<table>
<thead>
<tr>
<th>Substance No.</th>
<th>Description</th>
<th>Qty.</th>
<th>Symbols</th>
</tr>
</thead>
<tbody>
<tr>
<td>4312524a</td>
<td>Gram Crystal Violet</td>
<td>1</td>
<td>Xn</td>
</tr>
<tr>
<td>4312524b</td>
<td>Gram Decolorizer</td>
<td>1</td>
<td>Xi F</td>
</tr>
<tr>
<td>4312524c</td>
<td>Gram Iodine 100X</td>
<td>1</td>
<td>Xn</td>
</tr>
<tr>
<td>4312524d</td>
<td>Gram Safrin</td>
<td>1</td>
<td>Xn F</td>
</tr>
</tbody>
</table>
Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 05/21/98 Reviewed on 05/14/98

1 Identification of substance:
   - Product details:
     - Trade name: Gram Crystal Violet
       (Gram Stain Kit)
     - Article number:
       4312524
       Formerly BDMS #12293
       Formerly Difco #3329-76
   - Manufacturer/Supplier:
     In the Continental United States call:
     Becton Dickinson Microbiology Systems
     250 Schilling Circle
     Cockeysville, Maryland 21030
     Tel: 410-771-0101

     Outside the United States call:
     Becton Dickinson Europe
     5 chemin des Sources
     38241 Meylan Cedex France
     Tel: 33 476 41 64 64
   - Information department: Technical Service Representative

2 Composition/Data on components:
   - Chemical characterization:
     - Identification number(s):
       - EINECS Number: 2089536
   - Chemical characterization
     - Description:
       Mixture of the substances listed below with nonhazardous additions.

     Dangerous components:
     - 67-63-0 isopropyl alcohol 5.0 %
     - 64-17-5 ethanol 4.8 %
     - 548-62-9 crystal violet 0.4 %

3 Hazards identification
   - Hazard description:
     Xn Harmful
   - Information pertaining to particular dangers for man and environment
     R 36/37/38 Irritating to eyes, respiratory system and skin.
     R 40 Possible risks of irreversible effects.
     R 20 Harmful by inhalation.

(Contd. on page 2)
Trade name: Gram Crystal Violet
(Gram Stain Kit)

R 22 Harmful if swallowed.

- **Classification system**
The classification was made according to the latest editions of
international substances lists, and expanded upon from company and
literature data.
- **NFPA ratings (scale 0-4)**
  - Health = 2
  - Fire = 0
  - Reactivity = 0

4 **First aid measures**

- **After inhalation**
  Supply fresh air. If required, provide artificial respiration. Keep
  patient warm. Consult doctor if symptoms persist.
  In case of unconsciousness place patient on side position for
  transportation.
- **After skin contact** Immediately rinse with water.
- **After eye contact**
  Rinse opened eye for several minutes under running water. If symptoms
  persist, consult a doctor.
- **After swallowing** If symptoms persist consult doctor.

5 **Fire fighting measures**

- **Suitable extinguishing agents**
  CO2, extinguishing powder or water spray. Fight larger fires with water
  spray or alcohol resistant foam.
- **Protective equipment:**
  - Wear self-contained respiratory protective device.
  - Wear fully protective suit.

6 **Accidental release measures**

- **Person-related safety precautions:**
  Wear protective equipment. Keep unprotected persons away.
- **Measures for environmental protection:**
  Do not allow to enter sewers/surface or ground water.
- **Measures for cleaning/collecting:**
  Dispose contaminated material as waste according to item 13.
  Ensure adequate ventilation.

7 **Handling and storage**

- **Handling**
  - Information for safe handling:
    Ensure good ventilation/exhaustion at the workplace.
  - Information about protection against explosions and fires:
    Keep ignition sources away - Do not smoke.

- **Storage**
  - Requirements to be met by storerooms and receptacles:
    Store at 15 - 30 C
  - Information about storage in one common storage facility:
    Store away from oxidizing agents.
    Do not store together with acids.

(Contd. on page 3)
Trade name: Gram Crystal Violet  
(Gram Stain Kit)

Further information about storage conditions:
Keep receptacle tightly sealed.
Class according to regulation on flammable liquids: Void

8 Exposure controls and personal protection

Additional information about design of technical systems:
No further data; see item 7.

Components with limit values that require monitoring at the workplace:
67-63-0 isopropyl alcohol
TLV: Short-term value: 1230 mg/m³, 500 ppm
   Long-term value: 985 mg/m³, 400 ppm
64-17-5 ethanol
TLV: 1880 mg/m³, 1000 ppm

Additional information:
The lists that were valid during the creation were used as basis.

Personal protective equipment
General protective and hygienic measures
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing
Wash hands before breaks and at the end of work.
Avoid contact with the eyes and skin.

Breathing equipment:
In case of brief exposure or low pollution use NIOSH/MSHA-approved respirator. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

Protection of hands:
Protective gloves.

Eye protection: Safety glasses
Body protection: Protective work clothing.

9 Physical and chemical properties:

Form: Liquid
Color: Violet
Odor: Characteristic

<table>
<thead>
<tr>
<th>Change in condition</th>
<th>Value/Range</th>
<th>Unit</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Melting point</td>
<td>Undetermined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling point</td>
<td>Undetermined</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Flash point:
Not applicable

Auto igniting:
Product is not selfigniting.

Danger of explosion:
Product does not present an explosion hazard.

(Contd. on page 4)
Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 05/21/98
Reviewed on 05/14/98

Trade name: Gram Crystal Violet
(Gram Stain Kit)

(Contd. of page 3)

- Density: Not determined
- Solubility in / Miscibility with Water: Slightly soluble
- Solvent content: Organic solvents: 9.8 %

10 Stability and reactivity

- Thermal decomposition / conditions to be avoided:
  No decomposition if used according to specifications.
- Dangerous reactions: No dangerous reactions known
- Dangerous products of decomposition:
  Nitrogen oxides
  Carbon monoxide and carbon dioxide
  Ammonia

11 Toxicological information

- Acute toxicity:
  LD/Lc50 values that are relevant for classification:
  64-17-5 ethanol
  Oral: LD50: 7060 mg/kg (rat)
  Inhalative: LC50/4 h: 20000 mg/l (rat)

  548-62-9 crystal violet
  Oral: LD50: 96 mg/kg (mou)

  67-63-0 isopropyl alcohol
  Oral: LD50: 4570 mg/kg (rat)
  Dermal: LD50: 13400 mg/kg (rab)
  Inhalative: LC50/4 h: 30 mg/l (rat)

  Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.
  - Sensitization: No sensitizing effects known.

  Additional toxicological information:
  The product shows the following dangers according to internally
  approved calculation methods for preparations:
  Irritant

12 Ecological information:

- General notes:
  Water hazard class 2 (Self-assessment): hazardous for water.
  Do not allow product to reach ground water, water course or sewage
  system.
  Danger to drinking water if even small quantities leak into the ground.

13 Disposal considerations

- Product:
- Recommendation:
  Must not be disposed of together with solid waste. Do not allow product
  (Contd. on page 5)
Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 05/21/98
Reviewed on 05/14/98

Trade name: Gram Crystal Violet
(Gram Stain Kit)

(Contd. of page 4)

• Uncleaned packagings:
• Recommendation:
  Disposal must be made according to regulations found in 40 CFR 261
• Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

• DOT regulations:
• Hazard class: -

• Land transport ADR/RID (cross-border)
• ADR/RID class: -

• Maritime transport IMDG:
• IMDG Class: -
• Marine pollutant: No

• Air transport ICAO-TI and IATA-DGR:
• ICAO/IATA Class: -

15 Regulations

• Product related hazard informations:
  The product has been classified and marked in accordance with
  regulations on hazardous materials.

• Hazard symbols: Xn Harmful

• Hazard-determining components of labelling: ethanol

• Risk phrases:
  36/37/38 Irritating to eyes, respiratory system and skin.
  40 Possible risks of irreversible effects.
  20 Harmful by inhalation.
  22 Harmful if swallowed.

• Safety phrases:
  7 Keep container tightly closed.
  16 Keep away from sources of ignition - No smoking.
  23 Do not breathe gas/fumes/vapour/spray.
  36/37 Wear suitable protective clothing and gloves.

• National regulations
• Additional classification according to Decree on Hazardous Materials:
  CERCLA: This product contains no Reporting Quantity (RQ) substances.
  SARA 311/312: May be subject to reporting.
  313: Not subject to reporting.
  TSCTA: This product is exempt under TSCTA.

• Technical instructions (air):
  Class Share in %
  III  9.8

(Contd. on page 6)
Trade name: Gram Crystal Violet
(Gram Stain Kit)

Water hazard class:
Water hazard class 2 (Self-assessment): hazardous for water.

16 Other information:

To the best of our knowledge, the information contained herein is accurate. However, neither Becton Dickinson or any of its subsidiaries assumes any liabilities whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

- Department issuing MSDS: Safety & Environment Department
- Contact: Technical Service Representative
1 Identification of substance:

- Product details:
- Trade name: Gram Decolorizer (Gram Stain Set)
- Article number:
  4312524
  Formerly BDMS #12403
  Formerly Difco #3330-76
- Manufacturer/Supplier:
  In the Continental United States call:
  Becton Dickinson Microbiology Systems
  250 Schilling Circle
  Cockeysville, Maryland 21030
  Tel: 410-771-0101
  Outside the United States call:
  Becton Dickinson Europe
  5 chemin des Sources
  38241 Meylan Cedex France
  Tel: 33 476 41 64 64
- Information department: Technical Service Representative

2 Composition/Data on components:

- Chemical characterization
- Description:
  Mixture of the substances listed below with nonhazardous additions.
- Dangerous components:
  - 67-63-0 isopropyl alcohol 75.0%
  - 67-64-1 acetone 25.0%

3 Hazards identification

- Hazard description:
  - Xi Irritant
  - F Highly flammable
- Information pertaining to particular dangers for man and environment
  R 11 Highly flammable.
  R 36/37/38 Irritating to eyes, respiratory system and skin.
- Classification system
  The classification was made according to the latest editions of
  international substances lists, and expanded upon from company and
  literature data.
- NFPA ratings (scale 0-4)
  Health = 2
  Fire = 4

(Contd. on page 2)
4 First aid measures

- **After inhalation**
  Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.
  Call a doctor immediately.
- **After skin contact**
  Immediately rinse with water.
- **After eye contact**
  Rinse opened eye for several minutes under running water. Then consult a doctor.
- **After swallowing**
  Immediately call a doctor.

5 Fire fighting measures

- **Suitable extinguishing agents**
  CO₂, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Protective equipment:**
  Wear self-contained respirator protective device.
  Wear fully protective suit.

6 Accidental release measures

- **Person-related safety precautions:**
  Wear protective equipment. Keep unprotected persons away.
- **Measures for environmental protection:**
  Prevent seepage into sewage system, workpits and cellars.
  Dilute with plenty of water.
  Do not allow to enter sewers/surface or ground water.
- **Measures for cleaning/collecting:**
  Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).
  Ensure adequate ventilation.
- **Additional information:**
  See Section 7 for information on safe handling
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

7 Handling and storage

- **Handling**
- **Information for safe handling:**
  Ensure good ventilation/exhaustion at the workplace.
  Prevent formation of aerosols.
- **Information about protection against explosions and fires:**
  Keep ignition sources away - Do not smoke.
  Protect against electrostatic charges.

- **Storage**
- **Requirements to be met by storerooms and receptacles:**
  Store at 15 - 30 C
### Material Safety Data Sheet

**Trade name:** Gram Decolorizer  
*Gram Stain Set*

(Contd. of page 2)

- **Information about storage in one common storage facility:**  
  Do not store together with oxidizing and acidic materials.  
  Do not store with halogens.  
  Do not store with chloroform.

- **Further information about storage conditions:**  
  Store in cool, dry conditions in well sealed receptacles.

- **Class according to regulation on flammable liquids:** B

### 8 Exposure controls and personal protection

- **Additional information about design of technical systems:**  
  No further data; see item 7.

**Components with limit values that require monitoring at the workplace:**

- 67-63-0 isopropyl alcohol  
  - TLV: Short-term value: 1230 mg/m³, 500 ppm  
  - Long-term value: 985 mg/m³, 400 ppm

- 67-64-1 acetone  
  - TLV: Short-term value: 2380 mg/m³, 1000 ppm  
  - Long-term value: 1780 mg/m³, 750 ppm

- **Additional information:**  
  The lists that were valid during the creation were used as basis.

- **Personal protective equipment**

- **General protective and hygienic measures**
  - Keep away from foodstuffs, beverages and feed.  
  - Immediately remove all soiled and contaminated clothing  
  - Wash hands before breaks and at the end of work.  
  - Avoid contact with the eyes and skin.

- **Breathing equipment:**
  - In case of brief exposure or low pollution use NIOSH/MSHA-approved respirator.  
    In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.  
    Use suitable respiratory protective device in case of insufficient ventilation.

- **Protection of hands:**  
  - Protective gloves.

- **Eye protection:** Safety glasses  
- **Body protection:** Protective work clothing.

### 9 Physical and chemical properties:

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Range</th>
<th>Unit</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Form</strong> Liquid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Color</strong> Colorless</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Odor</strong> Characteristic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Change in condition</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Melting point/Melting range</strong></td>
<td>Undetermined</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Boiling point/Boiling range</strong></td>
<td></td>
<td>56.1 - 82 °C</td>
<td></td>
</tr>
<tr>
<td><strong>Flash point</strong></td>
<td></td>
<td>-6.7 °C</td>
<td>(Contd. on page 4) USA</td>
</tr>
</tbody>
</table>
Trade name: Gram Decolorizer  
(Gram Stain Set)  

(Contd. of page 3)

- **Ignition temperature:** 425.0 °C  
- **Auto igniting:** Product is not selfigniting.
- **Danger of explosion:**  
  Product is not explosive. However,  
  formation of explosive air/vapor  
  mixtures are possible.
- **Explosion limits:**  
  - Lower: 3.5 Vol %  
  - Upper: 18.0 Vol %  
- **Vapor pressure:** at 20 °C 186.0 hPa  
- **Density:** at 20 °C 2.0 - 2.1 g/cm³  
- **Solubility in / Miscibility with**  
  - Water: Soluble  
  - Solvent content: 100.0 %

10 **Stability and reactivity**

- **Thermal decomposition / conditions to be avoided:**  
  No decomposition if used according to specifications.  
- **Dangerous reactions** No dangerous reactions known
- **Dangerous products of decomposition:** Carbon monoxide and carbon dioxide

11 **Toxicological information**

- **Acute toxicity:**  
<table>
<thead>
<tr>
<th>LD/LC50 values that are relevant for classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>67-63-0 isopropyl alcohol</td>
</tr>
<tr>
<td>Oral: LD50: 4570 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal: LD50: 13400 mg/kg (rab)</td>
</tr>
<tr>
<td>Inhalative: LC50/4 h: 30 mg/l (rat)</td>
</tr>
<tr>
<td>67-64-1 acetone</td>
</tr>
<tr>
<td>Oral: LD50: 5800 mg/kg (rat)</td>
</tr>
<tr>
<td>Dermal: LD50: 20000 mg/kg (rab)</td>
</tr>
</tbody>
</table>
- **Primary irritant effect:**  
  - on the skin: Irritant to skin and mucous membranes.  
  - on the eye: Irritating effect.  
- **Sensitization:** No sensitizing effects known.  
- **Additional toxicological information:**  
  The product shows the following dangers according to internally  
  approved calculation methods for preparations:  
  Irritant
12 Ecological information:

- General notes:
  Water hazard class 1 (Self-assessment): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.

13 Disposal considerations

- Product:
  - Recommendation
    Must not be disposed of together with solid waste. Do not allow product to reach sewage system.

- Uncleaned packagings:
  - Recommendation:
    Disposal must be made according to regulations found in 40 CFR 261 RCRA # D001, F003
  - Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

- DOT regulations:
- Hazard class: 3
- Identification number: UN1993
- Packing group: II
- Proper shipping name (technical name):
  Flammable liquid, n.o.s., isopropanol
  (Isopropyl alcohol)

- Land transport ADR/RID (cross-border)
  - ADR/RID class: 3 Flammable liquids
  - Item: 3b
  - Danger code (Kamler): 33
  - UN-Number: 1993
  - Description of goods: 1993 Flammable liquid, n.o.s., isopropanol (Isopropyl alcohol)

- Maritime transport IMDG:
  - IMDG Class: 3.2
  - Page: 3230
  - UN Number: 1993
  - Packaging group: II
  - EMS Number: 3-07
  - MFAG: 310
  - Marine pollutant: No
  - Proper shipping name: Flammable liquid, n.o.s., isopropanol (Isopropyl alcohol)

- Air transport ICAO-TI and IATA-DGR:
  - ICAO/IATA Class: 3
  - UN/ID Number: 1993
  - Packaging group: II
  - Proper shipping name: Flammable liquid, n.o.s., isopropanol
    (Contd. on page 6)
Trade name: Gram Decolorizer (Gram Stain Set) (Isopropyl alcohol)

15 Regulations

- Product related hazard informations:
The product has been classified and marked in accordance with regulations on hazardous materials.

- Hazard symbols:
  - Xi: Irritant
  - F: Highly flammable

- Risk phrases:
  - 11: Highly flammable.
  - 36/37/38: Irritating to eyes, respiratory system and skin.

- Safety phrases:
  - 7/9: Keep container tightly closed and in a well-ventilated place.
  - 15: Keep away from sources of ignition - No smoking.
  - 23: Do not breathe gas/fumes/vapour/spray.
  - 24/25: Avoid contact with skin and eyes.

- National regulations
- Additional classification according to Decree on Hazardous Materials:
  - CERCLA: This product contains Acetone which has a Reporting Quantity (RQ) of 5000#.
  - SARA 311/312: Subject to reporting.
  - 313: Acetone and Isopropyl Alcohol are subject to reporting.
  - TSCA: This product is exempt under TSCA.

- Technical instructions (air):
  - Class Share in %
  - III 100.0

- Water hazard class:
  - Water hazard class 1 (Self-assessment): slightly hazardous for water.

16 Other information:

To the best of our knowledge, the information contained herein is accurate. However, neither Becton Dickinson or any of its subsidiaries assumes any liabilities whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

- Department issuing MSDS: Safety & Environment Department
- Contact: Technical Service Representative
1 Identification of substance:

- Product details:
  - Trade name: Gram Iodine 100X (Gram Stain Set)
  - Article number: 4312524
    Formerly BDMS #12308
    Formerly Difco #3331-76

- Manufacturer/Supplier:
  In the Continental United States call:
  Becton Dickinson Microbiology Systems
  250 Schilling Circle
  Cockeysville, Maryland 21030
  Tel: 410-771-0101

  Outside the United States call:
  Becton Dickinson Europe
  5 chemin des Sources
  38241 Meylan Cedex France
  Tel: 33 476 41 64 64

- Information department: Technical Service Representative

2 Composition/Data on components:

- Chemical characterization
- Description:
  Mixture of the substances listed below with nonhazardous additions.

<table>
<thead>
<tr>
<th>Dangerous components</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>7681-11-0 potassium iodide</td>
<td>53.0</td>
</tr>
<tr>
<td>7553-56-2 iodine</td>
<td>27.0</td>
</tr>
</tbody>
</table>

3 Hazards identification

- Hazard description:
  Xn Harmful

- Information pertaining to particular dangers for man and environment
  R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
  R 61 May cause harm to the unborn child

- Classification system
  The classification was made according to the latest editions of international substances lists, and expanded upon from company and literature data.

- NFPA ratings (scale 0-4)
  Health = 2

(Contd. on page 2)
Trade name: Gram Iodine 100X  
(Gram Stain Set)  
(Contd. of page 1)

Fire = 0  
Reactivity = 0

4 First aid measures

- General information  
  Immediately remove any clothing soiled by the product.  
  Symptoms of poisoning may even occur after several hours; therefore  
  medical observation for at least 48 hours after the accident.  
- After inhalation  
  Supply fresh air or oxygen; call for doctor.  
  In case of unconsciousness place patient on side position for  
  transportation.  
- After skin contact  
  Immediately rinse with water.  
- After eye contact  
  Rinse opened eye for several minutes under running water. Then consult  
  a doctor.  
- After swallowing  
  If symptoms persist consult doctor.  
- Information for doctor  
- The following symptoms may occur:  
  Nausea  
  Gastric or intestinal disorders.  
- Danger  
  Danger of impaired breathing.

5 Fire fighting measures

- Suitable extinguishing agents  
  CO2, extinguishing powder or water spray. Fight larger fires with water  
  spray or alcohol resistant foam.  
- Special hazards caused by the material, its products of combustion or  
  resulting gases:  
  In certain fire conditions, traces of other toxic gases cannot be  
  excluded.  
- Protective equipment:  
  Wear self-contained respiratory protective device.  
  Wear fully protective suit.

6 Accidental release measures

- Person-related safety precautions:  
  Wear protective equipment. Keep unprotected persons away.  
- Measures for environmental protection:  
  Do not allow to penetrate the ground/soil.  
  Do not allow to enter sewers/ surface or ground water.  
- Measures for cleaning/collecting:  
  Absorb with liquid-binding material (sand, diatomite, acid binders,  
  universal binders, sawdust).  
- Additional information:  
  See Section 7 for information on safe handling  
  See Section 8 for information on personal protection equipment.  
  See Section 13 for disposal information.

7 Handling and storage

- Handling  
  (Contd. on page 3)
Trade name: Gram Iodine 100X  
(Gram Stain Set)  

- **Information for safe handling:**  
  Ensure good ventilation/exhaustion at the workplace.  
- **Information about protection against explosions and fires:**  
  No special measures required.  

- **Storage**  
  - Requirements to be met by storerooms and receptacles:  
    Store at 15 - 30 °C  
  - Information about storage in one common storage facility:  
    Store away from oxidizing agents.  
    Store away from reducing agents.  
    Do not store with ammonia and salts, aluminum, bromine trifluorides and 
    trichloroethers, chemically active metals, and carbides.  
- **Further information about storage conditions:** Store in a cool place.  
- **Class according to regulation on flammable liquids:** Void  

### 8 Exposure controls and personal protection  

- **Additional information about design of technical systems:**  
  No further data; see item 7.  

  **Components with limit values that require monitoring at the workplace:**  
  - 7553-56-2 iodine  
    - TLV: 1 mg/m³, 0.1 ppm  

- **Additional information:**  
  The lists that were valid during the creation were used as basis.  

- **Personal protective equipment**  
  - **General protective and hygienic measures**  
    The usual precautionary measures for handling chemicals should be  
    followed.  
  - **Breathing equipment:**  
    In case of brief exposure or low pollution use NIOSH/MSHA-approved  
    respirator. In case of intensive or longer exposure use respiratory  
    protective device that is independent of circulating air.  
  - **Protection of hands:**  
    Protective gloves.  

- **Eye protection:** Safety glasses  
- **Body protection:** Protective work clothing.  

### 9 Physical and chemical properties:  

- **Form:** Liquid  
- **Color:** Dark brown  
- **Odor:** Characteristic  

<table>
<thead>
<tr>
<th>Property</th>
<th>Value/Range</th>
<th>Unit</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in condition</td>
<td>Undetermined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>Undetermined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>184 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flash point:</td>
<td>Not applicable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Material Safety Data Sheet  
acc. to ISO/DIS 11014

Trade name: Gram Iodine 100X  
(Gram Stain Set)

(Contd. of page 3)

- Auto igniting:  
  Product is not selfigniting.

- Danger of explosion:  
  Product does not present an  
  explosion hazard.

- Vapor pressure:  
  at 20 °C  
  0.4 hPa

- Density:  
  Not determined

- Solubility in / Miscibility with  
  Water:  
  Soluble

- pH-value:  
  at 25 °C  
  2.275 +/- 0.2

- Solvent content:  
  Organic solvents:  
  0.0 %

10 Stability and reactivity

- Thermal decomposition / conditions to be avoided:  
  No decomposition if used according to specifications.

- Dangerous reactions:  
  No dangerous reactions known

- Dangerous products of decomposition:  
  Iodine compounds
  Sulfur oxides (SOx)
  Carbon monoxide and carbon dioxide
  Nitrogen oxides (NOx)

11 Toxicological information

- Acute toxicity:
  - LD/LC50 values that are relevant for classification:
    7681-11-0 potassium iodide
    Oral: LD50: 1862 mg/kg (rat)

- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.
  - Sensitization: No sensitizing effects known.

- Subacute to chronic toxicity:  
  Target organs: lung, thyroid, bladder damage and central nervous system depression.

- Additional toxicological information:  
  The product is not subject to classification according to internally approved calculation methods for preparations:  
  Harmful

12 Ecological information:

- General notes:  
  Water hazard class 1 (Self-assessment): slightly hazardous for water.  
  Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system.
Trade name: Gram Iodine 100X
   (Gram Stain Set)

13 Disposal considerations

   - Product:
     Recommendation Smaller quantities can be disposed of with solid waste.

   - Uncleaned packagings:
     Recommendation: Disposal must be made according to regulations found in 40 CFR 261
     This product is not a hazardous considered a RCRA hazardous waste.
     Follow State and Federal regulations.
     Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

   - DOT regulations:  
   - Hazard class:  -

   - Land transport ADR/RID (cross-border)
     - ADR/RID class:  -

   - Maritime transport IMDG:
     - IMDG Class:  -
     - Marine pollutant: No

   - Air transport ICAO-TI and IATA-DGR:
     - ICAO/IATA Class:  -

15 Regulations

   - Product related hazard informations:
     Observe the general safety regulations when handling chemicals
     The product is not subject to identification regulations pertaining to
     regulations on hazardous materials.

   - Hazard symbols: Xn Harmful

   - Risk phrases:
     20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
     61 May cause harm to the unborn child

   - Safety phrases:
     24/25 Avoid contact with skin and eyes.
     23 Do not breathe gas/fumes/vapour/spray.
     36 Wear suitable protective clothing.
     7 Keep container tightly closed.

   - National regulations
   - Additional classification according to Decree on Hazardous Materials:
     CERCLA: This product does not contain chemicals having a reportable
     quantity.
     SARA 311/312: Not subject to reporting.
     313: Not subject to reporting.
     TSCA: This product is exempt under TSCA.

(Contd. on page 6)
| Trade name: Gram Iodine 100X  
<table>
<thead>
<tr>
<th>(Gram Stain Set)</th>
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<tbody>
<tr>
<td>(Contd. of page 5)</td>
</tr>
<tr>
<td><strong>Water hazard class:</strong></td>
</tr>
<tr>
<td>Water hazard class 1 (Self-assessment): slightly hazardous for water.</td>
</tr>
</tbody>
</table>

**16 Other information:**

To the best of our knowledge, the information contained herein is accurate. However, neither Becton Dickinson or any of its subsidiaries assumes any liabilities whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

- **Department issuing MSDS:** Safety & Environment Department
- **Contact:** Technical Service Representative

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**USA-**
Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 05/21/98
Reviewed on 05/13/98

1 Identification of substance:
   - Product details:
   - Trade name: Gram Safranin
     (Gram Stain Set)
   - Article number:
     4312524
     Formerly BDMS #12296
     Formerly Difco #3332-76
   - Manufacturer/Supplier:
     In the Continental United States call:
     Becton Dickinson Microbiology Systems
     250 Schilling Circle
     Cockeysville, Maryland 21030
     Tel: 410-771-0101

     Outside the United States call:
     Becton Dickinson Europe
     5 chemin des Sources
     38241 Meylan Cedex France
     Tel: 33 476 41 64 64
   - Information department: Technical Service Representative

2 Composition/Data on components:
   - Chemical characterization
   - Description:
     Mixture of the substances listed below with nonhazardous additions.
   - Dangerous components:
     64-17-5 ethanol
     19.0 %
     67-56-1 methanol
     1.0 %

3 Hazards identification
   - Hazard description:
     F Highly flammable
     Xn Harmful

   - Information pertaining to particular dangers for man and environment
     R 10 Flammable
     R 20/22 Harmful by inhalation and if swallowed.
     R 36/37/38 Irritating to eyes, respiratory system and skin.
     R 45 Can cause cancer - Group III (hazardous)
     R 61 May cause harm to the unborn child
     R 40 Possible risks of irreversible effects.
   - Classification system
     The classification was made according to the latest editions of
     international substances lists, and expanded upon from company and
     (Contd. on page 2)
Material Safety Data Sheet
acc. to ISO/DIS 11014

Printing date 05/21/98  Reviewed on 05/13/98

Trade name: Gram Safranin
(Gram Stain Set)

(Contd. of page 1)

literature data.
• NFPA ratings (scale 0-4)
  Health = 2
  Fire = 2
  Reactivity = 0

4 First aid measures

• After inhalation
  Supply fresh air or oxygen; call for doctor.
  In case of unconsciousness place patient on side position for
  transportation.
• After skin contact Immediately rinse with water.
• After eye contact
  Rinse opened eye for several minutes under running water. Then consult
  a doctor.
• After swallowing Call a doctor immediately.

5 Fire fighting measures

• Suitable extinguishing agents
  CO2, extinguishing powder or water spray. Fight larger fires with water
  spray or alcohol resistant foam.
• Protective equipment:
  Wear self-contained respiratory protective device.
  Wear fully protective suit.

6 Accidental release measures

• Person-related safety precautions:
  Wear protective equipment. Keep unprotected persons away.
• Measures for environmental protection:
  Prevent seepage into sewage system, workpits and cellars.
  Dilute with plenty of water.
• Measures for cleaning/collecting:
  Absorb with liquid-binding material (sand, diatomite, acid binders,
  universal binders, sawdust).
• Additional information:
  See Section 7 for information on safe handling
  See Section 8 for information on personal protection equipment.
  See Section 13 for disposal information.

7 Handling and storage

• Handling
• Information for safe handling:
  Ensure good ventilation/exhaustion at the workplace.
• Information about protection against explosions and fires:
  Keep ignition sources away - Do not smoke.
  Protect against electrostatic charges.

• Storage
• Requirements to be met by storerooms and receptacles:
  Store at 15 - 30 C
• Information about storage in one common storage facility:
  Store away from oxidizing agents.

(Contd. on page 3)
Material Safety Data Sheet  
acc. to ISO/DIS 11014

Printing date 05/21/98  
Reviewed on 05/13/98

| Trade name: Gram Safranin  
<table>
<thead>
<tr>
<th>(Gram Stain Set)</th>
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</thead>
<tbody>
<tr>
<td>(Contd. of page 2)</td>
</tr>
</tbody>
</table>

8 Exposure controls and personal protection

- Additional information about design of technical systems:
  No further data; see item 7.

Components with limit values that require monitoring at the workplace:
- 64-17-5 ethanol
  TLV: 1880 mg/m³, 1000 ppm

- 67-56-1 methanol
  TLV: Short-term value: 328 mg/m³, 250 ppm
  Long-term value: 262 mg/m³, 200 ppm

- Additional information:
The lists that were valid during the creation were used as basis.

- Personal protective equipment
- General protective and hygienic measures
  Wash hands before breaks and at the end of work.

- Breathing equipment:
  In case of brief exposure or low pollution use NIOSH/MSHA-approved respirator. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- Protection of hands:
  Protective gloves.

- Eye protection: Safety glasses
- Body protection: Protective work clothing.

9 Physical and chemical properties:

- Form: Liquid
- Color: Red
- Odor: Characteristic

<table>
<thead>
<tr>
<th>Value/Range</th>
<th>Unit</th>
<th>Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in condition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Melting point/Melting range:</td>
<td>Undetermined</td>
<td></td>
</tr>
<tr>
<td>Boiling point/Boiling range:</td>
<td>79 °C</td>
<td></td>
</tr>
<tr>
<td>Flash point:</td>
<td>39 °C</td>
<td></td>
</tr>
<tr>
<td>Ignition temperature:</td>
<td>425.0 °C</td>
<td></td>
</tr>
<tr>
<td>Auto igniting:</td>
<td>Product is not selfigniting.</td>
<td></td>
</tr>
</tbody>
</table>

- Danger of explosion:
  Product is not explosive. However, formation of explosive air/vapor mixtures are possible.

(Contd. on page 4)
Material Safety Data Sheet
acc. to ISO/DIS 11014

Trade name: Gram Safranin
(Gram Stain Set)

(Contd. of page 3)

- Explosion limits:
  - Lower: 6.5 Vol %
  - Upper: 22 Vol %
- Vapor pressure: at 25 °C 59.0 hPa
- Density: Not determined
- Solubility in / Miscibility with
  - Water: Soluble
- Solvent content: 20.0 %

10 Stability and reactivity

- Thermal decomposition / conditions to be avoided:
  No decomposition if used according to specifications.
- Dangerous reactions: No dangerous reactions known
- Dangerous products of decomposition:
  - Carbon monoxide and carbon dioxide
  - Nitrogen oxides
  - Hydrogen chloride (HCl)

11 Toxicological information

- Acute toxicity:
  LD/LC50 values that are relevant for classification:
  - Oral: LD50: 5628 mg/kg (rat)
  - Inhalative: LC50/4 h: 20000 mg/l (rat)

- Primary irritant effect:
  - on the skin: Irritant to skin and mucous membranes.
  - on the eye: Irritating effect.
- Sensitization: No sensitizing effects known.
- Subacute to chronic toxicity:
  - Target organs: eyes, kidneys, tumor formation, reproductive disorders
- Additional toxicological information:
  The product shows the following dangers according to internally approved calculation methods for preparations:
  - Irritant
  - Carcinogenic
  - Product is suspected to cause birth defects.

12 Ecological information:

- General notes:
  - Water hazard class 0 (Self-assessment): generally not hazardous for water.
13 Disposal considerations

- **Product:**
  - **Recommendation:**
    Must not be disposed of together with solid waste. Do not allow product to reach sewage system.

- **Uncleaned packagings:**
  - **Recommendation:**
    Disposal must be made according to regulations found in 40 CFR 261
    RCRA # D001
  - **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

- **DOT regulations:**
  - **Hazard class:** 3
  - **Identification number:** UN1993
  - **Packing group:** III
  - **Proper shipping name (technical name):** Flammable liquid, n.o.s., ethanol (Ethyl alcohol)

- **Land transport ADR/RID (cross-border):**
  - **ADR/RID class:** 3 Flammable liquids
  - **Item:** 31c
  - **Danger code (Kepler):** 30
  - **UN-Number:** 1993
  - **Description of goods:** 1993 Flammable liquid, n.o.s., ethanol (Ethyl alcohol)

- **Maritime transport IMDG:**
  - **IMDG Class:** 3.3
  - **Page:** 3345
  - **UN Number:** 1993
  - **Packing group:** III
  - **EMS Number:** 3-07
  - **MFAG:** 310
  - **Marine pollutant:** No
  - **Proper shipping name:** Flammable liquid, n.o.s., ethanol (Ethyl alcohol)

- **Air transport ICAO-TI and IATA-DGR:**
  - **ICAO/IATA Class:** 3
  - **UN/ID Number:** 1993
  - **Packing group:** III
  - **Proper shipping name:** Flammable liquid, n.o.s., ethanol (Ethyl alcohol)

15 Regulations

- **Product related hazard informations:**
  The product has been classified and marked in accordance with regulations on hazardous materials.

(Contd. on page 6)
Trade name: Gram Safranin  
(Grum Stain Set)

(Contd. of page 5)

- Hazard symbols:
  F Highly flammable
  Xn Harmful

- Risk phrases:
  10 Flammable.
  20/22 Harmful by inhalation and if swallowed.
  36/37/38 Irritating to eyes, respiratory system and skin.
  45 Can cause cancer - Group III (hazardous)
  61 May cause harm to the unborn child
  40 Possible risks of irreversible effects.

- Safety phrases:
  7 Keep container tightly closed.
  16 Keep away from sources of ignition - No smoking.
  24/25 Avoid contact with skin and eyes.
  36 Wear suitable protective clothing.

- National regulations
- Additional classification according to Decree on Hazardous Materials:
  CERCLA: This product contains methanol which has reporting quantity (RQ) 5000 lbs.
  SARA 311/312: Maybe subject to reporting.
  313: Methanol is subject to reporting.
  TSCA: This product is exempt under TSCA.

- Technical instructions (air):
  Class Share in %
    III 20.0

- Water hazard class:
  Water hazard class 0 (Self-assessment): generally not hazardous for water.

16 Other information:

To the best of our knowledge, the information contained herein is accurate. However, neither Becton Dickinson or any of its subsidiaries assumes any liabilities whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards that exist.

- Department issuing MSDS: Safety & Environment Department
- Contact: Technical Service Representative