K 45598

Fisher Scientific

ACROS ORGANICS

MSDS

IMPORTANT SAFETY INFORMATION -- DO NOT DISCARD.
PLEASE ROUTE TO COMPANY SAFETY OFFICER.

SYRACUSE CTY SCH DIST
BOVA SUPP CTR
1023 ERIE BLVD W

SYRACUSE NY 13204

IF NAME AND/OR ADDRESS HAVE CHANGED, CONTACT YOUR SALES REPRESENTATIVE OR LOCAL BRANCH.

FOR EACH CHEMICAL, A MSDS SHEET WILL BE SENT ONLY ON THE FIRST SHIPMENT UNLESS A SUBSTANTIAL REVISION OCCURS.

REQUIRED MATERIAL SAFETY DATA SHEETS (MSDS) NOT INCLUDED IN THIS MAILING WILL FOLLOW UNDER SEPARATE COVER.

THIS PACKET MAY CONTAIN MSDS FOR PRODUCTS MANUFACTURED BY OTHERS AND DISTRIBUTED BY FISHER SCIENTIFIC COMPANY OR ACROS ORGANICS. THESE MSDS WERE PREPARED BY THE MANUFACTURER AND FISHER/ACROS DISCLAIMS ALL LIABILITY FOR THE CONTENT.

**** MATERIAL SAFETY DATA SHEET ****

Acetone
00140

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Acetone
Catalog Numbers:
S70090, S70091-1, A11 1, A11 20, A11 200, A11 4, A11-1, A11-20, A11-200, A11-4, A111, A11200, A114, A11S 4, A11S-4, A11S4, A16F-1GAL, A16P 4, A16P-4, A16P4, A16S 20, A16S 20 001, A16S 4, A16S-20, A16S-4, A16S20, A16S20001, A16S4, A16S4LC, A18 1, A18 20, A18 200, A18 200 001, A18 4, A18 500, A18-1, A18-20, A18-200, A18-4, A18-500, A181, A1820, A18200, A18200001, A18200LC, A1820LC, A1820LOT003, A184, A184LC, A184LOT001, A18500, A18CU1300, A18J500, A18P4, A18RB115, A18RB19, A18RB200, A18RB50, A18RS115, A18RS200, A18RS28, A18RS50, A18S 4, A18S-4, A18S4, A18SK 4, A18SK-4, A18SK4, A18SK4LC, A18SS 200, A18SS 50, A18SS-115, A18SS-200, A18SS-30, A18SS-50, A18SS200, A18SS50, A19 1, A19 4, A19-1, A19-4, A191, A194, A20-1, A40 4, A40-4, A404, A404LOT007, A404LOT008, A404LOT009, A928 4, A9284, A929 4, A929-1, A929-4, A9294, A9294LC, A9294LOT001, A9294LOT012, A9294LOT014, A9294LOT017, A9294LOT018, A9294LOT019, A9294LOT021, A9294LOT022, A9294LOT024, A929J4, A929RS115, A929RS19, A929RS200, A929RS28, A929RS50, A929SS115, A929SS200, A929SS28, A929SS50, A930-4, A946 4, A946-4, A9464, A946FB200, A946RB115, A946RB19, A946RB200, A946RB50, A949 1, A949 4, A949-1, A949-4, A9491, A9494, A9494LOT004, A949CU50, A949J4, A949LC, A949RS115, A949RS19, A949RS200, A949RS28, A949RS50, A949SK-1, A949SK-4, A949SS 115, A949SS 200, A949SS 30, A949SS 50, A949SS-11, A949SS-115, A949SS-20, A949SS-200, A949SS-30, A949SS-50, A949SS115, A949SS200, A949SS30, A949SS50, BP24011, BP240320, BP24034, BP2403500, BPA18-4, BPA946RB-115, BPA946RB-19, BPA946RB-200, BPA946RB-50, FLA929RS-115, FLA929RS-200, FLA929RS-28, FLA929RS-50, HC 300 1GAL, HC3001GAL, NC9475452, NC9475553, NC9614315, NC9631882, NC9743229, S70091, S70091HPLC, S70091SPEC, XXA181LI, XXA949U200LI
Synonyms:
Dimethylformaldehyde; Dimethyl Ketone; 2-Propanone; Pyroacetic Acid; Pyroacetic Ether.
Company Identification: Fisher Scientific
1 Reagent Lane
Fairlawn, 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	%	EINECS#
67-64-1	Acetone	99.0	200-662-2

Hazard Symbols: XI F
Risk Phrases: 11 36 66 67

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW
Appearance: colourless. Flash Point: -4 deg F.
Danger! Extremely flammable liquid. May cause central nervous system depression. May cause liver and kidney damage. Causes eye and skin irritation. Causes digestive and respiratory tract irritation.
Target Organs: Kidneys, central nervous system, liver, respiratory system.

Potential Health Effects
Eye:
Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury.
Skin:
Exposure may cause irritation characterized by redness, dryness, and inflammation.
Ingestion:
May cause irritation of the digestive tract. May cause central nervous system depression, kidney damage, and liver damage. Symptoms may include: headache, excitement, fatigue, nausea, vomiting, stupor, and coma. May cause liver and kidney damage. 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. Causes respiratory tract irritation. May cause liver and kidney damage. May cause motor incoordination and speech abnormalities.
Chronic:
Prolonged or repeated skin contact may cause dermatitis. Chronic inhalation may cause effects similar to those of acute inhalation.

**** 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 immediately.
Skin:
Flush skin with plenty of soap and 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:
Do NOT induce vomiting. 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:
Get medical aid immediately. Remove from exposure 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 respiration. 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:
Containers can build up pressure if exposed to heat and/or fire. 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. 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. Extremely flammable liquid and vapor. Vapors may be heavier than air. They can spread along the ground and collect in low or confined areas. May be ignited by heat, sparks, and flame.
Extinguishing Media:
For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

**** 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, dry sand or earth), then place into a chemical waste container. Do not use combustible materials such as saw dust. Avoid runoff into storm sewers and ditches which lead to waterways. Wear appropriate protective clothing to minimize contact with skin. Remove all sources of ignition. Provide ventilation. A vapor suppressing foam may be used to reduce vapors. Water spray may reduce vapor but may not prevent ignition in closed spaces. Clean up residual material by washing area with a 2-5% solution of soda ash.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:
Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use only in a well-ventilated area. 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. Avoid contact with heat, sparks and flame. 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. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area.

**** 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 exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs

Acetone	500 ppm; 750 ppm STEL	250 ppm TWA; 590 mg/m3 TWA 2500 ppm IDLH (lower explosive level)	1000 ppm TWA; 2400 mg/m3 TWA

OSHA Vacated PELs:
Acetone:
750 ppm TWA; 1800 mg/m3 TWA

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 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Liquid
Appearance:	colourless
Odor:	sweetish odor - musky
pH:	7
Vapor Pressure:	180 mm Hg
Vapor Density:	2.0 (Air=1)
Evaporation Rate:	7.7 (n-Butyl acetate=1)
Viscosity:	Not available
Boiling Point:	133.2 deg F
Freezing/Melting Point:	-139.6 deg F
Autoignition Temperature:	869 deg F (465.00 deg C)
Flash Point:	-4 deg F (-20.00 deg C)
NFPA Rating:	(est.) Health: 1; Flammability: 3; Reactivity: 0
Explosion Limits, Lower:	2.5
Upper:	12.8
Decomposition Temperature:	
Solubility:	Soluble.
Specific Gravity/Density:	0.79 (Water=1)
Molecular Formula:	C3H6O
Molecular Weight:	58.0414

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable at room temperature in closed containers under normal storage and handling conditions.
Conditions to Avoid:
High temperatures, ignition sources, temperatures above 220&C.
Incompatibilities with Other Materials:
Acids (mineral, non-oxidizing, e.g. hydrochloric acid, hydrofluoric acid, muriatic acid, phosphoric acid), acids (mineral, oxidizing, e.g. chromic acid, hypochlorous acid, nitric acid, sulfuric acid), acids (organic, e.g. acetic acid, benzoic acid, formic acid, methanoic acid, oxalic acid), alcohols and glycols (e.g. butyl alcohol, ethanol, methanol, ethylene glycol), aldehydes (e.g. acetaldehyde, acrolein, chloral hydrate, formaldehyde), amides (e.g. butyramide, diethyltoluamide, dimethyl formamide), amines (aliphatic and aromatic, e.g. dimethyl amine, propylamine, pyridine, triethylamine), azo, diazo, and hydrazines (e.g. dimethyl hydrazine, hydrazine, methyl hydrazine), carbamates (e.g. carbanolate, carbofuran), caustics (e.g. ammonia, ammonium hydroxide, calcium hydroxide, potassium hydroxide, sodium hydroxide), cyanides (e.g. potassium cyanide, sodium cyanide), dithiocarbamates (e.g. ferbam, maneb, metham, thiram), esters (e.g. butyl acetate, ethyl acetate, propyl formate), ethers.
Hazardous Decomposition Products:
Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 67-64-1: AL3150000
LD50/LC50:
CAS# 67-64-1: Inhalation, rat: LC50 =50100 mg/m3/8H; Oral, mouse: LD50 = 3 gm/kg; Oral, rabbit: LD50 = 5340 mg/kg; Oral, rat: LD50 =

5800 mg/kg; Skin, rabbit: LD50 = 20 gm/kg.
Carcinogenicity:
Acetone -
ACGIH: A4 - Not Classifiable as a Human Carcinogen
Epidemiology:
No information available.
Teratogenicity:
No information available.
Reproductive Effects:
TDLo(Oral, rat) = 273 gm/kg;Reproductive - Paternal Effects - spermatogenesis (incl. genetic material, sperm morphology, motility, and count).
Neurotoxicity:
No information available.
Mutagenicity:
Sex chromosome loss and nondisjunction(Yeast - Saccharomyces cerevisiae) = 47600 ppm; Cytogenetic analysis(Rodent - hamster Fibroblast)= 40 gm/L.
Other Studies:
Standard Draize Test: Administration onto the skin (human) = 500 mg/7days (Mild). Standard Draize Test: Administration onto the skin (rabbit) = 500 mg/24H (Mild). Standard Draize Test(Eye, Rabbit) = 20 mg; Severe.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

Ecotoxicity:
Material Safety Data Sheet Brown trout:Rainbow trout LC50=5540 mg/L/96H Sunfish (tap water), death at 14250 ppm/24H Mosquito fish (turbid water) TLm=13000 ppm/48H Cas# 67-64-1: LC50 (96Hr.) rainbow trout = 5540 mg/L; Static conditions, 11-13 degrees C LC50 (96Hr) Fathead Minnow = 7280-8120 mg/L; Flow-through Conditions LC50 (96Hr) Bluegill = 8300 mg/L
Other
For more information, see "HANDBOOK OF ENVIRONMENTAL FATE AND EXPOSURE DATA."

**** 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# 67-64-1: waste number U002; (Ignitable waste).

**** SECTION 14 - TRANSPORT INFORMATION ****

US DOT
Shipping Name: ACETONE
Hazard Class: 3
UN Number: UN1090
Packing Group: II
Canadian TDG
Shipping Name: ACETONE
Hazard Class: 3
UN Number: UN1090
Other Information: FLASHPOINT -20 C

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 67-64-1 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.
SARA
Section 302 (RQ)
CAS# 67-64-1: final RQ = 5000 pounds (2270 kg)
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 67-64-1: acute, chronic, flammable, sudden release of pressure.
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

Acetone can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
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: XI F
Risk Phrases:

R 11 Highly flammable.
R 36 Irritating to eyes.
R 66 Repeated exposure may cause skin dryness or cracking.
R 67 Vapors may cause drowsiness and dizziness.

Safety Phrases:

S 9 Keep container in a well-ventilated place.
S 16 Keep away from sources of ignition - No smoking.
S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

WGK (Water Danger/Protection)

CAS# 67-64-1: 0

United Kingdom Occupational Exposure Limits

CAS# 67-64-1: OES-United Kingdom, TWA 750 ppm TWA; 1810 mg/m3 TWA
CAS# 67-64-1: OES-United Kingdom, STEL 1500 ppm STEL; 3620 mg/m3 STEL

Canada

CAS# 67-64-1 is listed on Canada's DSL/NDSL List.
This product has a WHMIS classification of B2, D2B.
CAS# 67-64-1 is not listed on Canada's Ingredient Disclosure List.

Exposure Limits

CAS# 67-64-1: OEL-AUSTRALIA:TWA 500 ppm (1185 mg/m3);STEL 1000 ppm
OEL-AUSTRIA:TWA 750 ppm (1780 mg/m3)
OEL-BELGIUM:TWA 750 ppm (1780 mg/m3);STEL 1000 pp
OEL-CZECHOSLOVAKIA:TWA 800 mg/m3;STEL 4000 mg/m3
OEL-DENMARK:TWA 250 ppm (600 mg/m3)
OEL-FINLAND:TWA 500 ppm (1200 mg/m3);STEL 625 ppm (1500 mg/m3)
OEL-FRANCE:TWA 750 ppm (1800 mg/m3)
OEL-GERMANY:TWA 1000 ppm (2400 mg/m3)
OEL-HUNGARY:TWA 600 mg/m3;STEL 1200 mg/m3
OEL-INDIA:TWA 750 ppm (1780 mg/m3);STEL 1000 ppm (2375 mg/m3)
OEL-JAPAN:TWA 200 ppm (470 mg/m3)
OEL-THE NETHERLANDS:TWA 750 ppm (1780 mg/m3) JAN9
OEL-THE PHILIPPINES:TWA 1000 ppm (2400 mg/m3)
OEL-POLAND:TWA 200 mg/m3
OEL-RUSSIA:TWA 200 ppm;STEL 200 mg/m3
OEL-SWEDEN:TWA 250 ppm (600 mg/m3);STEL 500 ppm (1200 mg/m3)
OEL-SWITZERLAND:TWA 750 ppm (1780 mg/m3)
OEL-TURKEY:TWA 1000 ppm (2400 mg/m3)
OEL-UNITED KINGDOM:TWA 750 ppm (1810 mg/m3);STEL 1250 ppm
OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV
OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 7/26/1999 Revision #6 Date: 8/11/2000

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

**** MATERIAL SAFETY DATA SHEET ****

Albumin from Eggs
00497

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Albumin from Eggs
Catalog Numbers:
S71907, S71908, A388 500, A388-500, A388500
Synonyms:
Alumin egg, egg albumin, egg white
Company Identification: Fisher Scientific
1 Reagent Lane
Fairlawn, 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	%	EINECS#
9006-50-2	ALBUMIN EGG	100	unlisted

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: yellow.
Caution! This is expected to be a low hazard for usual industrial handling. May cause irritation.
Target Organs: None.

Potential Health Effects

Eye:
Dust may cause mechanical irritation.

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

Ingestion:
Ingestion of large amounts may cause gastrointestinal irritation. Expected to be a low ingestion hazard.

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

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.

Inhalation:
Remove from exposure 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

Antidote:
None reported.

**** 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. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

Extinguishing Media:
In case of fire, use water, dry chemical, chemical foam, or alcohol-resistant foam.

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

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

Spills/Leaks:
Sweep up, then place into a suitable container for disposal. Avoid

generating dusty conditions.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:
Use with adequate ventilation. Avoid contact with skin and eyes. Avoid ingestion and inhalation.

Storage:
Keep from contact with oxidizing materials.

**** 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
ALBUMIN EGG	none listed	none listed	none listed

OSHA Vacated PELs:
ALBUMIN EGG:
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 gloves to prevent skin exposure.

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

Respirators:
Wear a NIOSH/MSHA or European Standard EN 149 approved full-facepiece airline respirator in the positive pressure mode with emergency escape provisions.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Solid
Appearance:	yellow
Odor:	none reported
pH:	7.6
Vapor Pressure:	Negligible.
Vapor Density:	Not available.
Evaporation Rate:	Neglible.
Viscosity:	Not available.
Boiling Point:	141.8 deg F
Freezing/Melting Point:	31 deg F
Autoignition Temperature:	Not applicable.
Flash Point:	Not applicable.
NFPA Rating:	Not published.
Explosion Limits, Lower:	Not available.
Upper:	Not available.
Decomposition Temperature:	60 deg C
Solubility:	Soluble in water.
Specific Gravity/Density:	1.0
Molecular Formula:	Not available.
Molecular Weight:	0

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable under normal temperatures and pressures.

Conditions to Avoid:
Incompatible materials.

Incompatibilities with Other Materials:
Strong oxidizing agents.

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

Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 9006-50-2: JX2550000

LD50/LC50:
CAS# 9006-50-2: Oral, rat: LD50 = 101 mg/kg.

Carcinogenicity:
ALBUMIN EGG -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology:
No data available.
Teratogenicity:
No data available.
Reproductive Effects:
No data available.
Neurotoxicity:
No data available.
Mutagenicity:
No data available.
Other Studies:
No data available.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

**** 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
No information available
Canadian TDG
No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 9006-50-2 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.
SARA
Section 302 (RQ)
None of the chemicals in this material have an RQ.
Section 302 (TPQ)
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.
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
ALBUMIN EGG is not present on state lists from CA, PA, MN, MA, FL, or NJ.
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:
WGK (Water Danger/Protection)
CAS# 9006-50-2: No information available.
United Kingdom Occupational Exposure Limits

Canada
None of the chemicals in this product are listed on the DSL/NDSL list.
This product has a WHMIS classification of Not controlled..
CAS# 9006-50-2 is not listed on Canada's Ingredient Disclosure List.
Exposure Limits

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 12/12/1997 Revision #2 Date: 8/02/2000

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

**** MATERIAL SAFETY DATA SHEET ****

Benedicts Qualitative Solution
02564

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Benedicts Qualitative Solution
Catalog Numbers:
S71366-R
Synonyms:
None
Company Identification: Fisher Scientific
1 Reagent Lane
Fairlawn, 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	%	EINECS#
5968-11-6	Sodium Carbonate Monohydrate	10	unlisted
6132-04-3	Sodium Citrate Dihydrate	15	unlisted
7732-18-5	Water	73.5	231-791-2
7758-99-8	Cupric sulfate pentahydrate	1.5	unlisted

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: clear blue.
Warning! Causes respiratory tract irritation. Causes skin irritation. This substance has caused adverse reproductive and fetal effects in animals. Causes severe eye irritation. May cause liver and kidney damage. Causes severe digestive tract irritation with pain, nausea, vomiting and diarrhea. May corrode the digestive tract with hemorrhaging and possible shock.
Target Organs: Kidneys, liver.

Potential Health Effects

Eye:
Exposure to particulates or solution may cause conjunctivitis, ulceration, and corneal abnormalities.

Skin:
Causes skin irritation.

Ingestion:
May cause severe digestive tract irritation with abdominal pain, nausea, vomiting and diarrhea. May cause hemorrhaging of the digestive tract.

Inhalation:
May cause respiratory tract irritation. May cause ulceration and perforation of the nasal septum if inhaled in excessive quantities.

Chronic:
Chronic inhalation and ingestion may cause effects similar to those of acute inhalation and ingestion. May cause liver and kidney damage. May cause reproductive and fetal effects.

**** 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 immediately.

Skin:
Get medical aid. Immediately flush skin with plenty of soap and 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. Get medical aid immediately.

Inhalation:
Remove from exposure 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

Antidote:
No specific antidote exists.

**** SECTION 5 - FIRE FIGHTING MEASURES ****

General Information:

PAGE: 2
DATE: 04/25/01 ACCT: 419643002
INDEX: G11135824 CAT NO: S71366R PO NBR: K45S99C

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

Extinguishing Media:
For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam.

**** 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, dry sand or earth), then place into a chemical waste container. Do not use combustible materials such as saw dust.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:
Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Do not get on skin or in eyes. Do not ingest or inhale.

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 general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Sodium Carbonate Monohydrate	none listed	none listed	none listed
Sodium Citrate Dihydrate	none listed	none listed	none listed
Water	none listed	none listed	none listed
Cupric sulfate pentahydrate	fume: 0.2 mg/m3 TWA; dusts and mists, as Cu: 1 mg/m3 TWA (listed under ** no name **).	as Cu: 1 mg/m3 TWA (dusts and mists); 0.1 mg/m3 TWA (fume) (listed under ** no name **).dusts as mists as Cu: 100 mg/m3 IDLH (listed under ** no name **).	fume, as Cu: 0.1 mg/m3 TWA; dusts and mists, as Cu: 1 mg/m3 TWA (listed under ** no name **).

OSHA Vacated PELs:
Sodium Carbonate Monohydrate:
No OSHA Vacated PELs are listed for this chemical.
Sodium Citrate Dihydrate:
No OSHA Vacated PELs are listed for this chemical.
Water:
No OSHA Vacated PELs are listed for this chemical.
Cupric sulfate pentahydrate:
fume, as Cu: 0.1 mg/m3 TWA (listed under ** no name **)

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 natural rubber gloves, apron, and/or clothing.

Clothing:
Wear appropriate protective clothing to prevent skin exposure.

Respirators:
Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State: Liquid
Appearance: clear blue

Odor:	none reported
pH:	Not available.
Vapor Pressure:	Not available.
Vapor Density:	Not available.
Evaporation Rate:	Not available.
Viscosity:	Not available.
Boiling Point:	212 deg F
Freezing/Melting Point:	Not available.
Autoignition Temperature:	Not applicable.
Flash Point:	Not available.
NFPA Rating:	Not published.
Explosion Limits, Lower:	Not available.
Upper:	Not available.
Decomposition Temperature:	Not available.
Solubility:	Completely soluble in water.
Specific Gravity/Density:	1.2
Molecular Formula:	Mixture
Molecular Weight:	0

****** SECTION 10 - STABILITY AND REACTIVITY ******

Chemical Stability:
Stable.
Conditions to Avoid:
High temperatures, incompatible materials.
Incompatibilities with Other Materials:
None reported.
Hazardous Decomposition Products:
Irritating and toxic fumes and gases.
Hazardous Polymerization: Has not been reported.

****** SECTION 11 - TOXICOLOGICAL INFORMATION ******

RTECS#:
CAS# 5968-11-6 unlisted.
CAS# 6132-04-3 unlisted.
CAS# 7732-18-5: ZC0110000
CAS# 7758-99-8: GL8900000
LD50/LC50:
Not available.
Not available.
CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg.
CAS# 7758-99-8: Oral, rat: LD50 = 300 mg/kg.
Carcinogenicity:
Sodium Carbonate Monohydrate -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Sodium Citrate Dihydrate -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Water -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Cupric sulfate pentahydrate -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
No information available.
Teratogenicity:
Cupric sulfate Anhydrous: Embryo or Fetus: fetotoxicity, ivn-mouse TDLo=3200 ug/kg. Specific Developmental Abnormalities: body wall, ivn- hamster TDLo=2130 ug/kg; cardiovascular and central nervous system, ivn-mouse TDLo=3200 ug/kg.
Reproductive Effects:
Cupric sulfatae Anhydrous: Fertility: post-implantation mortality, ivn-mouse TDLo=3200 ug/kg. Paternal Effects: spermatogenesis, itt-rat TDLo=3192 ug/kg; testes/sperm duct/epididymis, scu-mouse TDLo=12768 ug/kg.
Neurotoxicity:
No information available.
Mutagenicity:
Unscheduled DNA Synthesis: hamster embryo 200 umol/L Oncogenic Transformation: hamster embryo 80 umol/L
Other Studies:
No data available.

****** SECTION 12 - ECOLOGICAL INFORMATION ******

****** 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
No information available
Canadian TDG
No information available.

****** SECTION 15 - REGULATORY INFORMATION ******

US FEDERAL
TSCA
CAS# 5968-11-6 is not on the TSCA Inventory. It is a hydrate and exempt from TSCA Inventory requirements (40CFR720.3(u)(2)).
CAS# 6132-04-3 is not on the TSCA Inventory. It is a hydrate and exempt from TSCA Inventory requirements (40CFR720.3(u)(2)).
CAS# 7732-18-5 is listed on the TSCA inventory.
CAS# 7758-99-8 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.
SARA
Section 302 (RQ)
None of the chemicals in this material have an RQ.
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 5968-11-6: acute.
CAS # 7758-99-8: acute, chronic.
Section 313
This material contains Cupric sulfate pentahydrate (listed as ** undefined **), 1 5%, (CAS# 7758-99-8) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.
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.
CAS# 7758-99-8 is listed as a Priority Pollutant under the Clean Water Act.
CAS# 7758-99-8 is listed as a Toxic Pollutant under the Clean Water Act.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
Sodium Carbonate Monohydrate is not present on state lists from CA, PA, MN, MA, FL, or NJ.
Sodium Citrate Dihydrate is not present on state lists from CA, PA, MN, MA, FL, or NJ.
Water is not present on state lists from CA, PA, MN, MA, FL, or NJ.
Cupric sulfate pentahydrate can be found on the following state right to know lists: California, (listed as ** no name **), California, (listed as ** no name **), New Jersey, (listed as ** no name **), Florida, (listed as ** no name **), Pennsylvania, (listed as ** no name **), Minnesota, (listed as ** no name **), Massachusetts, (listed as ** no name **).
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:
WGK (Water Danger/Protection)
CAS# 5968-11-6: 1
CAS# 6132-04-3: 0
CAS# 7732-18-5: No information available.
CAS# 7758-99-8: 2
United Kingdom Occupational Exposure Limits
CAS# 7758-99-8: OES-United Kingdom, TWA (listed as ** undefined **): fume: 0.2 ppm TWA; dusts and mists, as Cu: 1 mg/m3 TWA
CAS# 7758-99-8: OES-United Kingdom, STEL (listed as ** undefined **): dusts and mists, as Cu: 2 mg/m3 STEL
Canada
CAS# 7732-18-5 is listed on Canada's DSL/NDSL List.
This product has a WHMIS classification of E.
CAS# 5968-11-6 is not listed on Canada's Ingredient Disclosure List.
CAS# 6132-04-3 is not listed on Canada's Ingredient Disclosure List.
CAS# 7732-18-5 is not listed on Canada's Ingredient Disclosure List.
CAS# 7758-99-8 is not listed on Canada's Ingredient Disclosure List.
Exposure Limits
CAS# 7758-99-8: OEL-ARAB Republic of Egypt:TWA 0.1 mg(Cu)/m3 (fume)

OEL-AUSTRALIA:TWA 0.2 mg(Cu)/m3 (fume)
OEL-AUSTRALIA:TWA 1 mg(Cu)/m3 (dust)
OEL-BELGIUM:TWA 0.2 mg(Cu)/m3 (fume)
OEL-BELGIUM:TWA 1 mg(Cu)/m3 (dust)
OEL-DENMARK:TWA 0.1 mg(Cu)/m3 (fume)
OEL-DENMARK:TWA 1 mg(Cu)/m3 (dust)
OEL-FINLAND:TWA 0.2 mg(Cu)/m3 (fume)
OEL-FINLAND:TWA 1 mg(Cu)/m3
OEL-FINLAND:TWA 1 mg(Cu)/m3 (dust)
OEL-FRANCE:TWA 0.2 mg(Cu)/m3 (fume)
OEL-FRANCE:TWA 1 mg(Cu)/m3;STEL 2 mg(Cu)/m3 (dust
OEL-GERMANY:TWA 0.1 mg(Cu)/m3 (fume)
OEL-GERMANY:TWA 1 mg(Cu)/m3
OEL-GERMANY:TWA 1 mg(Cu)/m3 (dust)
OEL-HUNGARY:TWA 0.2 mg(Cu)/m3;STEL 0.4 mg(Cu)/m3 (dust)
OEL-INDIA:TWA 0.2 mg(Cu)/m3 (fume)
OEL-THE NETHERLANDS:TWA 02 mg(Cu)/m3 (fume)
OEL-THE NETHERLANDS:TWA 1 mg(Cu)/m3 (dust)
OEL-THE PHILIPPINES:TWA 1.0 mg(Cu)/m3 (fume) JAN9
OEL-POLAND:TWA 0.1 mg(Cu)/m3 (fume)
OEL-RUSSIA:STEL 0.5 ppm (1 mg(Cu)/m3) (dust) JAN9
OEL-SWEDEN:TWA 0.2 mg(Cu)/m3 (resp. dust)
OEL-SWEDEN:TWA 0.2 mg(Cu)/m3 (fume)
OEL-SWEDEN:TWA 1 mg(Cu)/m3 (total dust)
OEL-SWITZERLAND:TWA 0.1 mg(Cu)/m3;STEL 0.2 mg(Cu)/m3 (fume)
OEL-SWITZERLAND:TWA 1 mg(Cu)/m3;STEL 1 mg(Cu)/m3
OEL-THAILAND:TWA 0.1 mg(Cu)/m3 (fume)
OEL-THAILAND:TWA 1 mg(Cu)/m3
OEL-U

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 9/02/1997 Revision #1 Date: 8/02/2000

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.

**** MATERIAL SAFETY DATA SHEET ****

Copper
05430

**** SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION ****

MSDS Name: Copper
Catalog Numbers:
S72895, S72896, S79977, S79977-1, S79977-2, S79977-3, S79978, S79978-1, S79979, S79979-1, C430 500, C430-500, C430500, C431 500, C431-500, C431500, C434 500, C434-500, C434500, C575 500, C575-500, C575500, S4821A, S4821B, S4821C, S4821D, S4821E, S72895ND, S799771, S799772, S799773, S799781, S79978ND, S799791
Synonyms:
Allbri natural copper, bronze powder, copper slag-airborne
Company Identification: Fisher Scientific
1 Reagent Lane
Fairlawn, 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	%	EINECS#
7440-50-8	COPPER	100	231-159-6

**** SECTION 3 - HAZARDS IDENTIFICATION ****

EMERGENCY OVERVIEW

Appearance: red to brown.
Warning! Causes respiratory tract irritation. May cause lung damage. May cause liver and kidney damage. Causes eye and skin irritation. Inhalation of fumes may cause metal-fume fever. Can be explosive when exposed to heat or flames. May cause digestive tract irritation with nausea, vomiting, and diarrhea.
Target Organs: Kidneys, liver, lungs.

Potential Health Effects

Eye:
Causes eye irritation.

Skin:
Causes skin irritation. May cause skin discoloration.

Ingestion:
Causes gastrointestinal irritation with nausea, vomiting and diarrhea. May cause liver and kidney damage.

Inhalation:
Dust is irritating to the respiratory tract. Inhalation of fumes may cause metal fume fever, which is characterized by flu-like symptoms with metallic taste, fever, chills, cough, weakness, chest pain, muscle pain and increased white blood cell count.

Chronic:
Prolonged or repeated skin contact may cause dermatitis. May cause liver and kidney damage. May cause lung damage.

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

Ingestion:
Induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Get medical aid.

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

Notes to Physician:
Individuals with Wilson's disease are more susceptible to chronic copper poisoning.

**** 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. Material can spontaneously ignite (pyrophoric) when exposed to air at normal or slightly elevated temperatures.

Extinguishing Media:
Use extinguishing media most appropriate for the surrounding fire.

**** SECTION 6 - ACCIDENTAL RELEASE MEASURES ****

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

Spills/Leaks:
Sweep up, then place into a suitable container for disposal. Avoid generating dusty conditions.

**** SECTION 7 - HANDLING and STORAGE ****

Handling:
Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Avoid ingestion and inhalation.

Storage:
Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Do not expose to air.

**** 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
COPPER	fume: 0.2 mg/m3 ; dusts and mists, as Cu: 1 mg/m3	as Cu: 1 mg/m3 TWA (dusts and mists); 0.1 mg/m3 TWA (fume) dusts as mists as Cu: 100 mg/m3 IDLH	fume, as Cu: 0.1 mg/m3 TWA; dusts and mists, as Cu: 1 mg/m3 TWA

OSHA Vacated PELs:
COPPER:
fume, as Cu: 0.1 mg/m3 TWA

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 gloves to prevent skin exposure.

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

Respirators:
Follow the OSHA respirator regulations found in 29CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

**** SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES ****

Physical State:	Solid
Appearance:	red to brown
Odor:	none reported
pH:	Not available.
Vapor Pressure:	1 mm Hg @1628C
Vapor Density:	Not available.
Evaporation Rate:	Not applicable.
Viscosity:	Not applicable.
Boiling Point:	2595 deg C
Freezing/Melting Point:	1083 deg C
Autoignition Temperature:	Not applicable.
Flash Point:	Not applicable.
NFPA Rating:	(est.) Health: 1; Flammability: 1; Reactivity: 0
Explosion Limits, Lower:	Not available.
Upper:	Not available.
Decomposition Temperature:	Not available.
Solubility:	Insoluble in water.
Specific Gravity/Density:	8.92
Molecular Formula:	Cu
Molecular Weight:	63.546

**** SECTION 10 - STABILITY AND REACTIVITY ****

Chemical Stability:
Stable at room temperature in closed containers under normal storage and handling conditions. Explosive peroxides may form on concentration. Peroxides can be detonated by friction, impact, or

heating.
Conditions to Avoid:
Incompatible materials, dust generation, moisture, exposure to air.
Incompatibilities with Other Materials:
Liquid copper explodes on contact with water. Reacts violently with ammonium nitrate, bromates, iodates, chlorates, ethylene oxide, hydrazoic acid, potassium oxide, dimethyl sulfoxide + trichloroacetic acid, hydrogen peroxide, sodium peroxide, sodium azide, sulfuric acid, hydrogen sulfide + air, and lead azide. Ignites on contact with chlorine, fluorine (above 121C), chlorine trifluoride, and hydrazinium nitrate (above 70C). Incompatible with 1-bromo-2-propyne, potassium dioxide, and acetylenic compounds.
Hazardous Decomposition Products:
Copper fumes.
Hazardous Polymerization: Has not been reported.

**** SECTION 11 - TOXICOLOGICAL INFORMATION ****

RTECS#:
CAS# 7440-50-8: GL5325000
LD50/LC50:
Not available.
Carcinogenicity:
COPPER -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiology:
No data available.
Teratogenicity:
Experimental studies show teratogenic effects in laboratory animals.
Reproductive Effects:
No data available.
Neurotoxicity:
No data available.
Mutagenicity:
No data available.
Other Studies:
Experimetal studies show tumorigenic effects in laboratory animals.

**** SECTION 12 - ECOLOGICAL INFORMATION ****

**** 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
No information available
Canadian TDG
No information available.

**** SECTION 15 - REGULATORY INFORMATION ****

US FEDERAL
TSCA
CAS# 7440-50-8 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.
SARA
Section 302 (RQ)
CAS# 7440-50-8: final RQ = 5000 pounds (2270 kg) (no reporting of rele
Section 302 (TPQ)
None of the chemicals in this product have a TPQ.
SARA Codes
CAS # 7440-50-8: acute, chronic, flammable.
Section 313
This material contains COPPER (CAS# 7440-50-8, 100%),which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.
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.
CAS# 7440-50-8 is listed as a Priority Pollutant under the Clean Water Act.
CAS# 7440-50-8 is listed as a Toxic Pollutant under the Clean Water Act.
OSHA:
None of the chemicals in this product are considered highly hazardous by OSHA.
STATE
COPPER can be found on the following state right to know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.
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:
WGK (Water Danger/Protection)
CAS# 7440-50-8: 0
United Kingdom Occupational Exposure Limits
CAS# 7440-50-8: OES-United Kingdom, TWA fume: 0.2 ppm TWA; dusts and mists, as Cu: 1 mg/m3 TWA
CAS# 7440-50-8: OES-United Kingdom, STEL dusts and mists, as Cu: 2 mg/m3 STEL
Canada
CAS# 7440-50-8 is listed on Canada's DSL/NDSL List.
This product has a WHMIS classification of D2B.
CAS# 7440-50-8 is not listed on Canada's Ingredient Disclosure List.
Exposure Limits
CAS# 7440-50-8: OEL-ARAB Republic of Egypt:TWA 0.1 mg/m3 (fume)
OEL-AUSTRALIA:TWA 0.2 mg/m3 (fume)
OEL-AUSTRALIA:TWA 1 mg/m3 (dust)
OEL-BELGIUM:TWA 0.2 mg/m3 (fume)
OEL-BELGIUM:TWA 1 mg/m3 (dust)
OEL-DENMARK:TWA 0.1 mg/m3 (fume)
OEL-DENMARK:TWA 1 mg/m3 (dust)
OEL-FINLAND:TWA 0.2 mg/m3 (fume)
OEL-FINLAND:TWA 1 mg/m3
OEL-FINLAND:TWA 1 mg/m3 (dust)
OEL-FRANCE:TWA 0.2 mg/m3 (fume)
OEL-FRANCE:TWA 1 mg/m3;STEL 2 mg/m3 (dust)
OEL-GERMANY:TWA 0.1 mg/m3 (fume)
OEL-GERMANY:TWA 1 mg/m3
OEL-GERMANY:TWA 1 mg/m3 (dust)
OEL-HUNGARY:TWA 0.2 mg/m3;STEL 0.4 mg/m3 (dust)
OEL-INDIA:TWA 0.2 mg/m3 (fume)
OEL-THE NETHERLANDS:TWA 02 mg/m3 (fume)
OEL-THE NETHERLANDS:TWA 1 mg/m3 (dust)
OEL-THE PHILIPPINES:TWA 1.0 mg/m3 (fume)
OEL-POLAND:TWA 0.1 mg/m3 (fume)
OEL-RUSSIA:STEL 0.5 ppm (1 mg/m3) (dust)
OEL-SWEDEN:TWA 0.2 mg/m3 (resp. dust)
OEL-SWEDEN:TWA 0.2 mg/m3 (fume)
OEL-SWEDEN:TWA 1 mg/m3 (total dust)
OEL-SWITZERLAND:TWA 0.1 mg/m3;STEL 0.2 mg/m3 (fume)
OEL-SWITZERLAND:TWA 1 mg/m3;STEL 1 mg/m3
OEL-THAILAND:TWA 0.1 mg/m3 (fume)
OEL-THAILAND:TWA 1 mg/m3
OEL-UNITED KINGDOM:TWA 0.2 mg/m3 (fume)

**** SECTION 16 - ADDITIONAL INFORMATION ****

MSDS Creation Date: 12/12/1997 Revision #1 Date: 8/02/2000

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no way shall the company be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if the company has been advised of the possibility of such damages.
