1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer..............: EM SCIENCE
A Division of EM Industries
P.O. Box 70
480 Democrat Road
Gibbstown, N.J. 08027

Preparation Date.: 10/19/99

Information Phone Number.: 856-423-6300
Hours: Mon. to Fri. 8:30-5

Chemtrec Emergency Number: 800-424-9300
Hours: 24 hrs a day

Catalog Number(s):
65092A

Product Name:
Crystal Violet (Gram Stain Set)

Synonyms:
None

Chemical Family:
Solution

Formula:
Solution

Molecular Weight.:
N/A

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Appr %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>70-90%</td>
</tr>
<tr>
<td>Crystal Violet</td>
<td>548-62-9</td>
<td>0-1%</td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td>64-17-5</td>
<td>10-30%</td>
</tr>
</tbody>
</table>
Denatured ethyl alcohol contains methanol but its concentration for this product is less than 1%.
Approx. % as wt/vol

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
FLAMMABLE LIQUID AND VAPOR.
HARMFUL IF INHALE, SWALLOWED OR ABSORBED THROUGH SKIN.
IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES.
MAY CAUSE EYE INJURY.

Appearance:
Violet or red liquid

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

Symptoms of Exposure:
Harmful if inhaled, swallowed, or absorbed through the skin. Contains Phenol (less than 1%) which is toxic and causes burns in concentrated form. Diluted phenol in this solution is expected to cause irritation to the eyes and skin. Eye contact may result in more serious injury depending on the extent of exposure.

Medical Cond. Aggravated by Exposure:
None found

Routes of Entry:
Inhalation, ingestion or skin contact.

Carcinogenicity:
The material is not listed (IARC, NTP, OSHA) as cancer causing agent.

4. FIRST AID MEASURES

Emergency First Aid:
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.
Skin: Wash thoroughly with soap and water.
Eyes: Immediately flush thoroughly with water for at least 15 minutes.
Inhalation: Remove to fresh air; give artificial respiration if breathing has stopped.
Ingestion: If conscious, drink water and induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.
5. FIRE FIGHTING MEASURES

Flash Point (F): 97°F
Flammable Limits LEL (%): N/A
Flammable Limits UEL (%): N/A
Extinguishing Media:
Use water spray, foam, dry chemical, or CO₂.

Fire Fighting Procedures:
Wear self-contained breathing apparatus.

Fire & Explosion Hazards:
Moderate fire hazard.

6. ACCIDENTAL RELEASE MEASURES

Spill Response:
Evacuate the area of all unnecessary personnel. Wear suitable protective equipment listed under Exposure / Personal Protection. Eliminate any ignition sources until the area is determined to be free from explosion or fire hazards. Contain the release and eliminate its source, if this can be done without risk. Take up and containerize for proper disposal as described under Disposal. Comply with Federal, State, and local regulations on reporting releases. Refer to Regulatory Information for reportable quantity and other regulatory data.
EM SCIENCE recommends Spill–X absorbent agents for various types of spills. Additional information on the Spill–X products can be provided through the EM SCIENCE Technical Service Department (856) 423–6300. The following EM SCIENCE Spill–X absorbent is recommended for this product:

    SX0863 Solvent Spill Treatment Kit

7. HANDLING AND STORAGE

Handling & Storage:
Keep container closed. Store in a cool area away from ignition sources and oxidizers. Do not breath vapor or mist. Do not get in eyes, on skin, or on clothing.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:
Ventilation, Respiratory Protection, Protective Clothing, Eye Protection:
Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see TLV/PEL), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your safety equipment supplier). Engineering and/or administrative controls should be implemented to reduce exposure. Material should be handled or transferred in an approved fume hood or
with adequate ventilation. Protective gloves must be worn to prevent skin contact (Butyl Rubber, Viton or equivalent) Safety glasses with side shields must be worn at all times.

**Work/Hygenic Practices:**
Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available.

**EXPOSURE GUIDELINES**

**OSHA – PEL:**

<table>
<thead>
<tr>
<th>Component</th>
<th>TWA PPM</th>
<th>TWA MG/M3</th>
<th>STEL PPM</th>
<th>STEL MG/M3</th>
<th>CL PPM</th>
<th>CL MG/M3</th>
<th>Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crystal Violet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td>1000</td>
<td>1900</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenol</td>
<td>5</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

**ACGIH – TLV:**

<table>
<thead>
<tr>
<th>Component</th>
<th>TWA PPM</th>
<th>TWA MG/M3</th>
<th>STEL PPM</th>
<th>STEL MG/M3</th>
<th>CL PPM</th>
<th>CL MG/M3</th>
<th>Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crystal Violet</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td>1000</td>
<td>1880</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenol</td>
<td>5</td>
<td>19</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

If there are no exposure limit numbers listed in the Exposure Guidelines chart, this indicates that no OSHA or ACGIH exposure limits have been established.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

- **Boiling Point (C 760 mmHg)**: N/A
- **Melting Point (C)**: N/A
- **Specific Gravity (H₂O = 1)**: N/A
- **Vapor Pressure (mm Hg)**: N/A
- **Percent Volatile by vol (%)**: N/A
- **Vapor Density (Air = 1)**: N/A
- **Evaporation Rate (BuAc = 1)**: N/A
- **Solubility in Water (%)**: Soluble
- **Appearance**: Violet or red liquid
10. STABILITY AND REACTIVITY

Stability: Yes

Hazardous Polymerization:
Does not occur

Hazardous Decomposition:
CO\textsubscript{x}, Formaldehyde, Cl

Conditions to Avoid:
Heat; contact with ignition source.

Materials To Avoid:

( ) Water
( ) Acids
( ) Bases
( ) Corrosives
(X) Oxidizers
(X) Other: Reactive metals

11. TOXICOLOGICAL INFORMATION

Toxicity Data

None established

Toxicological Findings:
None
Cited in Registry of Toxic Effects of Chemical Substances (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA Waste Numbers: D001 U188

Treatment:
Incineration, fuels blending or recycle. Contact your local permitted waste disposal site (TSD) for permissible treatment sites.
ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION
DOT Proper Shipping Name:
Flammable Liquid, n.o.s. (Contains Ethanol, Methanol)

DOT ID Number :
UN1993

14. REGULATORY INFORMATION

TSCA Statement:
This product is a "Mixture". The CAS numbers of all components are listed on the TSCA Inventory.

<table>
<thead>
<tr>
<th>Component</th>
<th>SARA EHS (302)</th>
<th>SARA EHS TPQ (lbs)</th>
<th>CERCLA RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crystal Violet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenol</td>
<td>Y</td>
<td>500/10000</td>
<td>1000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA Floor List</th>
<th>SARA 313</th>
<th>DeMinimis for SARA 313 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Crystal Violet</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phenol</td>
<td>Y</td>
<td>Y</td>
<td>1.0</td>
</tr>
</tbody>
</table>

If there is no information listed on the regulatory information chart, this indicates that the chemical is not covered by the specific regulation listed.

15. OTHER INFORMATION

Comments:
None

NFPA Hazard Ratings:
Health : 1
Flammability : 2
Reactivity : 0
Special Hazards :

Revision History: 10/9/97

|= Revised Section
N/A = Not Available
N/E = None Established

The statements contained herein are offered for informational purposes only and are based upon technical data that EM Science believes to be accurate. It is intended for use only by persons having the necessary technical skill and at their own discretion and risk. Since conditions and manner of use are outside our control, we make NO WARRANTY, EXPRESS OR IMPLIED, OR MERCHANTABILITY, FITNESS OR OTHERWISE.

MATERIAL SAFETY DATA SHEET

EM SCIENCE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer..............: EM SCIENCE
A Division of EM Industries
P.O. Box 70
480 Democrat Road
Gibbstown, N.J. 08027

Preparation Date.: 10/6/97

Information Phone Number.: 856-423-6300
Hours: Mon. to Fri. 8:30-5
Chemtrec Emergency Number: 800-424-9300
Hours: 24 hrs a day

Catalog Number(s):

65092B
Product Name: Safranin Stain
Synonyms: None
Chemical Family: Solution
Formula: Solution
Molecular Weight: N/A

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Appr %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>67−56−1</td>
<td>0−5%</td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td>64−17−5</td>
<td>10−30%</td>
</tr>
<tr>
<td>Water</td>
<td>7732−18−5</td>
<td>70−90%</td>
</tr>
<tr>
<td>Safranin O</td>
<td>477−73−6</td>
<td>0−1%</td>
</tr>
</tbody>
</table>

Approx. % as wt/vol

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
FLAMMABLE LIQUID AND VAPOR.
VAPOR HARMFUL.
MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED.
CANNOT BE MADE NON–POISONOUS.
May Cause Damage To Lungs and Central Nervous System.
ABSORPTION THROUGH SKIN HARMFUL.

Appearance:
Red liquid

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

Symptoms of Exposure:
Contains Methanol which is toxic by ingestion and inhalation. Can be toxic by skin absorption. After ingestion or inhalation, initial symptoms may be only that of mild intoxication, but may become severe after 12 to 18 hours. Affects central nervous system, especially optic nerve. Marked impairment of vision and enlargement of the liver has been reported with chronic exposure. Chronic exposure may also cause damage to kidneys and Central Nervous System. Causes dizziness, nausea, muscle weakness, narcosis, respiratory failure. Ingestion of methanol can produce blindness (100 ml can be fatal). Fetal development abnormalities and effects on embryo or fetus have been reported from prolonged exposure to methyl alcohol in laboratory.
tests involving pregnant rats.

**Medical Cond. Aggravated by Exposure:**
Impaired liver or kidney function.

**Routes of Entry:**
Inhalation, ingestion or skin contact.

**Carcinogenicity:**
The material is not listed (IARC, NTP, OSHA) as cancer causing agent.

### 4. FIRST AID MEASURES

**Emergency First Aid:**
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.
Skin: Wash thoroughly with soap and water.
Eyes: Immediately flush thoroughly with water for at least 15 minutes.
Inhalation: Remove to fresh air; give artificial respiration if breathing has stopped.
Ingestion: If conscious, drink water and induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

### 5. FIRE FIGHTING MEASURES

**Flash Point (F):** 97°F
**Flammable Limits LEL (%)**: N/A
**Flammable Limits UEL (%)**: N/A

**Extinguishing Media:**
Use water spray, foam, dry chemical, or CO₂.

**Fire Fighting Procedures:**
Wear self−contained breathing apparatus.

**Fire & Explosion Hazards:**
Moderate fire hazard.

### 6. ACCIDENTAL RELEASE MEASURES

**Spill Response:**
Evacuate the area of all unnecessary personnel. Wear suitable protective equipment listed under Exposure / Personal Protection. Eliminate any ignition sources until the area is determined to be free from explosion or fire hazards. Contain the release and eliminate its source, if this can be done without risk. Take up and containerize for proper disposal as described under Disposal. Comply with Federal, State, and local
regulations on reporting releases. Refer to Regulatory Information for reportable quantity and other regulatory data.
EM SCIENCE recommends Spill−X absorbent agents for various types of spills. Additional information on the Spill−X products can be provided through the EM SCIENCE Technical Service Department (856) 423–6300. The following EM SCIENCE Spill−X absorbent is recommended for this product:

SX0863  Solvent Spill Treatment Kit

7. HANDLING AND STORAGE

Handling & Storage:
Keep container closed. Store in a cool area away from ignition sources and oxidizers. Do not breath vapor or mist. Do not get in eyes, on skin, or on clothing.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:
Ventilation, Respiratory Protection, Protective Clothing, Eye Protection:
Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see TLV/PEL), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your safety equipment supplier). Engineering and/or administrative controls should be implemented to reduce exposure. Material should be handled or transferred in an approved fume hood or with adequate ventilation. Protective gloves must be worn to prevent skin contact (Butyl Rubber, Viton or equivalent) Safety glasses with side shields must be worn at all times.

Work/Hygienic Practices:
Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available.

EXPOSURE GUIDELINES

OSHA – PEL:

<table>
<thead>
<tr>
<th>Component</th>
<th>TWA PPM</th>
<th>STEL PPM</th>
<th>CL PPM</th>
<th>TWA MG/M3</th>
<th>STEL MG/M3</th>
<th>CL MG/M3</th>
<th>Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td>200</td>
<td>260</td>
<td>250</td>
<td>325</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td>1000</td>
<td>1900</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safranin O</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

ACGIH – TLV:

<table>
<thead>
<tr>
<th></th>
<th>TWA</th>
<th>STEL</th>
<th>CL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If there are no exposure limit numbers listed in the Exposure Guidelines chart, this indicates that no OSHA or ACGIH exposure limits have been established.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (C 760 mmHg) : N/A
Melting Point (C) : N/A
Specific Gravity (H₂O = 1) : N/A
Vapor Pressure (mm Hg) : N/A
Percent Volatile by vol (%) : N/A
Vapor Density (Air = 1) : N/A
Evaporation Rate (BuAc = 1) : N/A
Solubility in Water (%) : Soluble
Appearance :
Red liquid

10. STABILITY AND REACTIVITY

Stability: Yes

Hazardous Polymerization:
Does not occur

Hazardous Decomposition:
COₓ, Formaldehyde, Cl

Conditions to Avoid:
Heat; contact with ignition source.

Materials To Avoid:

( ) Water
( ) Acids
( ) Bases
( ) Corrosives
(X) Oxidizers
(X) Other: Reactive metals
11. TOXICOLOGICAL INFORMATION

Toxicity Data

None established

Toxicological Findings:

None
Cited in Registry of Toxic Effects of Chemical Substances (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA Waste Numbers:  D001

Treatment:
Incineration, fuels blending or recycle. Contact your local permitted waste disposal site (TSD) for permissible treatment sites.
ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

DOT Proper Shipping Name:
non–regulated (per 49CFR173.150(e))

DOT ID Number :
none(per 49CFR173.150(e))

14. REGULATORY INFORMATION

TSCA Statement:
This product is a "Mixture". The CAS numbers of all components are listed on the TSCA Inventory.

<table>
<thead>
<tr>
<th>Component</th>
<th>SARA EHS (302)</th>
<th>SARA EHS TPQ (lbs)</th>
<th>CERCLA RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methanol</td>
<td></td>
<td></td>
<td>5000</td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>OSHA Floor List</td>
<td>SARA 313</td>
<td>DeMinimis for SARA 313 (%)</td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------</td>
<td>----------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Methanol</td>
<td>Y</td>
<td>Y</td>
<td>1.0</td>
</tr>
<tr>
<td>Ethyl Alcohol</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If there is no information listed on the regulatory information chart, this indicates that the chemical is not covered by the specific regulation listed.

15. OTHER INFORMATION

Comments:
None

NFPA Hazard Ratings:

Health : 1  
Flammability : 2  
Reactivity : 0  
Special Hazards :

Revision History: 10/6/97

| = Revised Section  
N/A = Not Available  
N/E = None Established

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MATERIAL SAFETY DATA SHEET

EM SCIENCE

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer.............: EM SCIENCE
A Division of EM Industries
Preparation Date.: 2/20/98
P.O. Box 70
480 Demoecrat Road
Gibbstown, N.J. 08027
Information Phone Number.: 856-423-6300
Hours: Mon. to Fri. 8:30-5
Chemtrec Emergency Number: 800-424-9300
Hours: 24 hrs a day

Catalog Number(s):

65092D

Product Name:
Gram Iodine Concentrate
Synonyms:
None
Chemical Family:
Solution
Formula:
Solution
Molecular Weight.:
N/A

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Appr %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodine</td>
<td>7553-56-2</td>
<td>0-15%</td>
</tr>
<tr>
<td>Water</td>
<td>7732-18-5</td>
<td>85-100%</td>
</tr>
</tbody>
</table>

Represents iodine content of inorganic iodine constituents. Approx. % as wt/vol
3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
IRRITATING TO SKIN, EYES AND MUCOUS MEMBRANES. MAY CAUSE EYE INJURY.

Appearance:
Brown liquid, pungent odor

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

Symptoms of Exposure:
Irritating on contact with skin, eyes or mucous membranes. May cause eye injury. Ingestion or absorption of iodine may cause increased serum iodine levels, hypernatremia and acidosis. Chronic exposure may cause hyperthyroidism.

Medical Cond. Aggravated by Exposure:
Hyperthyroidism

Routes of Entry:
Inhalation, ingestion or skin contact

Carcinogenicity:
The material is not listed (IARC, NTP, OSHA) as cancer causing agent.

4. FIRST AID MEASURES

Emergency First Aid:

GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.
Skin: Immediately flush thoroughly with large amounts of water.
Eyes: Immediately flush thoroughly with water for at least 15 minutes.
Inhalation: Remove to fresh air; give artificial respiration if breathing has stopped.
Ingestion: Get immediate medical attention; if conscious, give water freely.

5. FIRE FIGHTING MEASURES

Flash Point (F): Noncombustible
Flammable Limits LEL (%): N/A
Flammable Limits UEL (%): N/A
Extinguishing Media:
Use any suitable for adjacent material.

Fire Fighting Procedures:

Wear self-contained breathing apparatus and protective clothing.

Fire & Explosion Hazards:
None established

6. ACCIDENTAL RELEASE MEASURES

Spill Response:
Evacuate the area of all unnecessary personnel. Wear suitable protective equipment listed under Exposure / Personal Protection. Eliminate any ignition sources until the area is determined to be free from explosion or fire hazards. Contain the release and eliminate its source, if this can be done without risk. Take up and containerize for proper disposal as described under Disposal. Comply with Federal, State, and local regulations on reporting releases. Refer to Regulatory Information for reportable quantity and other regulatory data.

7. HANDLING AND STORAGE

Handling & Storage:
Store in a cool, dry area. Do not breathe vapor. Do not get in eyes, on skin, or on clothing.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:
Ventilation, Respiratory Protection, Protective Clothing, Eye Protection:
Material should be handled or transferred in an approved fume hood or with adequate ventilation. Protective gloves should be worn to prevent skin contact (Neoprene or equivalent) Safety glasses with side shields must be worn at all times.

Work/Hygienic Practices:
Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available.

EXPOSURE GUIDELINES

OSHA – PEL:

<table>
<thead>
<tr>
<th>Component</th>
<th>TWA PPM</th>
<th>STEL PPM</th>
<th>CL PPM</th>
<th>Skin MG/M3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodine</td>
<td></td>
<td></td>
<td></td>
<td>0.1</td>
</tr>
<tr>
<td>Water</td>
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</tbody>
</table>
ACGIH – TLV:

<table>
<thead>
<tr>
<th>Component</th>
<th>TWA PPM</th>
<th>MG/M3</th>
<th>STEL PPM</th>
<th>MG/M3</th>
<th>CL PPM</th>
<th>MG/M3</th>
<th>Skin</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodine</td>
<td>0.1</td>
<td>1.0</td>
<td>0.1</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

If there are no exposure limit numbers listed in the Exposure Guidelines chart, this indicates that no OSHA or ACGIH exposure limits have been established.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (C 760 mmHg) : N/A
Melting Point (C) : N/A
Specific Gravity (H\(_2\)O = 1) : N/A
Vapor Pressure (mm Hg) : N/A
Percent Volatile by vol (%): N/A
Vapor Density (Air = 1) : N/A
Evaporation Rate (BuAc = 1) : N/A
Solubility in Water (%) : Soluble

Appearance :
Brown liquid, pungent odor

10. STABILITY AND REACTIVITY

Stability: Yes

Hazardous Polymerization:
Does not occur

Hazardous Decomposition:
None indicated

Conditions to Avoid:
None indicated

Materials To Avoid:

( ) Water
( ) Acids
( ) Bases
( ) Corrosives
( ) Oxidizers
(X) Other: none
11. TOXICOLOGICAL INFORMATION

Toxicity Data
None established

Toxicological Findings:
None
Cited in Registry of Toxic Effects of Chemical Substances (RTECS)

12. DISPOSAL CONSIDERATIONS

EPA Waste Numbers: D002

Treatment:
Specified Technology – Contact your local permitted waste disposal site (TSD) for permissible treatment sites.
ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

DOT Proper Shipping Name: non-regulated

DOT ID Number : none

14. REGULATORY INFORMATION

TSCA Statement:
Exempt from TSCA listing requirements.

<table>
<thead>
<tr>
<th>Component</th>
<th>SARA EHS (302)</th>
<th>SARA EHS TPQ (lbs)</th>
<th>CERCLA RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iodine</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component</td>
<td>OSHA Floor List</td>
<td>SARA 313</td>
<td>DeMinimis for SARA 313 (%)</td>
</tr>
<tr>
<td>-----------</td>
<td>----------------</td>
<td>---------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Iodine</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If there is no information listed on the regulatory information chart, this indicates that the chemical is not covered by the specific regulation listed.

### 15. OTHER INFORMATION

**Comments:**
none

**NFPA Hazard Ratings:**

- Health : 0
- Flammability : 0
- Reactivity : 0
- Special Hazards :

**Revision History:** 10/22/97

| = Revised Section
| N/A = Not Available
| N/E = None Established

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Manufacturer..............: EM SCIENCE
A Division of EM Industries
P.O. Box 70
480 Democrat Road
Gibbstown, N.J. 08027

Preparation Date.: 9/3/97

Information Phone Number.: 856-423-6300
Hours: Mon. to Fri. 8:30-5

Chemtrec Emergency Number: 800-424-9300
Hours: 24 hrs a day

Catalog Number(s):

65092E

Product Name:
Decolorizer

Synonyms:
N/A

Chemical Family:
Aliphatic alcohol

Formula:
Solution

Molecular Weight.:
N/A

2. COMPOSITION / INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS #</th>
<th>Appr %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>67-63-0</td>
<td>80%</td>
</tr>
<tr>
<td>Acetone</td>
<td>67-64-1</td>
<td>20%</td>
</tr>
</tbody>
</table>

Approx. % as wt/vol

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
FLAMMABLE LIQUID AND VAPOR.
MAY CAUSE EYE INJURY.
HARMFUL IF INHALED OR SWALLOWS.

Appearance:
Clear, colorless liquid; characteristic odor

POTENTIAL HEALTH EFFECTS (ACUTE AND CHRONIC)

Symptoms of Exposure:
Effects of ingestion or inhalation: nausea, intoxication, central nervous system depression, headache, decreased blood rate, coma. High vapor concentrations cause irritation of eyes and respiratory system. Contact may cause eye injury, skin irritation. Chronic exposure to Acetone may be harmful during pregnancy. Exposure to Acetone may also be harmful to liver, kidneys, and central nervous system.

Medical Cond. Aggravated by Exposure:
Respiratory, skin, liver, and kidney conditions; pregnancy.

Routes of Entry:
Inhalation, ingestion or skin contact

Carcinogenicity:
The material is not listed (IARC, NTP, OSHA) as cancer causing agent.

4. FIRST AID MEASURES

Emergency First Aid:
GET MEDICAL ASSISTANCE FOR ALL CASES OF OVEREXPOSURE.
Skin: Wash thoroughly with soap and water.
Eyes: Immediately flush thoroughly with water for at least 15 minutes.
Inhalation: Remove to fresh air; give artificial respiration if breathing has stopped.
Ingestion: If conscious, drink water and induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

5. FIRE FIGHTING MEASURES

Flash Point (F): 53F (tcc) for IPA
Flammable Limits LEL (%): N/A
Flammable Limits UEL (%): N/A
Extinguishing Media:
Dry chemical, CO₂, "alcohol" foam; Water spray to cool fire−exposed containers and disperse vapors.

Fire Fighting Procedures:
Wear self-contained breathing apparatus.

**Fire & Explosion Hazards:**
Dangerous fire and explosive hazard. Vapor can travel distances to ignition source and flash back. Hot organic chemical vapors or mists are susceptible to sudden spontaneous combustion when mixed with air. Ignition may occur at temperatures below published autoignition or ignition temperatures. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time and are influenced by pressure changes. Ignition may occur at typical elevated temperature process conditions, especially in process operating under vacuum if subjected to sudden ingress of air, or outside process equipment operating under elevated pressure if sudden escape of vapors or mists to the atmosphere occurs.

### 6. ACCIDENTAL RELEASE MEASURES

**Spill Response:**
Evacuate the area of all unnecessary personnel. Wear suitable protective equipment listed under Exposure / Personal Protection. Eliminate any ignition sources until the area is determined to be free from explosion or fire hazards. Contain the release and eliminate its source, if this can be done without risk. Take up and containerize for proper disposal as described under Disposal. Comply with Federal, State, and local regulations on reporting releases. Refer to Regulatory Information for reportable quantity and other regulatory data.

EM SCIENCE recommends Spill-X absorbent agents for various types of spills. Additional information on the Spill-X products can be provided through the EM SCIENCE Technical Service Department (856) 423–6300. The following EM SCIENCE Spill-X absorbent is recommended for this product:

- SX0863 Solvent Spill Treatment Kit

### 7. HANDLING AND STORAGE

**Handling & Storage:**
Keep container closed. Store in a cool area away from ignition sources and oxidizers. Do not breathe vapor. Do not get in eyes. Avoid prolonged, or repeated, skin contact. Electrically ground all equipment when handling this product.

### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

**ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT:**
**Ventilation, Respiratory Protection, Protective Clothing, Eye Protection:**
Respiratory Protection: If workplace exposure limit(s) of product or any component is exceeded (see TLV/PEL), a NIOSH/MSHA approved air supplied respirator is advised in absence of proper environmental control. OSHA regulations also permit other NIOSH/MSHA respirators (negative pressure type) under specified conditions (see your safety equipment supplier). Engineering and/or administrative controls should be implemented to reduce exposure. Material should be handled or transferred in an approved fume hood or with adequate ventilation. Protective gloves (Butyl Rubber, PVC or equivalent) should be worn to prevent skin contact. Safety glasses with side shields must be worn at all times.

**Work/Hygenic Practices:**
Wash thoroughly after handling. Do not take internally. Eye wash and safety equipment should be readily available.

EXPOSURE GUIDELINES

OSHA – PEL:

<table>
<thead>
<tr>
<th>Component</th>
<th>TWA PPM</th>
<th>STEL PPM</th>
<th>CL PPM</th>
<th>Skin MG/M3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>400</td>
<td>500</td>
<td>1225</td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>750</td>
<td>1000</td>
<td>2400</td>
<td></td>
</tr>
</tbody>
</table>

ACGIH – TLV:

<table>
<thead>
<tr>
<th>Component</th>
<th>TWA PPM</th>
<th>STEL PPM</th>
<th>CL PPM</th>
<th>Skin MG/M3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>400</td>
<td>500</td>
<td>1230</td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>750</td>
<td>1000</td>
<td>2380</td>
<td></td>
</tr>
</tbody>
</table>

If there are no exposure limit numbers listed in the Exposure Guidelines chart, this indicates that no OSHA or ACGIH exposure limits have been established.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (C 760 mmHg) : N/A
Melting Point (C) : N/A
Specific Gravity (H₂O = 1) : N/A
Vapor Pressure (mm Hg) : N/A
Percent Volatile by vol (%) : 100%
Vapor Density (Air = 1) : N/A
Evaporation Rate (BuAc = 1) : N/A
Solubility in Water (%) : Miscible
Appearance : Clear, colorless liquid; characteristic odor

10. STABILITY AND REACTIVITY

Stability: Yes

Hazardous Polymerization:
Does not occur

Hazardous Decomposition:
CO

**Conditions to Avoid:**
Heat, contact with ignition source.

**Materials To Avoid:**

- ( ) Water
- (X) Acids
- ( ) Bases
- ( ) Corrosives
- (X) Oxidizers
- (X) Other: Halogens and halogen compounds; aldehydes

11. TOXICOLOGICAL INFORMATION

**Toxicity Data**
None established

**Toxicological Findings:**
None
Cited in Registry of Toxic Effects of Chemical Substances (RTECS)

12. DISPOSAL CONSIDERATIONS

**EPA Waste Numbers:** D001

**Treatment:**
Incineration, fuels blending or recycle. Contact your local permitted waste disposal site (TSD) for permissible treatment sites.
ALWAYS CONTACT A PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

13. TRANSPORT INFORMATION

**DOT Proper Shipping Name:**
Flammable Liquids, n.o.s. (Isopropanol, Acetone)

**DOT ID Number:**
UN1993

14. REGULATORY INFORMATION
**TSCA Statement:**
This product is a "Mixture". The CAS numbers of all components are listed on the TSCA Inventory.

<table>
<thead>
<tr>
<th>Component</th>
<th>SARA EHS (302)</th>
<th>SARA EHS TPQ (lbs)</th>
<th>CERCLA RQ (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acetone</td>
<td>5000</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>OSHA Floor List</th>
<th>SARA 313</th>
<th>DeMinimis for SARA 313 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Isopropyl Alcohol</td>
<td>Y</td>
<td>Y</td>
<td>0.1</td>
</tr>
<tr>
<td>Acetone</td>
<td>Y</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If there is no information listed on the regulatory information chart, this indicates that the chemical is not covered by the specific regulation listed.

**15. OTHER INFORMATION**

**Comments:**
None

**NFPA Hazard Ratings:**
- Health : 1
- Flammability : 3
- Reactivity : 0
- Special Hazards :

**Revision History:** 9/3/97

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<table>
<thead>
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</table>

<table>
<thead>
<tr>
<th></th>
<th>Revised Section</th>
</tr>
</thead>
<tbody>
<tr>
<td>N/A</td>
<td>Not Available</td>
</tr>
<tr>
<td>N/E</td>
<td>None Established</td>
</tr>
</tbody>
</table>
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