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Scientific**

**ACROS
ORGANICS**

MSDS

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GRAND RAPIDS COMMUNITY
COLLEGE
151 FOUNTAIN NE

GRAND RAPIDS MI 49503

1,062

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*** MATERIAL SAFETY DATA SHEET ***

Iodine Solution, Tincture
45416

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

MSDS Name: Iodine Solution, Tincture
Catalog Numbers:
S71951, S71952

Synonyms:

Tincture of Iodine

Company Identification:

Reagent Name

Part Number 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#
64-17-5	Ethyl alcohol	45.85	200-578-6
7553-56-2	Iodine	1.99	231-442-4
7681-82-5	Sodium iodide	2.39	231-679-3
7732-18-5	Water	49.77	231-791-2

Hazard Symbols: 11
Risk Phrases: 11

*** SECTION 3 - HAZARDS IDENTIFICATION ***

EMERGENCY OVERVIEW

Appearance: amber liquid. Flash Point: 55 deg F.

Warning: Flammable liquid and vapor. Causes respiratory tract

irritation. May cause severe eye irritation. May cause Central

allegenic reaction, which becomes evident upon re-exposure to this

substance. May cause moderate skin irritation. Possible sensitizer. May

cause liver, kidney and heart damage.

Target Organs: Blood, kidneys, heart, central nervous system, liver,

respiratory system, cardiovascular system, bone marrow, thyroid.

Potential Health Effects

Eye: Causes severe eye irritation. May cause painful sensitization to

light. May cause chemical conjunctivitis and corneal damage.

Skin: Causes moderate skin irritation. May cause skin sensitization, an

allergic reaction, which becomes evident upon re-exposure to this

material. May be absorbed through the skin. May cause cyanosis of

the extremities.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and

diarrhea. May cause systemic toxicity with acidosis. May cause

respiratory distress, 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 narcotic

effects in high concentration. Vapors may cause dizziness or

asphyxiation. May cause respiratory sensitization.

Chronic: Prolonged or repeated skin contact may cause defatting and

dermatitis. Chronic exposure can lead to iodism characterized by

salivation, nasal discharge, sneezing, conjunctivitis, fever,

laryngitis, bronchitis, stomatitis, and skin rashes. May cause

reproductive and fetal effects. Laboratory experiments have resulted

in mutagenic effects. Chronic exposure can affect thyroid function.

Animal studies have reported the development of tumors. Prolonged

exposure may cause liver, kidney, and heart damage.

*** 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. Flush skin with plenty of water for at least 15

minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

Ingestion: Call a poison control center. 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: 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. Persons with skin or eye

disorders or liver, kidney, chronic respiratory diseases, or central

and peripheral nervous system diseases may be at increased risk from

exposure to this substance. Activated charcoal does not reduce

ethanol absorption.

Antidote: Ethanol may inhibit methanol metabolism.

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

General Information: Containers can build up pressure if exposed to heat and/or fire. As

containers are heated, contained breathing apparatus in full

pressure-demand MSHA/NIOSH approved equipment, wear self-contained

pressure-demand. Vapors may form an explosive mixture with air.

Vapors can travel to a source of ignition and flash back. Will burn

if involved in a fire. Flammable Liquid. Can release vapors that form

explosive mixtures at temperatures above the flashpoint. Use water

spray to keep fire-exposed containers cool. Wear appropriate

protective clothing to prevent contact with skin and eyes. Wear a

self-contained breathing apparatus (SCBA) to prevent contact with

thermal decomposition products. Containers may explode in the heat of

extinguishing media.

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.

Autoignition Temperature: 685 deg F (362.78 deg C)

Flash Point: 55 deg F (12.78 deg C)

Explosion Limits, Lower: 3 vol %

Explosion Limits, Upper: 19 vol %

NIOSH Rating: (Estimated) Health: 0; 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.

Use a spark-proof tool to avoid ignition. A vapor suppressing

foam may be used to reduce vapors.

*** 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. Use spark-proof tools and

explosion proof equipment. Avoid contact with eyes, skin, and

clothing. Wear appropriate protective clothing (including and/or

vapor) and can be dangerous. Keep container tightly closed. Avoid

contact with heat, sparks and flame. Do not ingest or inhale. 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 cool place in the original container and

protect from sunlight. Store in a tightly closed container. Keep

from contact with oxidizing materials. Store in a cool, dry,

flammable-area. Keep away from incompatible substances.

perchlorates, peroxides, chromic acid or nitric acid.

*** 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
			1,064

DATE: 10/14/03 ACCT: 173504003
INDEX: D32699148 CAT NO: S71951
PO NBR: 9/26/03
PAGE: 3

DATE: 10/14/03 ACCT: 173504003
INDEX: D32699148 CAT NO: S71951
PO NBR: 9/26/03
PAGE: 4

Ethyl alcohol	1000 ppm	1000 ppm TWA; 1900 mg/m ³ TWA 3300 ppm IDLH	1000 ppm TWA; 1900 mg/m ³ TWA
Iodine	0.1 ppm Ceiling	2 ppm IDLH	0.1 ppm Ceiling; 1 mg/m ³ Ceiling
Sodium iodide	none listed	none listed	none listed
Water	none listed	none listed	none listed

OSHA Vacated PELs:
Ethyl alcohol:
1000 ppm TWA; 1900 mg/m³ TWA
Iodine:
No OSHA Vacated PELs are listed for this chemical.
Sodium iodide:
No OSHA Vacated PELs are listed for this chemical.
Water:
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.

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 a respirator's use.

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

Physical State:	Liquid
Color:	amber
Odor:	
pH:	
Vapor Pressure:	alcohol-like
Vapor Density:	Not available.
Evaporation Rate:	40 mm Hg
Viscosity:	1.6
Boiling Point:	>1
Freezing/Melting Point:	Not available.
Stability Temperature:	73-79 deg C
Solubility:	-80 deg C
Specific Gravity/Density:	Not available.
Molecular Weight:	Soluble in water.
Mixture:	0.79
	Mixture
	0

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

Chemical Stability:
Stable under normal temperatures and pressures.
Conditions to Avoid:
Strong oxidizing agents, peroxides, acids, acid chlorides, acid anhydrides, alkali metals, ammonia, permanganic acid, ruthenium tetroxide, light, ignition sources, excess heat, oxidizers.
Incompatibilities with Other Materials:
Strong oxidizing agents, peroxides, acids, acid chlorides, acid anhydrides, alkali metals, ammonia, permanganic acid, ruthenium tetroxide, bromine pentafluoride, iodine heptafluoride, uranyl chloride, uranium hexafluoride, silver nitrate, disulfuryl difluoride, perchlorate, acetyl bromide, platinum, potassium-tert-butoxide, silver oxide, hydrazine, tetrachlorosilane + water, acetyl chloride, calcium hypochlorite, mercuric nitrate, perchloric acid, potassium dichloride, sodium, magnesium, zinc, aluminum, steel, antimony, acetaldehyde, bromine trifluoride, reducing agents.
Hazardous Decomposition Products:
Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, toxic fumes of sodium oxide, hydrogen iodide, iodine.
Hazardous Polymerization: Will not occur.

*** SECTION 11 " TOXICOLOGICAL INFORMATION ***

RTECS#:
CAS# 64-17-5: KQ6300000
CAS# 7553-56-2: NN1575000
CAS# 7681-82-5: WB6475000

1.065

CAS# 7732-18-5: ZC0110000
 LD50:
 CAS# 64-17-5: Draize test, rabbit, eye: 500 mg Severe; Draize test, rabbit, eye: 500 mg/24H Mild; Draize test, rabbit, skin: 20 mg/24H Moderate; Inhalation, mouse: LD50 = 3500 mg/kg; Inhalation, rat: LD50 = 5000 mg/kg; Oral, mouse: LD50 = 6300 mg/kg; Oral, rat: LD50 = 9000 mg/kg; Oral, rat: LD50 = 7060 mg/kg.
 CAS# 7533-56-2: Oral, mouse: LD50 = 22 gm/kg; Oral, rabbit: LD50 = 10 gm/kg; Oral, rat: LD50 = 14 gm/kg.
 Draize test, rabbit, eye: 100 mg/24H Moderate; Draize test, rabbit, skin: 50 mg/24H Moderate; Oral, mouse: LD50 = 1 gm/kg; Oral, rat: LD50 = 430 mg/kg.
 CAS# 7732-18-5: Oral, rat: LD50 = >90 mL/kg.

carcinogenicity:
Ethyl alcohol -
ACGIH: A4 - Not Classifiable as a Human Carcinogen

Iodine - Not listed by ACGIH, IARC, NIOSH, NTP or OSHA.

Sodium iodide -
Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

water - Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.
Epidemiologic

Ethanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Prenatal exposure to ethanol is associated with a distinct pattern of congenital malformations that have collectively been termed the "fetal alcohol syndrome". Teratogenicity:

CAS# 64-17-5: Oral, Human - woman: TDLo = 41 gm/kg (female 41 week(s) after conception) Effects on Newborn - Apgar score (human only) and Effects on Newborn - other neonatal measures or effects and Effects on Newborn - drug dependence.

Reproductive Effects:
CAS# 64-17-5: Intrauterine, Human - woman: TDLO = 200 mg/kg (female 5 day(s) pre-mating) Fertility - female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated).

Neurotoxicity:
No information available.

CAS# 68-17-5; DNA Inhibition: Human, Lymphocyte = 220 nmol/L.; Cytogenetic Analysis: Human, Lymphocyte = 1160 gm/L.; Cytogenetic Analysis: Human, Fibroblast = 12000 ppm.; Sister Chromatid Exchange: Human, Leukocyte = 1 pbh/72H (Continuous); Sister Chromatid Exchange: Human, Lymphocyte = 500 ppm/72H (Continuous).

Standard Draize Test (Skin, rabbit) = 20 mg/24H (Moderate) Standard Draize Test: Administration into the eye (rabbit) = 500mg (Severe).

*** SECTION 12 - ECOLOGICAL INFORMATION ***

ECOTOXICITY:
Fish: Rainbow trout: LC50 = 12900-15300 mg/L; 96 Hr; Flow-through @ 24-24.3°C/38. Rainbow trout: LC50 = 11200 mg/L; 24 Hr; fingerling @ 24-24.3°C/38. Microtox test: EC50 = 64.7 mg/L. When applied to pond it was found that the sediment adsorbed 10% of the chemical and it is apt to volatilize, biodegrade, and leach into the ground water, but no data on the rates of these processes could be found. Its fate in the environment is probably that it will release into water. It will volatilize and probably biodegrade. It is not expected to adsorb to sediment or bioconcentrate in fish.

***** SECTION 13 - DISPOSAL CONSIDERATIONS *****

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Waste generators must consult the 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 Shipping Name: ETHANOL SOLUTION
Hazard Class: 3
UN Number: UN1170
Packing Group: II
Canadian TDG Group: 2.1
Shipping Name: FLAMMABLE LIQUID NOS (ETHANOL)
Hazard Class: 3
UN Number: UN1993
Other information: FLASHPOINT 8 C

*** SECTION 15 - REGULATORY INFORMATION ***

1.066

US FEDERAL

TSCA CAS# 64-17-5 is listed on the TSCA inventory.
 CAS# 753-56-2 is listed on the TSCA inventory.
 CAS# 761-82-5 is listed on the TSCA inventory.
 CAS# 7732-18-5 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.
 SARA
 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 # 64-17-5: acute, chronic, flammable.
 CAS # 753-56-2: acute, chronic, flammable.
 CAS # 761-82-5: acute.
 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.
 Priority Pollutants
 None of the chemicals in this product are listed as Priority Pollutants under the CWA.
 OSHA:
 None of the chemicals in this product are considered highly hazardous by OSHA.

STATE
 Ethyl alcohol can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts, found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts. Sodium iodide 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.
 WARNING: This product contains Ethyl alcohol, a chemical known to the state of California to cause birth defects or other reproductive harm.
 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 7 Keep container tightly closed.
 S 9 Keep away from sources of ignition - No smoking.
 S 33 Take precautionary measures against static discharges.
 WGK (Water Danger/Protection)
 CAS# 64-17-5: 0
 CAS# 753-56-2: 1
 CAS# 761-82-5: 1
 CAS# 7732-18-5: 1
 No information available.

United Kingdom Occupational Exposure Limits
 CAS# 7732-18-5: OEL-Switzerland: TWA 1000 ppm TWA, 1920 mg/m3 TWA
 CAS# 753-56-2: OEL-Switzerland: STEL 0.1 ppm STEL; 1.1 mg/m3
 STEL
 United Kingdom Maximum Exposure Limits

Canada
 CAS# 64-17-5 is listed on Canada's DSL List.
 CAS# 753-56-2 is listed on Canada's DSL List.
 CAS# 761-82-5 is listed on Canada's DSL List.
 CAS# 7732-18-5 is listed on Canada's DSL List.
 This product has a WHMIS classification of B2, D2B.
 CAS# 753-56-2 is listed on Canada's Ingredient Disclosure List.
 CAS# 761-82-5 is listed on Canada's Ingredient Disclosure List.
 CAS# 7732-18-5 is listed on Canada's Ingredient Disclosure List.
 Exposure Limits
 CAS# 64-17-5: OEL-Australia: TWA 1000 ppm (1900 mg/m3)
 OEL-Belgium: TWA 1000 ppm (1880 mg/m3)

OEL-CZECHOSLOVAKIA: TWA 1000 mg/m3; STEL 5000 mg/m3
 OEL-DENMARK: TWA 1000 ppm (1900 mg/m3)
 OEL-FINLAND: TWA 1000 ppm (1900 mg/m3); STEL 1250 ppm (2400 mg/m3)
 OEL-FRANCE: TWA 1000 ppm (1900 mg/m3); STEL 5000 ppm
 OEL-GERMANY: TWA 1000 ppm (1900 mg/m3)
 OEL-HUNGARY: TWA 1000 mg/m3; STEL 3000 mg/m3
 OEL-THE NETHERLANDS: TWA 1000 ppm (1900 mg/m3)
 OEL-THE PHILIPPINES: TWA 1000 ppm (1900 mg/m3)
 OEL-POLAND: TWA 1000 mg/m3
 OEL-RUSSIA: TWA 1000 mg/m3
 OEL-SWEDEN: TWA 1000 ppm (1900 mg/m3)
 OEL-SWITZERLAND: TWA 1000 ppm (1900 mg/m3)
 OEL-TAIWAN: TWA 1000 ppm (1900 mg/m3)
 OEL-UNITED KINGDOM: TWA 1000 mg/m3; STEL 1900 mg/m3
 OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV
 OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH TLV
 CAS# 753-56-2: OEL-ARAB REPUBLIC OF EGYPT: TWA 0.1 ppm (0.1 mg/m3)
 OEL-AUSTRALIA: TWA 0.1 ppm (1 mg/m3)
 OEL-BELGIUM: STEL 0.1 ppm (1 mg/m3)
 OEL-DENMARK: STEL 0.1 ppm (1 mg/m3)
 OEL-FINLAND: STEL 0.1 ppm (1 mg/m3)
 OEL-FRANCE: STEL 0.1 ppm (1 mg/m3)
 OEL-GERMANY: TWA 1000 mg/m3; STEL 3000 mg/m3
 OEL-HUNGARY: TWA 1000 mg/m3; STEL 3000 mg/m3
 OEL-JAPAN: TWA 0.1 ppm (1 mg/m3); STEL 1 mg/m3 JAN9
 OEL-THE PHILIPPINES: TWA 0.1 ppm (1 mg/m3)
 OEL-POLAND: TWA 1 mg/m3
 OEL-RUSSIA: TWA 0.1 ppm; STEL 1 mg/m3; Skin
 OEL-SWEDEN: STEL 0.1 ppm (1 mg/m3)
 OEL-SWITZERLAND: TWA 0.1 ppm (1 mg/m3); STEL 0.2 ppm (2 mg/m3)
 OEL-TAIWAN: TWA 0.1 ppm (1 mg/m3)
 OEL-UNITED KINGDOM: STEL 0.1 ppm (1 mg/m3)
 OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV
 OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGIH TLV

*** SECTION 16 - ADDITIONAL INFORMATION ***

MSDS Creation Date: 9/02/1997 Revision #5 Date: 12/03/2002

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty as to the accuracy, completeness, or reliability of the information. 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.

