anxiety, nausea and vomiting. In severe cases, breathing is rapid, then becomes slow and gasping. The victim may feel an irregular heart beat and tightness in the chest.

**Chronic:** May be metabolized to cyanide which in turn acts by inhibiting cytochrome oxidase impairing cellular respiration. Exposure to small amounts of cyanide compounds over long periods of time is reported to cause loss of appetite, headache, weakness, nausea, dizziness, and symptoms of irritation of the upper respiratory tract and eyes. Animal studies indicate that the product may affect the liver and kidneys. Animal evidence for acetonitrile and other cyanide compounds clearly indicates that toxic effects would be expected in the fetus at exposure levels which are toxic to the

## Section 4 - First Aid Measures

**Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.

**Skin:** In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid immediately. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Exposure should be treated as a cyanide poisoning. Effects may be delayed. For methemoglobinemia, administer oxygen alone or with Methylene Blue depending on the methemoglobin concentration in the blood. May be partially metabolized to cyanide in the body.

**Antidote:** Always have a cyanide antidote kit on hand when working with cyanide compounds. Get medical advice to use. Methylene blue, alone or in combination with oxygen is indicated as a treatment in nitrite induced methemoglobinemia.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Use water spray to keep fire-exposed containers cool. Flammable liquid and vapor. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** 2 deg C ( 35.60 deg F)

**Autoignition Temperature:** 524 deg C ( 975.20 deg F)

**Explosion Limits, Lower:** 3.0 vol %

**Upper:** 16.00 vol %

**NFPA Rating:** (estimated) Health: 2; Flammability: 3; Instability: 0

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Provide ventilation. Evacuate unnecessary personnel. Approach spill from upwind.

**Section 7 - Handling and Storage**

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames. Use only with adequate ventilation. Avoid breathing vapor or mist.

**Storage:** Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Store protected from moisture.

**Section 8 - Exposure Controls, Personal Protection**

**Engineering Controls:** Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Exposure Limits**

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Acetonitrile	20 ppm TWA; Skin - potential significant contribution to overall exposure by the cutaneous route	20 ppm TWA; 34 mg/m <sup>3</sup> TWA 500 ppm IDLH	40 ppm TWA; 70 mg/m <sup>3</sup> TWA

**OSHA Vacated PELs:** Acetonitrile: 40 ppm TWA; 70 mg/m<sup>3</sup> TWA

**Personal Protective Equipment**

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

**Section 9 - Physical and Chemical Properties**

**Physical State:** Liquid

**Appearance:** clear, colorless



## Material Safety Data Sheets, Carver Hall RM 284

**Odor:** sweetish odor - ethereal odor

**pH:** Not available.

**Vapor Pressure:** 88.8 mm Hg @ 25 deg C

**Vapor Density:** 1.42 (air=1)

**Evaporation Rate:** 5.79 (Butyl acetate=1)

**Viscosity:** 0.36 cP 20 deg C

**Boiling Point:** 81.6 deg C @ 760 mmHg

**Freezing/Melting Point:** -45 deg C

**Decomposition Temperature:** > 500 deg C

**Solubility:** Soluble.

**Specific Gravity/Density:** .7810g/cm<sup>3</sup>

**Molecular Formula:** C<sub>2</sub>H<sub>3</sub>N

**Molecular Weight:** 41.05

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Ignition sources, excess heat, exposure to moist air or water.

**Incompatibilities with Other Materials:** Strong oxidizing agents, strong reducing agents, strong acids.

**Hazardous Decomposition Products:** Hydrogen cyanide, nitrogen oxides, carbon monoxide, carbon dioxide.

**Hazardous Polymerization:** Will not occur.

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 75-05-8: AL7700000

**LD50/LC50:**

CAS# 75-05-8:

Draize test, rabbit, eye: 100 uL/24H Moderate;

Inhalation, mouse: LC50 = 2693 ppm/1H;

Inhalation, rabbit: LC50 = 2828 ppm/4H;

Inhalation, rat: LC50 = 7551 ppm/8H;

Oral, mouse: LD50 = 269 mg/kg;

Oral, rabbit: LD50 = 50 mg/kg;

Oral, rat: LD50 = 2460 mg/kg;

Skin, rabbit: LD50 = >2 gm/kg;

In a well-conducted study in mice, the oral LD50 of acetonitrile was calculated to be 617 mg/kg.

**Carcinogenicity:**

CAS# 75-05-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** Three volunteers were exposed for 4 hours at 40, 80, or 160 ppm

## Material Safety Data Sheets, Carver Hall RM 284

acetonitrile. At 40 ppm, odor was detected, after which olfactory fatigue was noted. At this concentration, 2 persons had no signs of response, including no appreciable blood or urinary cyanide or thiocyanate. The third person experienced slight tightness in the chest that evening. A sensation of cooling in the lungs was observed and persisted for 24 hours. Traces of urinary thiocyanate were recorded.

**Teratogenicity:** In most of the available assays, teratogenicity was associated with maternal toxicity. In a well-conducted study, rats exposed by inhalation to acetonitrile did not result in significant fetal effects, even at concentrations which were overtly toxic to the dam. In this study, a maternal NOAEL of 1200 ppm and NOAEL of 1200 ppm with respect to developmental toxicity were established. A case-control study of pregnancy outcome among Finnish lab workers revealed no association between exposure to acetonitrile and increased risk of spontaneous abortion in mothers, or malformation and birth weight in their children.

**Reproductive Effects:** In relation to fertility, there is no information available in humans and there are no animal studies specifically investigating such effects. However, no changes were seen in weight of the right cauda or right testis and no effect on sperm motility in rats or mice exposed for 13 weeks with 100, 200 and 400 ppm to acetonitrile.

**Mutagenicity:** See actual entry in RTECS for complete information.

**Neurotoxicity:** No information available.

**Other Studies:**

### Section 12 - Ecological Information

**Ecotoxicity:** Fish: Fathead Minnow: 1150 ppm; 24 Hr; TLm (hard water) Fish: Fathead Minnow: 1000 mg/L; 96 Hr; TLm (soft water) Fish: Bluegill/Sunfish: 1850 mg/L; 96 Hr; TLm (soft water) Fish: Fathead Minnow: 1640 mg/L; 96 Hr; LC50 (flow-bioassay) Fish: Fathead Minnow: 1640 mg/L; 96 Hr; EC50 (flow-bioassay) No data available.

**Environmental:** Estimated Koc value = 16. Acetonitrile is expected to weakly adsorb to most soils based on the Koc value. Volatilization from soil surfaces and leaching into ground water is expected to be significant. Estimated BCF value = 0.3. This value indicates that acetonitrile will not significantly bioconcentrate in aquatic organisms or adsorb to suspended solids and sediments in water. Acetonitrile is unreactive towards photochemically-generated free radicals and direct photolysis in the gaseous phase.

**Physical:** No information available.

**Other:** Biodegradable.

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:**

CAS# 75-05-8: waste number U003 (Ignitable waste, Toxic waste).

Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	ACETONITRILE	ACETONITRILE
<b>Hazard Class:</b>	3	3
<b>UN Number:</b>	UN1648	UN1648
<b>Packing Group:</b>	II	II
<b>Additional Info:</b>		FLASHPOINT 6 C

Section 15 - Regulatory Information

**US FEDERAL**

**TSCA**

CAS# 75-05-8 is listed on the TSCA inventory.

**Health & Safety Reporting List**

CAS# 75-05-8: Effective 10/4/82, Sunset 10/4/92

**Chemical Test Rules**

CAS# 75-05-8: 40 CFR 799.5115

**Section 12b**

CAS# 75-05-8: Section 4, 1 % de minimus concentration

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**

CAS# 75-05-8: 5000 lb final RQ; 2270 kg final RQ

**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 75-05-8: immediate, delayed, fire.

**Section 313**

This material contains Acetonitrile (CAS# 75-05-8, 100%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

**Clean Air Act:**

CAS# 75-05-8 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

## Material Safety Data Sheets, Carver Hall RM 284

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 75-05-8 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

XN F

#### **Risk Phrases:**

R 11 Highly flammable.

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

R 36 Irritating to eyes.

#### **Safety Phrases:**

S 16 Keep away from sources of ignition - No smoking.

S 36/37 Wear suitable protective clothing and gloves.

### **WGK (Water Danger/Protection)**

CAS# 75-05-8: 2

### **Canada - DSL/NDSL**

CAS# 75-05-8 is listed on Canada's DSL List.

### **Canada - WHMIS**

This product has a WHMIS classification of B2, D1B, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

CAS# 75-05-8 is listed on the Canadian Ingredient Disclosure List.

# Material Safety Data Sheet

## Methanol

ACC# 89493

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** IPA Methanol

**Catalog Numbers:** A462SS-200

**Synonyms:** Mixture

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
67-63-0	Isopropyl alcohol	99.75	200-661-7
67-56-1	Methyl Alcohol	0.18	200-659-6
91-22-5	Quinoline	0.07	202-051-6

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: Not available. Flash Point: 11.7 deg C.

**Warning! Flammable liquid and vapor.** May cause eye, skin, and respiratory tract irritation. May cause central nervous system depression. May form explosive peroxides. May cause kidney damage.

**Target Organs:** Kidneys, central nervous system.

#### Potential Health Effects

**Eye:** Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury.

## Material Safety Data Sheets, Carver Hall RM 284

**Skin:** Prolonged and/or repeated contact may cause defatting of the skin and dermatitis. May cause irritation with pain and stinging, especially if the skin is abraded.

**Ingestion:** May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause kidney damage. May cause systemic toxicity with acidosis. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.

**Inhalation:** Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Inhalation of vapor may cause respiratory tract irritation.

**Chronic:** Prolonged or repeated skin contact may cause defatting and dermatitis. May cause allergic skin reaction in some

### Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Urine acetone test may be helpful in diagnosis.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire. Flammable liquid and vapor. May form explosive peroxides. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas.

**Extinguishing Media:** Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water. For large fires, use dry chemical, carbon dioxide, alcohol-resistant foam, or water spray. For small fires, use carbon dioxide, dry chemical, dry sand, or alcohol-resistant foam. Cool containers with flooding quantities of water until well after fire is out.

**Flash Point:** 11.7 deg C ( 53.06 deg F)

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: ; Flammability: ; Instability:

**Section 6 - Accidental Release Measures**

**General Information:** Use proper personal protective equipment as indicated in Section 8.  
**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. A vapor suppressing foam may be used to reduce vapors.

**Section 7 - Handling and Storage**

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.  
**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances.

**Section 8 - Exposure Controls, Personal Protection**

**Engineering Controls:** Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

**Exposure Limits**

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Isopropyl alcohol	200 ppm TWA; 400 ppm STEL	400 ppm TWA; 980 mg/m <sup>3</sup> TWA 2000 ppm IDLH	400 ppm TWA; 980 mg/m <sup>3</sup> TWA
Methyl Alcohol	200 ppm TWA; 250 ppm STEL; Skin - potential significant contribution to overall exposure by the cutaneous route	200 ppm TWA; 260 mg/m <sup>3</sup> TWA 6000 ppm IDLH	200 ppm TWA; 260 mg/m <sup>3</sup> TWA
Quinoline	none listed	none listed	none listed

**OSHA Vacated PELs:** Isopropyl alcohol: 400 ppm TWA; 980 mg/m<sup>3</sup> TWA Methyl Alcohol: 200 ppm TWA; 260 mg/m<sup>3</sup> TWA Quinoline: No OSHA Vacated PELs are listed for this chemical.

**Personal Protective Equipment**

## Material Safety Data Sheets, Carver Hall RM 284

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** Not available.

**Odor:** Not available.

**pH:** Not available.

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** Not available.

**Decomposition Temperature:** Not available.

**Solubility:** Not available.

**Specific Gravity/Density:** Not available.

**Molecular Formula:** Not available.

**Molecular Weight:** Not available.

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable. This material may be sensitive to peroxide formation.

**Conditions to Avoid:** This material may be sensitive to peroxide formation., incompatible materials, ignition sources.

**Incompatibilities with Other Materials:** Strong oxidizers, acetaldehyde, chlorine, ethylene oxide, acids and isocyanates, hydrogen + palladium, nitroform, oleum, phosgene, potassium t-butoxide, oxygen, trinitromethane, barium perchlorate, tetrafluoroborate, chromium trioxide, sodium dichromate + sulfuric acid, aluminum, and aluminum triisopropoxide. Methanol is incompatible with acetyl bromide, alkylaluminum solutions, beryllium hydride, carbon tetrachloride + metals, chloroform + sodium hydroxide, cyanuric chloride, dichloromethane, diethylzinc, metals, oxidants, phosphorus (III) oxide, and potassium tert-butoxide. Quinoline is incompatible dinitrogen tetroxide, hydrogen peroxide, linseed oil + thionyl chloride, maleic anhydride + bases. Isopropyl alcohol has also been reported to be susceptible to autoxidation and should therefore be considered peroxidizable.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, acrid smoke and



# Material Safety Data Sheets, Carver Hall RM 284

fumes.

**Hazardous Polymerization:** May occur.

## Section 11 - Toxicological Information

### **RTECS#:**

**CAS#** 67-63-0: NT8050000

**CAS#** 67-56-1: PC1400000

**CAS#** 91-22-5: VA9275000

### **LD50/LC50:**

CAS# 67-63-0:

Draize test, rabbit, eye: 100 mg Severe;  
Draize test, rabbit, eye: 10 mg Moderate;  
Draize test, rabbit, eye: 100 mg/24H Moderate;  
Draize test, rabbit, skin: 500 mg Mild;  
Inhalation, mouse: LC50 = 53000 mg/m<sup>3</sup>;  
Inhalation, rat: LC50 = 16000 ppm/8H;  
Inhalation, rat: LC50 = 72600 mg/m<sup>3</sup>;  
Oral, mouse: LD50 = 3600 mg/kg;  
Oral, mouse: LD50 = 3600 mg/kg;  
Oral, rabbit: LD50 = 6410 mg/kg;  
Oral, rat: LD50 = 5045 mg/kg;  
Oral, rat: LD50 = 5000 mg/kg;  
Skin, rabbit: LD50 = 12800

CAS# 67-56-1:

Draize test, rabbit, eye: 40 mg Moderate;  
Draize test, rabbit, eye: 100 mg/24H Moderate;  
Draize test, rabbit, skin: 20 mg/24H Moderate;  
Inhalation, rabbit: LC50 = 81000 mg/m<sup>3</sup>/14H;  
Inhalation, rat: LC50 = 64000 ppm/4H;  
Oral, mouse: LD50 = 7300 mg/kg;  
Oral, rabbit: LD50 = 14200 mg/kg;  
Oral, rat: LD50 = 5600 mg/kg;  
Skin, rabbit: LD50 = 15800 mg/kg;

CAS# 91-22-5:

Draize test, rabbit, skin: 100 mg/24H Moderate;  
Oral, rat: LD50 = 331 mg/kg;  
Skin, rabbit: LD50 = 540 uL/kg;

### **Carcinogenicity:**

CAS# 67-63-0: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 67-56-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 91-22-5:

- **ACGIH:** Not listed.
- **California:** carcinogen, initial date 10/24/97

## Material Safety Data Sheets, Carver Hall RM 284

- **NTP:** Not listed.
- **IARC:** Not listed.

**Epidemiology:** Early epidemiological studies suggested an association between the strong acid manufacture of isopropyl alcohol and paranasal sinus cancer in workers. The risk of laryngeal cancer may also be increased in these workers. However, it has not been tested adequately in animals to assess its carcinogenicity.

**Teratogenicity:** No data available.

**Reproductive Effects:** No data available.

**Mutagenicity:** No data available.

**Neurotoxicity:** No data available.

**Other Studies:**

### Section 12 - Ecological Information

**Ecotoxicity:** No data available. Acute aquatic effects: Fathead minnow: LC50 = 1000 mg/L/96 Hr. Golden orfe: LC50 = 8970 mg/L/48 Hr. goldfish: LC50 = GT5000 mg/L/24 Hr.

**Environmental:** This chemical has a low potential to affect aquatic organisms, secondary waste treatment microorganisms, and the germination and growth of some plants. It is readily biodegradable and is not expected to persist in an aquatic environment. It is not likely to bioconcentrate.

**Physical:** None

**Other:** None

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:**

CAS# 67-56-1: waste number U154 (Ignitable waste).

### Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	FLAMMABLE LIQUIDS, N.O.S.	No information available.
<b>Hazard Class:</b>	3	
<b>UN Number:</b>	UN1993	
<b>Packing Group:</b>	II	

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 67-63-0 is listed on the TSCA inventory.

CAS# 67-56-1 is listed on the TSCA inventory.

CAS# 91-22-5 is listed on the TSCA inventory.

#### Health & Safety Reporting List

CAS# 67-63-0: Effective 12/15/86, Sunset 12/15/96

#### Chemical Test Rules

CAS# 67-63-0: 40 CFR 799.2325

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

CAS# 67-56-1: 5000 lb final RQ; 2270 kg final RQ    CAS# 91-22-5: 5000 lb final RQ;  
2270 kg final RQ

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

#### SARA Codes

CAS # 67-63-0: immediate, delayed, fire.

CAS # 67-56-1: immediate, fire.

CAS # 91-22-5: immediate.

#### Section 313

This material contains Isopropyl alcohol (CAS# 67-63-0, 99.75%), which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 373.

Methyl Alcohol is not at a high enough concentration to be reportable under Section 313.

Quinoline is not at a high enough concentration to be reportable under Section 313.

#### Clean Air Act:

CAS# 67-56-1 is listed as a hazardous air pollutant (HAP).

CAS# 91-22-5 is listed as a hazardous air pollutant (HAP).

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

#### Clean Water Act:

CAS# 91-22-5 is listed as a Hazardous Substance under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

#### STATE

CAS# 67-63-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 67-56-1 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 91-22-5 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

# Material Safety Data Sheets, Carver Hall RM 284

## California Prop 65

WARNING: This product contains Quinoline, a chemical known to the state of California to cause cancer.

California No Significant Risk Level: None of the chemicals in this product are listed.

## European/International Regulations

### European Labeling in Accordance with EC Directives

#### Hazard Symbols:

F

#### Risk Phrases:

R 11 Highly flammable.

#### Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 7 Keep container tightly closed.

#### WGK (Water Danger/Protection)

CAS# 67-63-0: 1

CAS# 67-56-1: 1

CAS# 91-22-5: 2

#### Canada - DSL/NDSL

CAS# 67-63-0 is listed on Canada's DSL List.

CAS# 67-56-1 is listed on Canada's DSL List.

CAS# 91-22-5 is listed on Canada's DSL List.

#### Canada - WHMIS

not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

#### Canadian Ingredient Disclosure List

CAS# 67-63-0 is listed on the Canadian Ingredient Disclosure List.

CAS# 67-56-1 is listed on the Canadian Ingredient Disclosure List.

CAS# 91-22-5 is listed on the Canadian Ingredient Disclosure List.

# Material Safety Data Sheet

## 1-Hexadecylpyridinium bromide

ACC# 17241

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** 1-Hexadecylpyridinium bromide

**Catalog Numbers:** AC411370000, AC411370100, AC411370250

**Synonyms:** 1-Hexadecylpyridinium bromide; N-Cetylpyridinium bromide; Cetylpyridinium bromide; Bromocet; Acetoquat CPB; Quaternary ammonium compound.

**Company Identification:**

Acros Organics N.V.  
One Reagent Lane  
Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01

**For emergencies in the US, call CHEMTREC:** 800-424-9300

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
140-72-7	1-Hexadecylpyridinium bromide	98	205-428-3

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: white powder.

**Danger!** May be fatal if inhaled. Harmful if swallowed. Dust causes severe irritation of the eyes, skin and respiratory tract. May be harmful if absorbed through the skin.

**Target Organs:** Respiratory system, eyes, skin.

#### Potential Health Effects

**Eye:** Contact with eyes may cause severe irritation, and possible eye burns.

**Skin:** Causes skin irritation. May be harmful if absorbed through the skin.

**Ingestion:** Harmful if swallowed. May cause irritation of the digestive tract.

**Inhalation:** May be fatal if inhaled. Dust is irritating to the respiratory tract.

**Chronic:** Prolonged or repeated skin contact may cause dermatitis.

### Section 4 - First Aid Measures

## Material Safety Data Sheets, Carver Hall RM 284

**Eyes:** In case of contact, immediately flush eyes with plenty of water for a t least 15 minutes. Get medical aid immediately.

**Skin:** In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Get medical aid. Wash clothing before reuse.

**Ingestion:** If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** POISON material. If inhaled, get medical aid immediately. Remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion. Runoff from fire control or dilution water may cause pollution.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** Not available.

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 4; Flammability: 1; Instability: 0

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container.

Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation. Evacuate unnecessary personnel. Approach spill from upwind.

### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Do not get in eyes, on skin, or on clothing. Keep container tightly closed. Do not breathe dust. Do not breathe spray or mist. Use only with adequate ventilation or respiratory protection.

## Material Safety Data Sheets, Carver Hall RM 284

**Storage:** Keep container closed when not in use. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
1-Hexadecylpyridinium bromide	none listed	none listed	none listed

**OSHA Vacated PELs:** 1-Hexadecylpyridinium bromide: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

### Section 9 - Physical and Chemical Properties

**Physical State:** Powder

**Appearance:** white

**Odor:** characteristic odor

**pH:** 5.2 (10g/l H<sub>2</sub>O)

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 63-69 deg C

**Decomposition Temperature:** Not available.

**Solubility:** Soluble.

**Specific Gravity/Density:** Not available.

**Molecular Formula:** C<sub>21</sub>H<sub>38</sub>BrN

**Molecular Weight:** 384.44

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Dust generation, confined spaces.

**Incompatibilities with Other Materials:** Strong oxidizing agents.

**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, carbon dioxide, hydrogen bromide.

**Hazardous Polymerization:** Has not been reported

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 140-72-7: UU4848000

**LD50/LC50:**

CAS# 140-72-7:

Oral, rat: LD50 = 475 mg/kg;

Sensitization test (guinea pig): negative for the chloride. Inhalation LC50 rat: 90 mg/m<sup>3</sup>/4H for the chloride.

**Carcinogenicity:**

CAS# 140-72-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** No information found

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12 - Ecological Information

No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.



# Material Safety Data Sheets, Carver Hall RM 284

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	TOXIC SOLIDS, ORGANIC, N.O.S.	TOXIC SOLID ORGANIC NOS (CETYLPYRIDINIUM BROMIDE)
<b>Hazard Class:</b>	6.1	6.1
<b>UN Number:</b>	UN2811	UN2811
<b>Packing Group:</b>	I	I

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 140-72-7 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

#### SARA Codes

CAS # 140-72-7: immediate.

**Section 313** No chemicals are reportable under Section 313.

#### Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

#### Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### OSHA:

## Material Safety Data Sheets, Carver Hall RM 284

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 140-72-7 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

T+

#### **Risk Phrases:**

R 22 Harmful if swallowed.

R 26 Very toxic by inhalation.

R 36/37/38 Irritating to eyes, respiratory system and skin.

#### **Safety Phrases:**

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 36/37 Wear suitable protective clothing and gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 28A After contact with skin, wash immediately with plenty of water

S 61 Avoid release to the environment. Refer to special instructions /safety data sheets.

### **WGK (Water Danger/Protection)**

CAS# 140-72-7: No information available.

### **Canada - DSL/NDSL**

CAS# 140-72-7 is listed on Canada's DSL List.

### **Canada - WHMIS**

This product has a WHMIS classification of D1A, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

# Material Safety Data Sheet

Pyrene, ca 96%

ACC# 96675

## Section 1 - Chemical Product and Company Identification

**MSDS Name:** Pyrene, ca 96%

**Catalog Numbers:** AC157650000, AC157651000, AC157655000

**Synonyms:** Benzo[def]phenanthrene

**Company Identification:**

Acros Organics N.V.

One Reagent Lane

Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01

**For emergencies in the US, call CHEMTREC:** 800-424-9300

## Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
129-00-0	Pyrene	ca. 96.0	204-927-3

## Section 3 - Hazards Identification

### EMERGENCY OVERVIEW

Appearance: yellow powder.

**Danger!** May be fatal if inhaled. Causes respiratory tract irritation. Cancer hazard. Causes skin irritation. May be harmful if swallowed. May cause eye irritation. May cause cancer based on animal studies. The toxicological properties of this material have not been fully investigated.

**Target Organs:** None known.

#### Potential Health Effects

**Eye:** May cause eye irritation.

**Skin:** Causes skin irritation. Prolonged and/or repeated contact may cause irritation and/or dermatitis. Dermal applications may cause hyperemia (an excess of blood in a part), weight loss, and hematopoietic changes.

**Ingestion:** May cause digestive tract disturbances. The toxicological properties of this substance have not been fully investigated. May be harmful if swallowed.

**Inhalation:** May be fatal if inhaled. Causes respiratory tract irritation. Inhalation of dust may cause respiratory tract irritation.

## Material Safety Data Sheets, Carver Hall RM 284

**Chronic:** May cause cancer according to animal studies. Chronic effects may include leukocytosis and lengthened chronaxy of the leg muscle flexors.

### Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

**Extinguishing Media:** Use foam, dry chemical, or carbon dioxide.

**Flash Point:** 210 deg C ( 410.00 deg F)

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:**Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 1; Flammability: 1; Instability: 0

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions. Do not let this chemical enter the environment.

### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container

## Material Safety Data Sheets, Carver Hall RM 284

tightly closed. Avoid ingestion and inhalation.

**Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Use adequate ventilation to keep airborne concentrations low.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Pyrene	0.2 mg/m <sup>3</sup> TWA (as benzene soluble aerosol) (listed under Coal tar pitches).	0.1 mg/m <sup>3</sup> TWA (cyclohexane-extractable fraction) (listed under Coal tar pitches).80 mg/m <sup>3</sup> IDLH (listed under Coal tar pitches).	0.2 mg/m <sup>3</sup> TWA (benzene soluble fraction) (listed under Coal tar pitches).

**OSHA Vacated PELs:** Pyrene: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### Section 9 - Physical and Chemical Properties

**Physical State:** Powder

**Appearance:** yellow

**Odor:** None reported.

**pH:** Not available.

**Vapor Pressure:** < 1 mm Hg @20C

**Vapor Density:** Not available.

**Evaporation Rate:**Not available.

**Viscosity:** Not available.

**Boiling Point:** 404 deg C @ 760.00mmHg

**Freezing/Melting Point:**156 deg C

**Decomposition Temperature:**Not available.

**Solubility:** 1.271

**Specific Gravity/Density:**Not available.

# Material Safety Data Sheets, Carver Hall RM 284

**Molecular Formula:**C16H10

**Molecular Weight:**202.25

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, dust generation.

**Incompatibilities with Other Materials:** Strong oxidizing agents.

**Hazardous Decomposition Products:** Carbon monoxide, carbon monoxide, carbon dioxide, carbon dioxide.

**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 129-00-0: UR2450000; UR2450100

**LD50/LC50:**

CAS# 129-00-0:

Draize test, rabbit, skin: 500 mg/24H Mild;

Inhalation, rat: LC50 = 170 mg/m<sup>3</sup>;

Inhalation, rat: LC50 = 170 mg/m<sup>3</sup>;

Oral, mouse: LD50 = 800 mg/kg;

Oral, rat: LD50 = 2700 mg/kg;

**Carcinogenicity:**

CAS# 129-00-0:

- **ACGIH:** A1 - Confirmed Human Carcinogen (listed as 'Coal tar pitches').
- **California:** Not listed.
- **NTP:** Known carcinogen (listed as Coal tar pitches).
- **IARC:** Group 1 carcinogen (listed as Coal tar pitches).

**Epidemiology:** No information found

**Teratogenicity:** TDLo(skin, mouse) =10 gm/kg/3W-I; Skin and Appendages - tumors

**Reproductive Effects:** No information found

**Mutagenicity:** Mutation in microorganisms(Salmonella typhimurium)= 5 ug/plate  
Unscheduled DNA synthesis(Human Fibroblast)= 100 mg/L  
Sister chromatid exchange(Human Lymphocyte) = 100 umol/L

**Neurotoxicity:** No information found

**Other Studies:**

## Section 12 - Ecological Information

## Material Safety Data Sheets, Carver Hall RM 284

**Ecotoxicity:** Water flea Daphnia: EC50 = 1.8 mg/L; 48 Hr.; Unspecified No data available.

**Environmental:** If pyrene is released to soil, it will be expected to adsorb very strongly to the soil and will not be expected to leach to the groundwater. If released to water, pyrene will be expected to adsorb very strongly to sediments and particulate matter. It will not hydrolyze but may undergo slight to moderate bioconcentration.

**Physical:** No information available.

**Other:** Reported BCF: rainbow trout, 72); goldfish, 457; fathead minnow, 600-970. Based on these values, minimal to moderate bioconcentration of pyrene in aquatic organisms would be expected.

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

### Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	Not regulated as a hazardous material	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

### Section 15 - Regulatory Information

#### US FEDERAL

##### TSCA

CAS# 129-00-0 is listed on the TSCA inventory.

##### Health & Safety Reporting List

CAS# 129-00-0: Effective 6/1/87, Sunset 6/1/97

##### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

# Material Safety Data Sheets, Carver Hall RM 284

## Section 12b

None of the chemicals are listed under TSCA Section 12b.

## TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

## CERCLA Hazardous Substances and corresponding RQs

CAS# 129-00-0: 5000 lb final RQ; 2270 kg final RQ

## SARA Section 302 Extremely Hazardous Substances

CAS# 129-00-0: 1000 lb lower threshold TPQ; 10000 lb upper threshold T PQ

## SARA Codes

CAS # 129-00-0: immediate, delayed.

## Section 313

No chemicals are reportable under Section 313.

## Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

## Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. CAS# 129-00-0 is listed as a Priority Pollutant under the Clean Water Act.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

## OSHA:

None of the chemicals in this product are considered highly hazardous by OSHA.

## STATE

CAS# 129-00-0 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, (listed as Coal tar pitches), Massachusetts.

## California Prop 65

California No Significant Risk Level: None of the chemicals in this product are listed.

## European/International Regulations

### European Labeling in Accordance with EC Directives

#### Hazard Symbols:

XN

#### Risk Phrases:

R 45 May cause cancer.

#### Safety Phrases:

S 24/25 Avoid contact with skin and eyes.

#### WGK (Water Danger/Protection)

CAS# 129-00-0: No information available.

#### Canada - DSL/NDSL

CAS# 129-00-0 is listed on Canada's DSL List.

#### Canada - WHMIS

This product has a WHMIS classification of D1A, D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

#### Canadian Ingredient Disclosure List

CAS# 129-00-0 is listed on the Canadian Ingredient Disclosure List.



## Material Safety Data Sheet

1,1'-Diethyl-2,2'-Cyanine Iodide, 99% (UV-Vis)

ACC# 75953

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** 1,1'-Diethyl-2,2'-Cyanine Iodide, 99% (UV-Vis)

**Catalog Numbers:** AC407250000, AC407255000, EK1195692

**Synonyms:** None.

**Company Identification:**

Fisher Scientific  
1 Reagent Lane  
Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**For CHEMTREC assistance, call:** 800-424-9300

**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
977-96-8	Quinolinium,1-ethyl-2-(1-ethyl-2(1h)-quinolinylidene)methyl,	99	213-556-6

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: dark red crystals.

**Caution!** May cause eye and skin irritation. May cause respiratory and digestive tract irritation. Light sensitive. May cause reproductive and fetal effects. The toxicological properties of this material have not been fully investigated.

**Target Organs:** Thyroid.

#### Potential Health Effects

**Eye:** May cause eye irritation.

**Skin:** May cause skin irritation.

**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated. Chronic ingestion of iodides during pregnancy

## Material Safety Data Sheets, Carver Hall RM 284

has resulted in fetal death, severe goiter, and cretinoid appearance of the newborn.

**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.

**Chronic:** Chronic ingestion of iodides during pregnancy has resulted in fetal death, severe goiter, and cretinoid appearance of the newborn. Prolonged exposure to iodides may produce iodism in sensitive individuals. Symptoms could include skin rash, running nose and headache.

### Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:** Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 0; Instability: 0

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container.

## Material Safety Data Sheets, Carver Hall RM 284

Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

### Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Store protected from light.

**Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from light.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Quinolinium,1-ethyl-2-(1-ethyl-2(1h)-quinolinylidene)methyl,	none listed	none listed	none listed

**OSHA Vacated PELs:** Quinolinium,1-ethyl-2-(1-ethyl-2(1h)-quinolinylidene)methyl,: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

### Section 9 - Physical and Chemical Properties

**Physical State:** Crystals

## Material Safety Data Sheets, Carver Hall RM 284

**Appearance:** dark red  
**Odor:** Not available.  
**pH:** Not available.  
**Vapor Pressure:** Not available.  
**Vapor Density:** Not available.  
**Evaporation Rate:** Not available.  
**Viscosity:** Not available.  
**Boiling Point:** Not available.  
**Freezing/Melting Point:** 273 deg C  
**Decomposition Temperature:** > 273 deg C  
**Solubility:** Not available.  
**Specific Gravity/Density:** Not available.  
**Molecular Formula:** C<sub>23</sub>H<sub>23</sub>IN<sub>2</sub>  
**Molecular Weight:** 454.34

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.  
**Conditions to Avoid:** Incompatible materials, light, dust generation, excess heat, strong oxidants.  
**Incompatibilities with Other Materials:** Oxidizing agents.  
**Hazardous Decomposition Products:** Carbon monoxide, oxides of nitrogen, oxides of nitrogen, carbon dioxide, hydrogen iodide.  
**Hazardous Polymerization:** Has not been reported

### Section 11 - Toxicological Information

**RTECS#:**  
**CAS#** 977-96-8 unlisted.  
**LD50/LC50:**  
Not available.

**Carcinogenicity:**  
CAS# 977-96-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found  
**Teratogenicity:** No information found  
**Reproductive Effects:** No information found  
**Mutagenicity:** No information found  
**Neurotoxicity:** No information found  
**Other Studies:**

### Section 12 - Ecological Information

# Material Safety Data Sheets, Carver Hall RM 284

No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	DOT regulated - small quantity provisions apply (see 49CFR173.4)	TOXIC SOLID ORGANIC NOS (DIETHYL CYANINE IODIDE)
<b>Hazard Class:</b>		6.1
<b>UN Number:</b>		UN2811
<b>Packing Group:</b>		II

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 977-96-8 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

## Material Safety Data Sheets, Carver Hall RM 284

**Section 313** No chemicals are reportable under Section 313.

**Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

**Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

**OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**STATE**

CAS# 977-96-8 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

**California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

### European/International Regulations

#### European Labeling in Accordance with EC Directives

**Hazard Symbols:**

T

**Risk Phrases:**

R 23/24/25 Toxic by inhalation, in contact with skin and if swallowed.

**Safety Phrases:**

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 28A After contact with skin, wash immediately with plenty of water

**WGK (Water Danger/Protection)**

CAS# 977-96-8: No information available.

**Canada - DSL/NDSL**

CAS# 977-96-8 is listed on Canada's DSL List.

**Canada - WHMIS**

not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

## Material Safety Data Sheet

1,1'-Diethyl-2,2'-Dicarbocyanine Iodide, 99% (UV-Vis)

ACC# 25906

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** 1,1'-Diethyl-2,2'-Dicarbocyanine Iodide, 99% (UV-Vis)

**Catalog Numbers:** AC407260000, AC407265000, ACE1347145

**Synonyms:** None.

**Company Identification:**

Acros Organics N.V.  
One Reagent Lane  
Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01

**For emergencies in the US, call CHEMTREC:** 800-424-9300

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
14187-31-6	Quinolinium,1-ethyl-2-5-(1-ethyl-2(1h)-quinolinylidene)-1,3p	99	238-040-8

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: green powder.

**Caution!** May cause eye and skin irritation. May cause respiratory and digestive tract irritation. Light sensitive. May cause reproductive and fetal effects. The toxicological properties of this material have not been fully investigated.

**Target Organs:** Thyroid.

#### Potential Health Effects

**Eye:** May cause eye irritation.

**Skin:** May cause skin irritation.

**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated. Chronic ingestion of iodides during pregnancy has resulted in fetal death, severe goiter, and cretinoid appearance of the newborn.

**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.

**Chronic:** Chronic ingestion of iodides during pregnancy has resulted in fetal death, severe

## Material Safety Data Sheets, Carver Hall RM 284

goiter, and cretinoid appearance of the newborn. Prolonged exposure to iodides may produce iodism in sensitive individuals. Symptoms could include skin rash, running nose and headache.

### Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation. If breathing has ceased apply artificial respiration using oxygen and a suitable mechanical device such as a bag and a mask.

**Notes to Physician:** Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:** Use agent most appropriate to extinguish fire. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 0; Instability: 0

### Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.



## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Store protected from light.

**Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Store protected from light.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Quinolinium,1-ethyl-2-5-(1-ethyl-2(1h)-quinolinylidene)-1,3p	none listed	none listed	none listed

**OSHA Vacated PELs:** Quinolinium,1-ethyl-2-5-(1-ethyl-2(1h)-quinolinylidene)-1,3p: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant respirator use.

## Section 9 - Physical and Chemical Properties

**Physical State:** Powder

**Appearance:** green

**Odor:** Not available.

**pH:** Not available.

## Material Safety Data Sheets, Carver Hall RM 284

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 263-265C

**Decomposition Temperature:** Not available.

**Solubility:** Not available.

**Specific Gravity/Density:** Not available.

**Molecular Formula:** C<sub>27</sub>H<sub>27</sub>IN<sub>2</sub>

**Molecular Weight:** 506.42

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, light, dust generation, excess heat, strong oxidants.

**Incompatibilities with Other Materials:** Oxidizing agents.

**Hazardous Decomposition Products:** Carbon monoxide, oxides of nitrogen, oxides of nitrogen, carbon dioxide, hydrogen iodide.

**Hazardous Polymerization:** Has not been reported

### Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 14187-31-6 unlisted.

**LD50/LC50:**

Not available.

**Carcinogenicity:**

CAS# 14187-31-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** No information found

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

### Section 12 - Ecological Information

No information available.

**Section 13 - Disposal Considerations**

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

**Section 14 - Transport Information**

	<b>US DOT</b>	<b>Canada TDG</b>
<b>Shipping Name:</b>	Not regulated as a hazardous material	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

**Section 15 - Regulatory Information**

**US FEDERAL**

**TSCA**

CAS# 14187-31-6 is listed on the TSCA inventory.

**Health & Safety Reporting List**

None of the chemicals are on the Health & Safety Reporting List.

**Chemical Test Rules**

None of the chemicals in this product are under a Chemical Test Rule.

**Section 12b**

None of the chemicals are listed under TSCA Section 12b.

**TSCA Significant New Use Rule**

None of the chemicals in this material have a SNUR under TSCA.

**CERCLA Hazardous Substances and corresponding RQs**

None of the chemicals in this material have an RQ.

**SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

**Section 313** No chemicals are reportable under Section 313.

**Clean Air Act:**

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

## Material Safety Data Sheets, Carver Hall RM 284

### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 14187-31-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

XN

#### **Risk Phrases:**

R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.

#### **Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

S 37 Wear suitable gloves.

S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

S 28A After contact with skin, wash immediately with plenty of water

.

### **WGK (Water Danger/Protection)**

CAS# 14187-31-6: No information available.

### **Canada - DSL/NDSL**

CAS# 14187-31-6 is listed on Canada's DSL List.

### **Canada - WHMIS**

This product has a WHMIS classification of D2B, D2A.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

## Material Safety Data Sheet

Tris(2,2'-Bipyridyl)Ruthenium(II)Chloride Hexahydrate, ca. 13.5% Ru

ACC# 10424

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Tris(2,2'-Bipyridyl)Ruthenium(II)Chloride Hexahydrate, ca. 13.5% Ru

**Catalog Numbers:** AC208750000, AC208750010

**Synonyms:** None Known.

**Company Identification:**

Acros Organics N.V.  
One Reagent Lane  
Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01

**For emergencies in the US, call CHEMTREC:** 800-424-9300

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
50525-27-4	Tris(2,2'-Bipyridyl)Ruthenium(II)Chloride Hexahydrate	13.5	unlisted

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: red powder.

**Caution!** May cause eye and skin irritation. May cause respiratory and digestive tract irritation. The toxicological properties of this material have not been fully investigated.

**Target Organs:** No data found.

#### Potential Health Effects

**Eye:** May cause eye irritation.

**Skin:** May cause skin irritation.

**Ingestion:** May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated.

**Inhalation:** May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated.

**Chronic:** No information found.

## Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**Ingestion:** Never give anything by mouth to an unconscious person. Get medical aid. Do NOT induce vomiting. If conscious and alert, rinse mouth and drink 2-4 cupfuls of milk or water.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Runoff from fire control or dilution water may cause pollution.

**Extinguishing Media:** Use agent most appropriate to extinguish fire.

**Flash Point:** Not available.

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 1; Flammability: 0; Instability: 0

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Clean up spills immediately, observing precautions in the Protective Equipment section. Avoid generating dusty conditions. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid

## Material Safety Data Sheets, Carver Hall RM 284

contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation.

**Storage:** Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use process enclosure, local exhaust ventilation, or other engineering controls to control airborne levels.

#### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Tris(2,2'-Bipyridyl)Ruthenium(II)Chloride Hexahydrate	none listed	none listed	none listed

**OSHA Vacated PELs:** Tris(2,2'-Bipyridyl)Ruthenium(II)Chloride Hexahydrate: No OSHA Vacated PELs are listed for this chemical.

#### Personal Protective Equipment

**Eyes:** Wear chemical splash goggles. Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to minimize contact with skin.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### Section 9 - Physical and Chemical Properties

**Physical State:** Powder

**Appearance:** red

**Odor:** Not available.

**pH:** Not available.

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** > 300 deg C

**Decomposition Temperature:** Not available.

**Solubility:** Not available.

## Material Safety Data Sheets, Carver Hall RM 284

**Specific Gravity/Density:** Not available.  
**Molecular Formula:** C<sub>30</sub>H<sub>24</sub>Cl<sub>2</sub>N<sub>6</sub>Ru.6H<sub>2</sub>O  
**Molecular Weight:** 748.63

### Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.  
**Conditions to Avoid:** Incompatible materials, dust generation, excess heat, strong oxidants.  
**Incompatibilities with Other Materials:** Oxidizing agents.  
**Hazardous Decomposition Products:** Hydrogen chloride, nitrogen oxides, carbon monoxide, carbon dioxide.  
**Hazardous Polymerization:** Has not been reported

### Section 11 - Toxicological Information

**RTECS#:**  
**CAS#** 50525-27-4: VM2730000  
**LD50/LC50:**  
Not available.

**Carcinogenicity:**  
CAS# 50525-27-4: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found  
**Teratogenicity:** No information found  
**Reproductive Effects:** No information found  
**Mutagenicity:** No information found  
**Neurotoxicity:** No information found  
**Other Studies:**

### Section 12 - Ecological Information

No information available.

### Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a



## Material Safety Data Sheets, Carver Hall RM 284

hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

### Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	Not regulated as a hazardous material	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

### Section 15 - Regulatory Information

#### US FEDERAL

##### TSCA

CAS# 50525-27-4 is not listed on the TSCA inventory. It is for research and development use only.

##### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

##### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

##### Section 12b

None of the chemicals are listed under TSCA Section 12b.

##### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

##### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

##### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

**Section 313** No chemicals are reportable under Section 313.

##### Clean Air Act:

This material does not contain any hazardous air pollutants.

This material does not contain any Class 1 Ozone depletors.

This material does not contain any Class 2 Ozone depletors.

##### Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA.

None of the chemicals in this product are listed as Priority Pollutants under the CWA.

## Material Safety Data Sheets, Carver Hall RM 284

None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

CAS# 50525-27-4 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

### **California Prop 65**

California No Significant Risk Level: None of the chemicals in this product are listed.

## **European/International Regulations**

### **European Labeling in Accordance with EC Directives**

#### **Hazard Symbols:**

Not available.

#### **Risk Phrases:**

#### **Safety Phrases:**

S 24/25 Avoid contact with skin and eyes.

### **WGK (Water Danger/Protection)**

CAS# 50525-27-4: No information available.

### **Canada - DSL/NDSL**

None of the chemicals in this product are listed on the DSL or NDSL list.

### **Canada - WHMIS**

WHMIS: Not available.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

### **Canadian Ingredient Disclosure List**

# Material Safety Data Sheets, Carver Hall RM 284

SIGMA CHEMICAL CO -- TRICINE, CELL CULTURE TESTED, T6272 -- 6505-00N092645

=====  
Product Identification  
=====

Product ID:TRICINE, CELL CULTURE TESTED, T6272

MSDS Date:01/01/1999

FSC:6505

NIIN:00N092645

Status Code:A

MSDS Number: CJTVY

=== Responsible Party ===

Company Name:SIGMA CHEMICAL CO

Box:14508

City:ST LOUIS

State:MO

ZIP:63178

Country:US

Info Phone Num:314-771-5765

Emergency Phone Num:314-771-5765

CAGE:21076

=== Contractor Identification ===

Company Name:SIGMA CHEMICAL COMPANY

Address:3050 SPRUCE ST

Box:14508

City:ST LOUIS

State:MO

ZIP:63178

Country:US

Phone:314-771-5765

CAGE:21076

=====  
Composition/Information on Ingredients  
=====

Ingred Name:TRICINE

CAS:5704-04-1

Other REC Limits:N/K

OSHA PEL:N/K

OSHA STEL:N/K

ACGIH TLV:N/K

ACGIH STEL:N/K

=====  
Hazards Identification  
=====

Routes of Entry: Inhalation:YES Skin:YES Ingestion:YES

Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO

Health Hazards Acute and Chronic:ACUTE: MAY BE HARMFUL BY INHALATION, INGESTION, OR SKIN ABSORPTION. MAY CAUSE EYE IRRITATION. MAY CAUSE SKIN IRRITATION. TO THE BEST OF MANUFACTURER'S KNOWLEDGE, THE CHEMICAL, PHYSICAL, AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

Effects of Overexposure:SEE HEALTH HAZARDS.

=====  
First Aid Measures  
=====

First Aid:EYES: IMMEDIATELY FLUSH WITH COPIOUS AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. SKIN: IMMEDIATELY WASH WITH SOAP AND COPIOUS AMOUNTS OF WATER. INHALATION: REMOVE TO FRESH AIR. IF NOT

# Material Safety Data Sheets, Carver Hall RM 284

BREATHING, GIVE ARTIFICIAL RESPIRATION. IF BREATHING IS DIFFICULT, GIVE OXYGEN. INGESTION: WASH OUT MOUTH WITH WATER PROVIDED PERSON IS CONSCIOUS. CALL A PHYSICIAN. WASH CONTAMINATED CLOTHING BEFORE REUSE.

## ===== Fire Fighting Measures =====

Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, DRY CHEMICAL POWDER OR APPROPRIATE FOAM.

Fire Fighting Procedures:WEAR NIOSH APPROVED SCBA AND FULL PROTECTIVE EQUIPMENT .

Unusual Fire/Explosion Hazard:EMITS TOXIC FUMES UNDER FIRE CONDITIONS.

## ===== Accidental Release Measures =====

Spill Release Procedures:WEAR NIOSH APPROVED RESPIRATOR, CHEMICAL SAFETY GOGGLES, RUBBER BOOTS AND HEAVY RUBBER GLOVES. SWEEP UP, PLACE IN A BAG AND HOLD FOR WASTE DISPOSAL. AVOID RAISING DUST. VENTILATE AREA AND WASH SPILL SITE AFTER MATERIAL PICKUP IS COMPLETE.

## ===== Handling and Storage =====

Handling and Storage Precautions:AVOID INHALATION. AVOID CONTACT WITH EYES, SKIN AND CLOTHING. AVOID PROLONGED OR REPEATED EXPOSURE. KEEP TIGHTLY CLOSED. STORE IN A COOL DRY PLACE.

## ===== Exposure Controls/Personal Protection =====

Respiratory Protection:NIOSH APPROVED RESPIRATOR.

Ventilation:MECHANICAL EXHAUST REQUIRED.

Protective Gloves:COMPATIBLE CHEMICAL-RESISTANT GLOVES.

Eye Protection:ANSI APPROVED CHEMICAL WORKERS GOGGLES .

Other Protective Equipment:ANSI APPROVED EMERGENCY EYEWASH AND DELUGE SHOWER .

Work Hygienic Practices:WASH THOROUGHLY AFTER HANDLING.

Supplemental Safety and Health

## ===== Physical/Chemical Properties =====

Melt/Freeze Pt:>185.C, 365.F

M.P/F.P Text:185C - 188C

Appearance and Odor:WHITE POWDER.

## ===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

STRONG OXIDIZING AGENTS.

Hazardous Decomposition Products:TOXIC FUMES OF CARBON MONOXIDE, CARBON DIOXIDE.

## ===== Ecological Information =====

Ecological:DATA NOT YET AVAILABLE.

## ===== Disposal Considerations =====

# Material Safety Data Sheets, Carver Hall RM 284

Waste Disposal Methods:DISSOLVE OR MIX THE MATERIAL WITH A COMBUSTIBLE SOLVENT AND BURN IN A CHEMICAL INCINERATOR EQUIPPED WITH AN AFTERBURNER AND SCRUBBER. OBSERVE ALL FEDERAL, STATE AND LOCAL ENVIRONMENTAL REGULATIONS.

=====  
MSDS Transport Information  
=====

Transport Information:CONTACT SIGMA CHEMICAL COMPANY FOR TRANSPORTATION INFORMATION.

=====  
Regulatory Information  
=====

SARA Title III Information:DATA NOT AVAILABLE.  
Federal Regulatory Information:DATA NOT AVAILABLE.  
State Regulatory Information:DATA NOT AVAILABLE.

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## BIO-RAD LABORATORIES CLINICAL DIV -- 1610700 AMMONIUM PERSULFATE 10G - 6850-00F055368

=====  
Product Identification  
=====

Product ID:1610700 AMMONIUM PERSULFATE 10G  
MSDS Date:10/22/1996  
FSC:6850  
NIIN:00F055368  
MSDS Number: CGJHC  
=== Responsible Party ===  
Company Name:BIO-RAD LABORATORIES CLINICAL DIV  
Address:2000 ALFRED NOBEL DR  
City:HERCULES  
State:CA  
ZIP:94547-5000  
Country:US  
Info Phone Num:510-724-7000/510-741-1000  
Emergency Phone Num:510-724-7000/510-741-1000  
CAGE:10987

==== Contractor Identification ====

Company Name:BIO-RAD LABORATORIES  
Address:3300 REGATTA BLVD  
Box:City:RICHMOND  
State:CA  
ZIP:94804  
Country:US  
Phone:415-232-7000  
CAGE:10987

# Material Safety Data Sheets, Carver Hall RM 284

## ==== Composition/Information on Ingredients =====

Ingred Name:AMMONIUM PERSULFATE  
CAS:7727-54-0  
RTECS #:SE0350000  
ACGIH TLV:2 MG/CUM

## ==== Hazards Identification =====

Routes of Entry: Inhalation:YES Skin:NO Ingestion:YES  
Reports of Carcinogenicity:NTP:NO IARC:NO OSHA:NO  
Health Hazards Acute and Chronic:INGESTION: HARMFUL. INHALATION:  
IRRITATING TO THE RESPIRATORY SYSTEM, MAY CAUSE SENSITIZATION.  
Explanation of Carcinogenicity:NONE  
Effects of Overexposure:IRRITATION.

## ==== First Aid Measures =====

First Aid:INHALATION: SUPPLY FRESH AIR. IF UNCONSCIOUSNESS, PLACE  
PATIENT STABLY IN SIDE POSITION FOR TRANSPORTATION. SKIN: WASH  
W/WATER & SOAP THEN RINSE THOROUGHLY. EYES: RINSE FOR SEVERAL MINS  
UNDER RUNNING WATER. OBTAIN MEDICAL ATTENTION IN ALL CASES.

## ==== Fire Fighting Measures =====

Extinguishing Media:CO2, EXTINGUISHING POWDER/WATER SPRAY. LARGE: WATER  
SPRAY/ALCOHOL RESISTANT FOAM.  
Fire Fighting Procedures:NO SPECIAL MEASURES REQUIRED.  
Unusual Fire/Explosion Hazard:CONTACT W/COMBUSTIBLE MATERIAL MAY CAUSE  
FIRE.

## ==== Accidental Release Measures =====

Spill Release Procedures:DON'T ALLOW TO ENTER SEWERS, SURFACE/GROUND  
WATER.

## ==== Handling and Storage =====

Handling and Storage Precautions:KEEP RECEPTACLE TIGHTLY SEALED. ENSURE  
GOOD VENTILATION/EXHAUSTION AT THE WORKPLACE.  
Other Precautions:AVOID CONTACT W/SKIN. KEEP AWAY FROM FOODSTUFFS,  
BEVERAGES & FOOD.

## ==== Exposure Controls/Personal Protection =====

Respiratory Protection:IN CASE OF BRIEF EXPOSURE/LOW POLLUTION USE  
RESPIRATORY FILTER DEVICE. IN CASE OF INTESIVE/LONGER EXPOSURE USE  
RESPIRATORY PROTECTIVE DEVICE THAT IS INDEPENDENT OF CIRCULATING  
AIR.

Ventilation:GOOD

Protective Gloves:PROTECTIVE/SYNTHETIC

Eye Protection:NOT REQUIRED

Work Hygienic Practices:REMOVE/LAUNDER CONTAMINATED CLOTHING BEFORE  
REUSE. WASH HANDS BEFORE BREAKS & AT THE END OF WORK.

Supplemental Safety and Health

# Material Safety Data Sheets, Carver Hall RM 284

===== Physical/Chemical Properties =====

Melt/Freeze Pt:M.P/F.P Text:<320F  
pH:1.5  
Solubility in Water:MISCIBLE  
Appearance and Odor:WHITE CRYSTALLINE; ODORLESS

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

===== Disposal Considerations =====

Waste Disposal Methods:DISPOSE CONTAMINATED MATERIAL AS WASTE,  
IAW/FEDERAL, STATE & LOCAL REGULATIONS. MUSTN'T BE DISPOSED OF  
TOGETHER W/HOUSEHOLD GARBAGE. DON'T ALLOW PRODUCT TO REACH SEWAGE  
SYSTEM.

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