



# Material Safety Data Sheet

## Section 1. Product and Company Identification

<b>Product Name</b>	Gram Stain Set	<b>Product Code</b>	65092
<b>Manufacturer</b>	EMD Chemicals Inc. P.O. Box 70 480 Democrat Road Gibbstown, NJ 08027 Prior to January 1, 2003 EMD Chemicals Inc. was EM Industries, Inc. or EM Science, Division of EM Industries, Inc.	<b>Effective Date</b>	2/16/2005
		<b>Print Date</b>	3/8/2005

### For More Information Call

856-423-6300 Technical Service  
Monday-Friday: 8:00 AM - 5:00 PM

### In Case of Emergency Call

800-424-9300 CHEMTREC (USA)  
613-996-6666 CANUTEC (CANADA)  
24 Hours/Day: 7 Days/Week

<b>Synonym</b>	Crystal Violet Safranin Stain Gram Iodine Solution Decolorizer	None. None. None. None.
<b>Material Uses</b>	Crystal Violet Safranin Stain Gram Iodine Solution Decolorizer	Laboratory Reagent Laboratory Reagent Laboratory Reagent Laboratory Reagent
<b>Chemical Family</b>	Crystal Violet Safranin Stain Gram Iodine Solution Decolorizer	Solution. Alcohol solution Solution. Alcohol solution

## Section 2. Composition and Information on Ingredients

<b>Product name / Reagent.</b>	<b>Component ; CAS # ; % by Weight</b>
Crystal Violet	Crystal Violet; 548-62-9; 0.5% Ethanol; 64-17-5; 20% Phenol; 108-95-2; 0.5% Water; 7732-18-5; 78.5% Methanol; 67-56-1; 0.5%
Safranin Stain	Safranin O; 477-73-6; 0.9% Ethanol; 64-17-5; 19.04% Methanol; 67-56-1; 0.96% Water; 7732-18-5; 79.79%
Gram Iodine Solution	PVP (Povidine) Iodine; 25655-41-8; 7.5% Water; 7732-18-5; 85.85% Potassium Iodide; 7681-11-0; 1.98%
Decolorizer	Isopropyl Alcohol; 67-63-0; 80% Acetone; 67-64-1; 20%

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**Section 3. Hazards Identification**

<b>Physical State and Appearance</b>	Crystal Violet Safranin Stain Gram Iodine Solution Decolorizer	Liquid. Liquid. Liquid. Liquid.
<b>Emergency Overview</b>	Crystal Violet (Gram Stain Set)  Safranin Stain  Gram Iodine Solution  Decolorizer  Crystal Violet (Gram Stain Set) Safranin Stain Gram Iodine Solution Decolorizer	WARNING ! FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. MAY CAUSE EYE BURNS. HARMFUL IF INHALED, ABSORBED THROUGH SKIN OR SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. POSSIBLE BIRTH DEFECT HAZARD. CONTAINS MATERIAL WHICH MAY CAUSE BIRTH DEFECTS BASED ON ANIMAL DATA.  WARNING ! FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. POSSIBLE BIRTH DEFECT HAZARD. MAY BE FATAL IF SWALLOWED. MAY CAUSE BLINDNESS IF SWALLOWED. HARMFUL IF INHALED OR ABSORBED THROUGH SKIN. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION. CONTAINS MATERIAL WHICH MAY CAUSE BIRTH DEFECTS BASED ON ANIMAL DATA.  CAUTION ! MAY CAUSE EYE BURNS. HARMFUL IF SWALLOWED. CAUSES RESPIRATORY TRACT, EYE AND SKIN IRRITATION.  DANGER ! FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. MAY BE HARMFUL IF INHALED OR SWALLOWED. CAUSES EYE BURNS. MAY CAUSE SKIN IRRITATION.  Not listed.California prop. 65  Not listed.California prop. 65 Not listed.California prop. 65 Not listed.California prop. 65

<b>Routes of Entry</b>	Crystal Violet	Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.
	Safranin Stain	Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.
	Gram Iodine Solution	Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.
	Decolorizer	Dermal contact. Eye contact. Inhalation. Ingestion.

**Potential Acute Health Effects**

<b>Eyes</b>	Crystal Violet	Hazardous in case of eye contact (corrosive, irritant). May cause burns. Inflammation of the eye is characterized by redness, watering, and itching.
	Safranin Stain	Hazardous in case of eye contact (irritant). Inflammation of the eye is characterized by redness, watering, and itching.
	Gram Iodine Solution	Hazardous in case of eye contact (corrosive, irritant). May cause burns. Inflammation of the eye is characterized by redness, watering, and itching.
	Decolorizer	Hazardous in case of eye contact (corrosive). Causes eye burns.

<b>Skin</b>	Crystal Violet	Hazardous in case of skin contact (permeator, irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
	Safranin Stain	Hazardous in case of skin contact (permeator, irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
	Gram Iodine Solution	Hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.
	Decolorizer	May be hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Non-permeator by skin.

<b>Inhalation</b>	Crystal Violet	Hazardous in case of inhalation (lung irritant).
	Safranin Stain	Hazardous in case of inhalation (lung irritant).
	Gram Iodine Solution	Hazardous in case of inhalation (lung irritant).
	Decolorizer	May be hazardous in case of inhalation.

<b>Ingestion</b>	Crystal Violet	Hazardous in case of ingestion.
	Safranin Stain	Extremely hazardous in case of ingestion. May be fatal if swallowed.
	Gram Iodine Solution	Hazardous in case of ingestion.
	Decolorizer	May be hazardous in case of ingestion.

**Potential Chronic Health Effects**

*Carcinogenic Effects* Crystal Violet

This material is not known to cause cancer in animals or humans.

Safranin Stain

This material is not known to cause cancer in animals or humans.

Gram Iodine Solution

This material is not known to cause cancer in animals or humans.

Decolorizer

This material is not known to cause cancer in animals or humans.

Additional information See Toxicological Information (section 11)

**Medical Conditions  
Aggravated by  
Overexposure:**

Crystal Violet

Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Safranin Stain

Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Gram Iodine Solution

Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

Decolorizer

Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection.

**Section 4. First Aid Measures****Eye Contact**

Crystal Violet

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Safranin Stain

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Gram Iodine Solution

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

Decolorizer

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention immediately.

**Skin Contact**

Crystal Violet	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Safranin Stain	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Gram Iodine Solution	In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.
Decolorizer	In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Inhalation**

Crystal Violet	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Safranin Stain	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Gram Iodine Solution	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.
Decolorizer	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion**

Crystal Violet	If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
Safranin Stain	If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.
Gram Iodine Solution	If swallowed, do not induce vomiting unless directed

Decolorizer	to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately. Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.
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### Section 5. Fire Fighting Measures

<b>Flammability of the Product</b>	Crystal Violet	Product will burn.
	Safranin Stain	Product will burn.
	Gram Iodine Solution	Non-flammable.
	Decolorizer	Product will burn.
<b>Auto-ignition Temperature</b>	Crystal Violet	The lowest known value is 362.78°C (685°F) (Ethanol).
	Safranin Stain	The lowest known value is 362.78°C (685°F) (Ethanol).
	Gram Iodine Solution	Not applicable.
	Decolorizer	The lowest known value is 399.05°C (750.3°F) (Isopropyl Alcohol).
<b>Flash Points</b>	Crystal Violet	The lowest known value is Closed cup: 13.333°C (56°F). (Ethanol)
	Safranin Stain	Closed cup: 36°C (96.8°F).
	Gram Iodine Solution	Not applicable.
	Decolorizer	Closed cup: 11.667°C (53°F).
<b>Flammable Limits</b>	Crystal Violet	The greatest known range is LOWER: 3.3% UPPER: 19% (Ethanol)
	Safranin Stain	The greatest known range is LOWER: 3.3% UPPER: 19% (Ethanol)
	Gram Iodine Solution	Not applicable.
	Decolorizer	The greatest known range is LOWER: 2.6% UPPER: 12.8% (Acetone)
<b>Products of Combustion</b>	Crystal Violet	These products are carbon oxides (CO, CO <sub>2</sub> ).
	Safranin Stain	These products are carbon oxides (CO, CO <sub>2</sub> ).
	Gram Iodine Solution	Not applicable.
	Decolorizer	These products are carbon oxides (CO, CO <sub>2</sub> ).
<b>Fire Hazards in Presence of Various Substances</b>	Crystal Violet	Highly flammable in presence of open flames, sparks and static discharge, of shocks, of heat. Slightly flammable to flammable in presence of oxidizing materials.
	Safranin Stain	Highly flammable in presence of open flames, sparks and static discharge, of shocks, of heat. Slightly flammable to flammable in presence of oxidizing materials.
	Gram Iodine Solution	Not applicable.
	Decolorizer	Not applicable.

Highly flammable in presence of oxidizing materials.  
Flammable in presence of open flames, sparks and static discharge, of shocks, of heat.

**Explosion Hazards in Presence of Various Substances**

Crystal Violet

**Risks of explosion of the product in presence of static discharge:**

Highly flammable in presence of open flames, sparks and static discharge.

Highly explosive in presence of open flames, sparks and static discharge.

**Risks of explosion of the product in presence of mechanical impact:**

Highly flammable in presence of shocks.

Slightly explosive in presence of shocks.

Safranin Stain

**Risks of explosion of the product in presence of static discharge:**

Highly flammable in presence of open flames, sparks and static discharge.

Slightly explosive in presence of open flames, sparks and static discharge.

**Risks of explosion of the product in presence of mechanical impact:**

Highly flammable in presence of shocks.

Slightly explosive in presence of shocks.

Gram Iodine Solution

**Risks of explosion of the product in presence of static discharge:** No.

**Risks of explosion of the product in presence of mechanical impact:** No.

Decolorizer

**Risks of explosion of the product in presence of static discharge:**

Flammable in presence of open flames, sparks and static discharge.

Highly explosive in presence of open flames, sparks and static discharge.

**Risks of explosion of the product in presence of mechanical impact:**

Flammable in presence of shocks.

Highly explosive in presence of shocks.

**Fire Fighting Media and Instructions**

Crystal Violet

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Safranin Stain

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

Gram Iodine Solution

Not applicable.



Decolorizer	SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.
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**Protective Clothing (Fire)**

Crystal Violet	Be sure to use an approved/certified respirator or equivalent.
Safranin Stain	Be sure to use an approved/certified respirator or equivalent.
Gram Iodine Solution	Not applicable.
Decolorizer	Be sure to use an approved/certified respirator or equivalent.

**Special Remarks on Fire Hazards**

Crystal Violet	Dangerous fire and explosion risk. Container explosion may occur under fire conditions or when heated. Vapor may travel considerable distance to source of ignition and flash back. (Methanol)
Safranin Stain	Dangerous fire and explosion risk. Container explosion may occur under fire conditions or when heated. Vapor may travel considerable distance to source of ignition and flash back. (Methanol)
Gram Iodine Solution	Not available.
Decolorizer	Vapor may travel considerable distance to source of ignition and flash back. (Isopropyl Alcohol)

**Special Remarks on Explosion Hazards**

Crystal Violet (Gram Stain Set)	Not available.
Safranin Stain	Vapor may travel considerable distance to source of ignition and flash back.
Gram Iodine Solution	MAY FORM EXPLOSIVE DUST-AIR MIXTURES. (PVP (Povidine) Iodine) Solid Form
Decolorizer	Vapor may travel considerable distance to source of ignition and flash back.

**Section 6. Accidental Release Measures****Small Spill and Leak**

Crystal Violet	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
Safranin Stain	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
Gram Iodine Solution	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.
Decolorizer	Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.



## Large Spill and Leak

Crystal Violet	Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.
Safranin Stain	Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.
Gram Iodine Solution	Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal.
Decolorizer	Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Spill Kit Information

Crystal Violet (Gram Stain Set)	The following EMD Chemicals Inc. SpillSolv (TM) absorbent is recommended for this product: SX1330 Solvent Treatment Kit
Safranin Stain	The following EMD Chemicals Inc. SpillSolv (TM) absorbent is recommended for this product: SX1330 Solvent Treatment Kit
Gram Iodine Solution Decolorizer	No specific spill kit required for this product. The following EMD Chemicals Inc. SpillSolv (TM) absorbent is recommended for this product: SX1330 Solvent Treatment Kit

**Section 7. Handling and Storage**

<b>Handling</b>	Crystal Violet	Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.
	Safranin Stain	Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.
	Gram Iodine Solution	Do not ingest. Avoid breathing vapors or spray mists. Avoid contact with skin and clothing. Do not get in eyes. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling.
	Decolorizer	Keep away from heat, sparks and flame. Keep container closed. Use only with adequate ventilation. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Use explosion-proof electrical (ventilating, lighting and material handling) equipment.
<b>Storage</b>	Crystal Violet	Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).
	Safranin Stain	Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).
	Gram Iodine Solution	Keep container tightly closed. Keep container in a cool, well-ventilated area. Store between 15 to 30°C (59 to 86°F).
	Decolorizer	Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

**Section 8. Exposure Controls/Personal Protection****Engineering Controls**

Crystal Violet	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Safranin Stain	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.
Gram Iodine Solution	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits.
Decolorizer	Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective occupational exposure limits. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection**

<i>Eyes</i>	Crystal Violet	Splash goggles.
	Safranin Stain	Splash goggles.
	Gram Iodine Solution	Face shield.
	Decolorizer	Face shield.

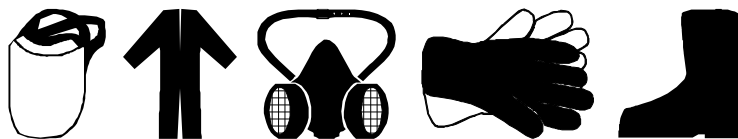
<i>Body</i>	Crystal Violet	Lab coat.
	Safranin Stain	Lab coat.
	Gram Iodine Solution	Full suit.
	Decolorizer	Full suit.

<i>Respiratory</i>	Crystal Violet	Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
	Safranin Stain	Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
	Gram Iodine Solution	Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.
	Decolorizer	Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

<i>Hands</i>	Crystal Violet	Gloves.
	Safranin Stain	Gloves.
	Gram Iodine Solution	Gloves.
	Decolorizer	Gloves.

<i>Feet</i>	Crystal Violet	Not applicable.
	Safranin Stain	Not applicable.
	Gram Iodine Solution	Boots.
	Decolorizer	Boots.

### Protective Clothing (Pictograms)



### Personal Protection in Case of a Large Spill

Crystal Violet	Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Safranin Stain	Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Gram Iodine Solution	Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.
Decolorizer	Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self-contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Product Name

Crystal Violet  
Ethanol

### Exposure Limits

Not available.

#### AUVA (Austria, 1995).

Spitzenbegrenzung: 3800 mg/m<sup>3</sup> 3 times per shift, 60 minute(s).

Spitzenbegrenzung: 2000 ML/M3 3 times per shift, 60 minute(s).

TWA: 1900 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ML/M3 8 hour(s).

#### NOHSC (Australia, 1995).

TWA: 1880 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ppm 8 hour(s).

#### Lijst Grenswaarden (Belgium, 1998).

VL: 1907 mg/m<sup>3</sup> 8 hour(s).

VL: 1000 ppm 8 hour(s).

#### SUVA (Switzerland, 1997).

MAK: 1900 mg/m<sup>3</sup> 8 hour(s).

MAK: 1000 ML/M3 8 hour(s).

#### Ministry of Health (CL, 1992).

TWA: 1500 mg/m<sup>3</sup> 8 hour(s).

TWA: 800 ppm 8 hour(s).

#### MAK-Werte Liste (Germany, 1998).

Spitzenbegrenzung: 1920 mg/m<sup>3</sup> 4 times per shift, 30 minute(s).

Spitzenbegrenzung: 1000 ML/M3 4 times per shift, 30 minute(s).

TWA: 960 mg/m<sup>3</sup> 8 hour(s).

TWA: 500 ML/M3 8 hour(s).

**TRGS900 (Germany, 1999).**

Spitzenbegrenzung: 7600 mg/m<sup>3</sup>

Spitzenbegrenzung: 4000 ML/M3

TWA: 1900 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ML/M3 8 hour(s).

**Arbejdstilsynet (Denmark, 1996).**

GV: 1900 mg/m<sup>3</sup> 8 hour(s).

GV: 1000 ppm 8 hour(s).

**Tyterveyslaitos (Finland, 1998).**

STEL: 2500 mg/m<sup>3</sup> 15 minute(s).

STEL: 1300 ppm 15 minute(s).

TWA: 1900 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ppm 8 hour(s).

**INRS (France, 1999).**

VLE: 9500 mg/m<sup>3</sup> 15 minute(s).

VLE: 5000 ppm 15 minute(s).

VME: 1900 mg/m<sup>3</sup> 8 hour(s).

VME: 1000 ppm 8 hour(s).

**EH40-OES (United Kingdom (UK), 2000).**

TWA: 1920 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ppm 8 hour(s).

**NAOSH (Ireland, 1999).**

OEL: 1900 mg/m<sup>3</sup> 8 hour(s).

OEL: 1000 ppm 8 hour(s).

**Ministry of Labour (KR, 1997).**

TWA: 1900 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ppm 8 hour(s).

**Secretary of Work and Social security (MX, 1994).**

CPT: 1900 mg/m<sup>3</sup> 8 hour(s).

CPT: 1000 ppm 8 hour(s).

**Nationale MAC-lijst (Netherlands, 2000).**

TGG 8 uur: 1000 mg/m<sup>3</sup> 8 hour(s).

TGG 8 uur: 500 ppm 8 hour(s).

**NZ OSH (NZ, 1994).**

TWA: 1880 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ppm 8 hour(s).

**AFS (Sweden, 1996).**

TGV: 1900 mg/m<sup>3</sup>

TGV: 1000 ppm

NGV: 1000 mg/m<sup>3</sup> 8 hour(s).

NGV: 500 ppm 8 hour(s).

**ACGIH TLV (United States, 2000).**

TWA: 1880 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ppm 8 hour(s).

**NIOSH REL (United States, 2000).**

TWA: 1900 mg/m<sup>3</sup> 10 hour(s).

TWA: 1000 ppm 10 hour(s).

**OSHA Final Rule (United States, 1989).**

TWA: 1900 mg/m<sup>3</sup> 8 hour(s).

TWA: 1000 ppm 8 hour(s).

**EH40-OES (United Kingdom (UK), 1997). Skin**

STEL: 39 mg/m<sup>3</sup> 15 minute(s).

STEL: 10 ppm 15 minute(s).

TWA: 20 mg/m<sup>3</sup> 8 hour(s).

TWA: 5 ppm 8 hour(s).

**ACGIH (United States, 1996). Skin**

TWA: 19 mg/m<sup>3</sup> 8 hour(s).

TWA: 5 ppm 8 hour(s).

**NIOSH REL (United States, 1994). Skin**

Phenol

CELL: 60 mg/m<sup>3</sup> 15 minute(s).

CELL: 15.6 ppm 15 minute(s).

TWA: 19 mg/m<sup>3</sup> 10 hour(s).

TWA: 5 ppm 10 hour(s).

**OSHA Final Rule (United States, 1989). Skin**

TWA: 19 mg/m<sup>3</sup> 8 hour(s).

TWA: 5 ppm 8 hour(s).

Not available.

**ACGIH (United States, 1994). Skin**

TWA: 262 mg/m<sup>3</sup>

STEL: 328 mg/m<sup>3</sup>

**OSHA (United States, 1989). Skin**

TWA: 260 mg/m<sup>3</sup>

STEL: 325 mg/m<sup>3</sup>

**ACGIH (United States, 1994). Skin**

STEL: 328 mg/m<sup>3</sup> 15 minute(s).

STEL: 250 ppm 15 minute(s).

TWA: 262 mg/m<sup>3</sup> 8 hour(s).

TWA: 200 ppm 8 hour(s).

**NIOSH REL (United States, 1994). Skin**

STEL: 325 mg/m<sup>3</sup> 15 minute(s).

STEL: 250 ppm 15 minute(s).

TWA: 260 mg/m<sup>3</sup> 10 hour(s).

TWA: 200 ppm 10 hour(s).

**OSHA Final Rule (United States, 1989). Skin**

STEL: 325 mg/m<sup>3</sup> 15 minute(s).

STEL: 250 ppm 15 minute(s).

TWA: 260 mg/m<sup>3</sup> 8 hour(s).

TWA: 200 ppm 8 hour(s).

Not available.

Not available.

Not available.

**BAUA (Germany, 1997).**

Spitzenbegrenzung: 2000 mg/m<sup>3</sup>

TWA: 500 mg/m<sup>3</sup> 8 hour(s).

**DK-Arbejdstylsinet (Denmark, 1996). Skin**

GV: 490 mg/m<sup>3</sup> 8 hour(s).

GV: 200 ppm 8 hour(s).

**INRS (France, 1996).**

VLE: 980 mg/m<sup>3</sup> 15 minute(s).

VLE: 400 ppm 15 minute(s).

**National Authority for Occupational Safety/Health (Ireland, 1999). Skin**

STEL: 1225 mg/m<sup>3</sup> 15 minute(s).

STEL: 500 ppm 15 minute(s).

OEL: 980 mg/m<sup>3</sup> 8 hour(s).

OEL: 400 ppm 8 hour(s).

**Arbeidsinspectie (Netherlands, 1999).**

TGG 8 uur: 650 mg/m<sup>3</sup> 8 hour(s).

TGG 8 uur: 250 ppm 8 hour(s).

**N-Arbeidstylsinet (Norway, 1996).**

AN: 245 mg/m<sup>3</sup> 8 hour(s).

AN: 100 ppm 8 hour(s).

**AFS (Sweden, 1996).**

KTV: 600 mg/m<sup>3</sup> 15 minute(s).

KTV: 250 ppm 15 minute(s).

NGV: 350 mg/m<sup>3</sup> 8 hour(s).

NGV: 150 ppm 8 hour(s).

**EH40-OES (United Kingdom (UK), 1997).**

STEL: 1250 mg/m<sup>3</sup> 15 minute(s).

STEL: 500 ppm 15 minute(s).

TWA: 999 mg/m<sup>3</sup> 8 hour(s).

TWA: 400 ppm 8 hour(s).

**ACGIH (United States, 1994).**

Water

Methanol

Safranin O

PVP (Povidine) Iodine

Potassium Iodide

Isopropyl Alcohol

STEL: 1230 mg/m<sup>3</sup> 15 minute(s).

STEL: 500 ppm 15 minute(s).

TWA: 983 mg/m<sup>3</sup> 8 hour(s).

TWA: 400 ppm 8 hour(s).

**NIOSH REL (United States, 1994).**

STEL: 1225 mg/m<sup>3</sup> 15 minute(s).

STEL: 500 ppm 15 minute(s).

TWA: 980 mg/m<sup>3</sup> 10 hour(s).

TWA: 400 ppm 10 hour(s).

**OSHA Final Rule (United States, 1989).**

STEL: 1225 mg/m<sup>3</sup> 15 minute(s).

STEL: 500 ppm 15 minute(s).

TWA: 980 mg/m<sup>3</sup> 8 hour(s).

TWA: 400 ppm 8 hour(s).

**INRS (France, 1996).**

VME: 1800 mg/m<sup>3</sup> 8 hour(s).

VME: 1800 mg/m<sup>3</sup> 8 hour(s).

VME: 750 ppm 8 hour(s).

**National Authority for Occupational Safety/Health (Ireland, 1999).**

STEL: 3560 mg/m<sup>3</sup> 15 minute(s).

STEL: 1500 ppm 15 minute(s).

OEL: 1780 mg/m<sup>3</sup> 8 hour(s).

OEL: 750 ppm 8 hour(s).

**AFS (Sweden, 1996).**

KTV: 1200 mg/m<sup>3</sup> 15 minute(s).

KTV: 1200 mg/m<sup>3</sup> 15 minute(s).

KTV: 500 ppm 15 minute(s).

NGV: 600 mg/m<sup>3</sup> 3 times per shift, 8 hour(s).

NGV: 600 mg/m<sup>3</sup> 8 hour(s).

NGV: 250 ppm 8 hour(s).

**EH40-OES (United Kingdom (UK), 2002). Notes: OES**

STEL: 3620 mg/m<sup>3</sup> 15 minute(s).

STEL: 1500 ppm 15 minute(s).

TWA: 1210 mg/m<sup>3</sup> 8 hour(s).

TWA: 500 ppm 8 hour(s).

**ACGIH (United States, 1996).**

STEL: 1782 mg/m<sup>3</sup> 15 minute(s).

STEL: 1782 mg/m<sup>3</sup> 15 minute(s).

STEL: 750 ppm 15 minute(s).

TWA: 1188 mg/m<sup>3</sup> 8 hour(s).

TWA: 1188 mg/m<sup>3</sup> 8 hour(s).

TWA: 500 ppm 8 hour(s).

**NIOSH REL (United States, 2001).**

TWA: 590 mg/m<sup>3</sup> 10 hour(s).

TWA: 250 ppm 10 hour(s).

**OSHA (United States, 1989).**

STEL: 2400 mg/m<sup>3</sup> 15 minute(s).

TWA: 1800 mg/m<sup>3</sup> 8 hour(s).

**OSHA Final Rule (United States, 1989).**

STEL: 2400 mg/m<sup>3</sup> 15 minute(s).

STEL: 1000 ppm 15 minute(s).

TWA: 1800 mg/m<sup>3</sup> 8 hour(s).

TWA: 750 ppm 8 hour(s).

**BMWA\_MAK (Austria, 2001).**

STEL: 4800 mg/m<sup>3</sup> 4 times per shift, 15 minute(s).

STEL: 2000 ppm 4 times per shift, 15 minute(s).

TWA: 1200 mg/m<sup>3</sup> 8 hour(s).

TWA: 500 ppm 8 hour(s).

**NOHSC (Australia, 2002). Notes: National Commission documentation available for these values**

STEL: 2375 mg/m<sup>3</sup> 15 minute(s).

STEL: 1000 ppm 15 minute(s).

TWA: 1185 mg/m<sup>3</sup> 8 hour(s).

Acetone



TWA: 500 ppm 8 hour(s).

**EU OEL (Europe, 2000). Notes: Indicative**

TWA: 1210 mg/m<sup>3</sup> 8 hour(s).

TWA: 500 ppm 8 hour(s).

**Työterveyslaitos (Finland, 2002).**

STEL: 1500 mg/m<sup>3</sup> 15 minute(s).

STEL: 630 ppm 15 minute(s).

TWA: 1200 mg/m<sup>3</sup> 8 hour(s).

TWA: 500 ppm 8 hour(s).

**NAOSH (Ireland, 2002).**

OEL: 1210 mg/m<sup>3</sup> 8 hour(s).

OEL: 500 ppm 8 hour(s).

**JSOH (Japan, 1996).**

TWA: 470 mg/m<sup>3</sup> 8 hour(s).

TWA: 200 ppm 8 hour(s).

**Secretary of Work and Social Security (MX, 1994).**

CCT: 3000 mg/m<sup>3</sup> 15 minute(s).

CCT: 1260 ppm 15 minute(s).

CPT: 2400 mg/m<sup>3</sup> 8 hour(s).

CPT: 1000 ppm 8 hour(s).

**Nationale MAC-lijst (Netherlands, 2002). Notes: Tentative**

TGG 8 uur: 1780 mg/m<sup>3</sup> 8 hour(s).

TGG 8 uur: 750 ppm 8 hour(s).

**NZ OSH (NZ, 1994).**

STEL: 2375 mg/m<sup>3</sup> 15 minute(s).

STEL: 1000 ppm 15 minute(s).

TWA: 1185 mg/m<sup>3</sup> 8 hour(s).

**ACGIH TLV (United States, 2002).**

STEL: 1782 mg/m<sup>3</sup> 15 minute(s).

STEL: 750 ppm 15 minute(s).

TWA: 1188 mg/m<sup>3</sup> 8 hour(s).

TWA: 500 ppm 8 hour(s).

**OSHA PEL (United States, 1971).**

TWA: 2400 MGM3 8 hour(s).

TWA: 1000 ppm 8 hour(s).

**OSHA PEL 1989 (United States, 1989). Notes: The acetone STEL does not apply to the cellulose acetate fiber industry. It is in effect for all other sectors.**

STEL: 2400 mg/m<sup>3</sup> 15 minute(s).

STEL: 1000 ppm 15 minute(s).

TWA: 1800 mg/m<sup>3</sup> 8 hour(s).

TWA: 750 ppm 8 hour(s).

### Section 9. Physical and Chemical Properties

<b>Odor</b>	Crystal Violet	Alcohol like. (Slight.)
	Safranin Stain	Alcohol like. (Slight.)
	Gram Iodine Solution	Pungent.
	Decolorizer	Characteristic.
<b>Color</b>	Crystal Violet	Violet or Red
	Safranin Stain	Red.
	Gram Iodine Solution	Brown.
	Decolorizer	Clear , Colorless.
<b>Physical State and Appearance</b>	Crystal Violet	Liquid.
	Safranin Stain	Liquid.
	Gram Iodine Solution	Liquid.
	Decolorizer	Liquid.

<b>Molecular Weight</b>	Crystal Violet Safranin Stain Gram Iodine Solution Decolorizer	Not applicable. Not applicable. Not applicable. Not applicable.
<b>Molecular Formula</b>	Crystal Violet Safranin Stain Gram Iodine Solution Decolorizer	Not applicable. Not applicable. Not applicable. Not applicable.
<b>pH</b>	Crystal Violet Safranin Stain Gram Iodine Solution Decolorizer	Not available. Not available. Not available. Not available.
<b>Boiling/Condensation Point</b>	Crystal Violet  Safranin Stain  Gram Iodine Solution Decolorizer	The lowest known value is 78.333°C (173°F) (Ethanol). Weighted average: 95.52°C (203.9°F) The lowest known value is 78.333°C (173°F) (Ethanol). Weighted average: 95.75°C (204.3°F) The lowest known value is 99.9°C (211.8°F) (Water). The lowest known value is 56.17°C (133.1°F) (Acetone). Weighted average: 77.27°C (171.1°F)
<b>Melting/Freezing Point</b>	Crystal Violet  Safranin Stain  Gram Iodine Solution Decolorizer	May start to solidify at -0.1°C (31.8°F) based on data for: Water. Weighted average: -0.79°C (30.6°F) May start to solidify at -0.1°C (31.8°F) based on data for: Water. Weighted average: -0.75°C (30.6°F) May start to solidify at -0.1°C (31.8°F) based on data for: Water. May start to solidify at -88.83°C (-127.9°F) based on data for: Isopropyl Alcohol. Weighted average: -89.9°C (-129.8°F)
<b>Critical Temperature</b>	Crystal Violet Safranin Stain Gram Iodine Solution Decolorizer	Not available. Not available. Not available. The lowest known value is 234.9°C (454.8°F) (Acetone).
<b>Specific Gravity</b>	Crystal Violet Safranin Stain Gram Iodine Solution Decolorizer	The only known value is 0.794 (Water = 1) (Ethanol). The only known value is 0.794 (Water = 1) (Ethanol). The only known value is 3.13 (Water = 1) (Potassium Iodide). Weighted average: 0.79 (Water = 1)
<b>Vapor Pressure</b>	Crystal Violet  Safranin Stain  Gram Iodine Solution Decolorizer	The highest known value is 5.9 kPa (44 mmHg) (@ 20°C) (Ethanol). The highest known value is 5.9 kPa (44 mmHg) (@ 20°C) (Ethanol). Not available. Not available.

<b>Vapor Density</b>	Crystal Violet	The highest known value is 1.59 (Air = 1) (Ethanol).
	Safranin Stain	The highest known value is 1.59 (Air = 1) (Ethanol).
	Gram Iodine Solution	Not available.
	Decolorizer	The highest known value is 2.07 (Air = 1) (Isopropyl Alcohol). Weighted average: 2.06 (Air = 1)
<b>Volatility</b>	Crystal Violet	99.9% (v/v). (Methanol.)
	Safranin Stain	99.9% (v/v). (Methanol.)
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
<b>Odor Threshold</b>	Crystal Violet	The lowest known value is 5 ppm (Ethanol)
	Safranin Stain	The lowest known value is 5 ppm (Ethanol)
	Gram Iodine Solution	Not available.
	Decolorizer	The lowest known value is 100 ppm (Acetone)
<b>Evaporation Rate</b>	Crystal Violet	The highest known value is 1.7 (Ethanol) Weighted average: 0.63 compared to (n-Butyl Acetate =1)
	Safranin Stain	The highest known value is 1.7 (Ethanol) Weighted average: 0.62 compared to (n-Butyl Acetate =1)
	Gram Iodine Solution	0.36 (Water) compared to (n-Butyl Acetate =1)
	Decolorizer	The highest known value is 6.06 (Acetone) Weighted average: 2.57 compared to (n-Butyl Acetate =1)
<b>VOC</b>	Crystal Violet	21 (%)
	Safranin Stain	20 (%)
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
<b>Viscosity</b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
<b>LogK<sub>ow</sub></b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
<b>Ionicity (in Water)</b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
<b>Solubility</b>	Crystal Violet	Soluble in water.
	Safranin Stain	Soluble in water.
	Gram Iodine Solution	Soluble in water.
	Decolorizer	Soluble in water.
<b>Physical Chemical Comments</b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.

**Section 10. Stability and Reactivity**

<b>Stability and Reactivity</b>	Crystal Violet	The product is stable.
	Safranin Stain	The product is stable.
	Gram Iodine Solution	The product is stable.
	Decolorizer	The product is stable.
<b>Conditions of Instability</b>	Crystal Violet	FLAMMABLE LIQUID AND VAPOR. (Ethanol)
	Safranin Stain	FLAMMABLE LIQUID AND VAPOR. (Ethanol)
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
<b>Incompatibility with Various Substances</b>	Crystal Violet	Highly reactive with oxidizing agents, metals. Slightly reactive to reactive with acids.
	Safranin Stain	Highly reactive with oxidizing agents, metals. Slightly reactive to reactive with acids.
	Gram Iodine Solution Decolorizer	Reactive with combustible materials, metals, alkalis. Reactive with oxidizing agents, acids.
<b>Rem/Incompatibility</b>	Avoid all possible sources of ignition (spark or flame). Avoid Heat Incompatible with acetic anhydride, metal hydrides, calcium oxychloride. (Ethanol)	
<b>Hazardous Decomposition Products</b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	These products are halogenated compounds.
	Decolorizer	Not available.
<b>Hazardous Polymerization</b>	Crystal Violet	Will not occur.
	Safranin Stain	Will not occur.
	Gram Iodine Solution	Will not occur.
	Decolorizer	Will not occur.

**Section 11. Toxicological Information**

<b>RTECS Number:</b>	Crystal Violet	BO9000000
	Ethanol	KQ6300000
	Phenol	SJ3325000
	Water	ZC0110000
	Methanol	PC1400000
	Safranin O	SG1623000
	PVP (Povidine) Iodine	TR1579600
	Potassium Iodide	TT2975000
	Isopropyl Alcohol	NT8050000
	Acetone	AL3150000
<b>Toxicity</b>	Crystal Violet	Acute oral toxicity (LD <sub>50</sub> ): 3450 mg/kg [Mouse]. (Ethanol). Acute toxicity of the vapor (LC <sub>50</sub> ): 20000 ppm 10 hour(s) [Rat]. (Ethanol).
	Safranin Stain	Acute oral toxicity (LD <sub>50</sub> ): 3450 mg/kg [Mouse]. (Ethanol). Acute toxicity of the vapor (LC <sub>50</sub> ): 20000 ppm 10 hour(s) [Rat]. (Ethanol).
	Gram Iodine Solution	Acute oral toxicity (LD <sub>50</sub> ): 5600 mg/kg [Rat]. (PVP (Povidine) Iodine).
	Decolorizer	Acute oral toxicity (LD <sub>50</sub> ): 3600 mg/kg [Mouse].

Continued on Next Page

(Isopropyl Alcohol).

Acute dermal toxicity (LD<sub>50</sub>): 12800 mg/kg [Rabbit].

(Isopropyl Alcohol).

**Chronic Effects on Humans**

**DEVELOPMENTAL TOXICITY:** Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED] [Ethanol].

Contains material which may cause damage to the following organs: blood, the reproductive system, mucous membranes, thyroid.

**Acute Effects on Humans**

Crystal Violet Hazardous in case of eye contact (corrosive, irritant).

May cause burns. Inflammation of the eye is characterized by redness, watering, and itching.

Hazardous in case of skin contact (permeator, irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Hazardous in case of inhalation (lung irritant). Hazardous in case of ingestion.

Safranin Stain

Hazardous in case of eye contact (irritant).

Inflammation of the eye is characterized by redness, watering, and itching. Hazardous in case of skin contact (permeator, irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Hazardous in case of inhalation (lung irritant). Extremely hazardous in case of ingestion. May be fatal if swallowed.

Gram Iodine Solution

Hazardous in case of eye contact (corrosive, irritant).

May cause burns. Inflammation of the eye is characterized by redness, watering, and itching. Hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Hazardous in case of inhalation (lung irritant). Hazardous in case of ingestion.

Decolorizer

Hazardous in case of eye contact (corrosive).

Causes eye burns. May be hazardous in case of skin contact (irritant). Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering. Non-permeator by skin. May be hazardous in case of inhalation. May be hazardous in case of ingestion.

**Special Remarks on Toxicity**

Crystal Violet Not available.

Safranin Stain Not available.

Gram Iodine Solution Not available.

Decolorizer Not available.

**Special Remarks on Chronic Effects on Humans**

Crystal Violet Not available.

Safranin Stain Not available.

Gram Iodine Solution Not available.

Decolorizer Not available.

**Special Remarks on Other Toxic Effects on Humans**

Crystal Violet	Not available.
Safranin Stain	Not available.
Gram Iodine Solution	MAY BE IRRITATING ON CONTACT WITH MUCOUS MEMBRANES.
Decolorizer	Not available.

**Synergetic Products (Toxicologically)**

Crystal Violet	Not available.
Safranin Stain	Not available.
Gram Iodine Solution	Not available.
Decolorizer	Not available.

**Irritancy**

Crystal Violet	<u>Draize Test</u> : Not available.
Safranin Stain	<u>Draize Test</u> : Not available.
Gram Iodine Solution	<u>Draize Test</u> : Not available.
Decolorizer	<u>Draize Test</u> : Not available.

**Sensitization**

Crystal Violet	Not available.
Safranin Stain	Not available.
Gram Iodine Solution	Not available.
Decolorizer	Not available.

**Carcinogenic Effects**

Crystal Violet	This material is not known to cause cancer in animals or humans.
Safranin Stain	This material is not known to cause cancer in animals or humans.
Gram Iodine Solution	This material is not known to cause cancer in animals or humans.
Decolorizer	This material is not known to cause cancer in animals or humans.

**Toxicity to Reproductive System**

Crystal Violet	Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED] [Ethanol].
Safranin Stain	Classified Reproductive system/toxin/female, Reproductive system/toxin/male [SUSPECTED] [Ethanol].
Gram Iodine Solution	Not available.
Decolorizer	Not available.

**Teratogenic Effects**

Crystal Violet	Not available.
Safranin Stain	Not available.
Gram Iodine Solution	Not available.
Decolorizer	Not available.

**Mutagenic Effects**

Crystal Violet	Not available.
Safranin Stain	Not available.
Gram Iodine Solution	Not available.
Decolorizer	Not available.

**Section 12. Ecological Information**

<b>Ecotoxicity</b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
<b>BOD5 and COD</b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
<b>Biodegradable/OECD</b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
<b>Mobility</b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.
	Crystal Violet	These products are carbon oxides (CO, CO2) and water.
	Safranin Stain	These products are carbon oxides (CO, CO2) and water.
	Gram Iodine Solution	These products are carbon oxides (CO, CO2) and water, nitrogen oxides (NO, NO2...), halogenated compounds. Some metallic oxides.
	Decolorizer	These products are carbon oxides (CO, CO2) and water.
<b>Toxicity of the Products of Biodegradation</b>	Crystal Violet	The products of degradation are as toxic as the product itself.
	Safranin Stain	The products of degradation are as toxic as the product itself.
	Gram Iodine Solution	The products of degradation are as toxic as the product itself.
	Decolorizer	The products of degradation are less toxic than the product itself.
<b>Special Remarks on the Products of Biodegradation</b>	Crystal Violet	Not available.
	Safranin Stain	Not available.
	Gram Iodine Solution	Not available.
	Decolorizer	Not available.

**Section 13. Disposal Considerations**

<b>EPA Waste Number</b>	Crystal Violet	D001 U188
	Safranin Stain	D001
	Gram Iodine Solution	D002
	Decolorizer	D001



<b>Treatment</b>	Crystal Violet	Incineration, fuels blending or recycle. Contact your local permitted waste disposal site (TSD) for permissible treatment sites.
	Safranin Stain	Incineration, fuels blending or recycle. Contact your local permitted waste disposal site (TSD) for permissible treatment sites. ALWAYS CONTACT PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.
	Gram Iodine Solution	Specified technology-Contact your local permitted waste disposal site (TSD) for permissible treatment sites. ALWAYS CONTACT PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.
	Decolorizer	Incineration, fuels blending or recycle. Contact your local permitted waste disposal site (TSD) for permissible treatment sites. ALWAYS CONTACT PERMITTED WASTE DISPOSER (TSD) TO ASSURE COMPLIANCE WITH ALL CURRENT LOCAL, STATE AND FEDERAL REGULATIONS.

### Section 14. Transport Information

<b>DOT Classification</b>	Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S. (ISOPROPANOL, ACETONE,ETHANOL) Hazard Class: 3 UN number: UN1993 Packing Group: II RQ: Not applicable.
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<b>TDG Classification</b>	Not available.
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<b>IMO/IMDG Classification</b>	Proper Shipping Name: FLAMMABLE LIQUIDS, N.O.S. (ISOPROPANOL, ACETONE, ETHANOL) Hazard Class: 3 UN number: 1993 Packing Group: II RQ: Not applicable.
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<b>ICAO/IATA Classification</b>	Not available.
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### Section 15. Regulatory Information

<b>U.S. Federal Regulations</b>	Crystal Violet	TSCA 8(b) inventory: Crystal Violet TSCA 8(d) H and S data reporting: Phenol: 1987
	Safranin Stain	TSCA 8(b) inventory: Safranin O; SDA-3A; Water
	Gram Iodine Solution	TSCA 8(b) inventory: PVP (Povidine) Iodine; Water; Potassium Iodide
	Decolorizer	TSCA 4(a) final test rules: Isopropyl Alcohol; Acetone TSCA 8(b) inventory: Isopropyl Alcohol; Acetone TSCA 8(d) H and S data reporting: Isopropyl Alcohol: 1986 TSCA 12(b) one time export: Isopropyl Alcohol; Acetone

Crystal Violet	SARA 302/304/311/312 extremely hazardous substances: Phenol SARA 302/304 emergency planning and notification: Crystal Violet SARA 302/304/311/312 hazardous chemicals: Crystal Violet SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Crystal Violet: Fire Hazard
Safranin Stain	SARA 302/304/311/312 extremely hazardous substances: No products were found. SARA 302/304 emergency planning and notification: No products were found. SARA 302/304/311/312 hazardous chemicals: SDA-3A SARA 311/312 MSDS distribution - chemical inventory - hazard identification: SDA-3A: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard
Gram Iodine Solution	SARA 302/304/311/312 extremely hazardous substances: No products were found. SARA 302/304 emergency planning and notification: No products were found. SARA 302/304/311/312 hazardous chemicals: Potassium Iodide SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Potassium Iodide: Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard
Decolorizer	SARA 302/304/311/312 extremely hazardous substances: No products were found. SARA 302/304 emergency planning and notification: No products were found. SARA 302/304/311/312 hazardous chemicals: Isopropyl Alcohol; Acetone SARA 311/312 MSDS distribution - chemical inventory - hazard identification: Isopropyl Alcohol: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard; Acetone: Fire Hazard, Immediate (Acute) Health Hazard, Delayed (Chronic) Health Hazard
Crystal Violet	SARA 313 toxic chemical notification and release reporting: Crystal Violet
Safranin Stain	
Gram Iodine Solution	SARA 313 toxic chemical notification and release reporting: No products were found.
Decolorizer	SARA 313 toxic chemical notification and release reporting: Isopropyl Alcohol 80%

Crystal Violet	Clean Water Act (CWA) 307: Phenol
Safranin Stain	Clean Water Act (CWA) 307: No products were found.
Gram Iodine Solution	Clean Water Act (CWA) 307: No products were found.
Decolorizer	Clean Water Act (CWA) 307: No products were found.
Crystal Violet	Clean Water Act (CWA) 311: Phenol
Safranin Stain	Clean Water Act (CWA) 311: No products were found.
Gram Iodine Solution	Clean Water Act (CWA) 311: No products were found.
Decolorizer	Clean Water Act (CWA) 311: No products were found.
Crystal Violet	Clean air act (CAA) 112 accidental release prevention: No products were found.
Safranin Stain	Clean air act (CAA) 112 accidental release prevention: No products were found.
Gram Iodine Solution	Clean air act (CAA) 112 accidental release prevention: No products were found.
Decolorizer	Clean air act (CAA) 112 accidental release prevention: No products were found.
Crystal Violet	Clean air act (CAA) 112 regulated flammable substances: No products were found.
Safranin Stain	Clean air act (CAA) 112 regulated flammable substances: No products were found.
Gram Iodine Solution	Clean air act (CAA) 112 regulated flammable substances: No products were found.
Decolorizer	Clean air act (CAA) 112 regulated flammable substances: No products were found.
Crystal Violet	Clean air act (CAA) 112 regulated toxic substances: No products were found.
Safranin Stain	Clean air act (CAA) 112 regulated toxic substances: No products were found.
Gram Iodine Solution	Clean air act (CAA) 112 regulated toxic substances: No products were found.
Decolorizer	Clean air act (CAA) 112 regulated toxic substances: No products were found.

**WHMIS (Canada)**

Crystal Violet	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).
Safranin Stain	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). Class D-2A: Material causing other toxic effects (VERY TOXIC). Class D-2B: Material causing other toxic effects (TOXIC).
Gram Iodine Solution	CLASS E: Corrosive liquid.
Decolorizer	CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). Class D-2B: Material causing other toxic effects

(TOXIC).

Crystal Violet	CEPA DSL: Crystal Violet; Ethanol; Phenol; Water; Methanol
Safranin Stain	CEPA DSL: Safranin O; Ethanol; Methanol; Water
Gram Iodine Solution	CEPA DSL: PVP (Povidine) Iodine; Water; Potassium Iodide
Decolorizer	CEPA DSL: Isopropyl Alcohol; Acetone

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

**International Regulations****EINECS**

Crystal Violet	Crystal Violet	208-953-6
	Ethanol	200-578-6
	Phenol	203-632-7
	Water	231-791-2
	Methanol	200-659-6
Safranin Stain	Safranin O	207-518-8
	Ethanol	200-578-6
	Methanol	200-659-6
	Water	231-791-2
Gram Iodine Solution	PVP (Povidine) Iodine	Not available.
	Water	231-791-2
	Potassium Iodide	231-659-4
Decolorizer	Isopropyl Alcohol	200-661-7
	Acetone	200-662-2

**DSCL (EEC)**

Crystal Violet	R36/38- Irritating to eyes and skin.
Safranin Stain	R10- Flammable.
Gram Iodine Solution	This product is not classified according to the EU regulations.
Decolorizer	R11- Highly flammable.
	R38- Irritating to skin.
	R41- Risk of serious damage to eyes.

**International Lists**

Crystal Violet	Australia (NICNAS): Crystal Violet; Ethanol; Phenol; Water; Methanol	
	China: Crystal Violet	
	Germany water class: Ethanol	
	Japan (MITI): Crystal Violet; Ethanol; Phenol; Water; Methanol	
	Korea (TCCL): Crystal Violet; Ethanol; Phenol; Water; Methanol	
	Philippines (RA6969): Crystal Violet; Ethanol; Phenol; Water; Methanol	
	Safranin Stain	Australia (NICNAS): Safranin O; Ethanol; Methanol; Water
		Germany water class: Ethanol
		Japan (MITI): Safranin O; Ethanol; Methanol; Water
		Korea (TCCL): Safranin O; Ethanol; Methanol; Water
Gram Iodine Solution	Philippines (RA6969): Safranin O; Ethanol; Methanol; Water	
	Australia (NICNAS): PVP (Povidine) Iodine; Water;	

Decolorizer	Potassium Iodide
	Japan (MITI): PVP (Povidine) Iodine; Water;
	Potassium Iodide
	Korea (TCCL): PVP (Povidine) Iodine; Water;
	Potassium Iodide
	Philippines (RA6969): PVP (Povidine) Iodine; Water;
	Potassium Iodide
Australia (NICNAS): Isopropyl Alcohol; Acetone	
Japan (MITI): Isopropyl Alcohol; Acetone	
Japan (MOL): Isopropyl Alcohol	
Korea (TCCL): Isopropyl Alcohol; Acetone	
Philippines (RA6969): Isopropyl Alcohol; Acetone	

Crystal Violet	China: Crystal Violet
Safranin Stain	China: No products were found.
Gram Iodine Solution	China: No products were found.
Decolorizer	China: No products were found.

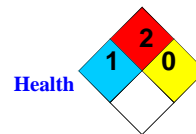
**State Regulations**

Crystal Violet	Pennsylvania RTK: Ethanol: (generic environmental hazard); Phenol: (environmental hazard, generic environmental hazard); Methanol: (environmental hazard, generic environmental hazard) Massachusetts RTK: Ethanol; Phenol; Methanol New Jersey: Crystal Violet
Safranin Stain	Pennsylvania RTK: Ethanol: (generic environmental hazard); Methanol: (environmental hazard, generic environmental hazard) Massachusetts RTK: Ethanol; Methanol New Jersey: Safranin Stain
Gram Iodine Solution	New Jersey: Gram Iodine Solution
Decolorizer	Pennsylvania RTK: Isopropyl Alcohol: (environmental hazard, generic environmental hazard); Acetone: (environmental hazard, generic environmental hazard) Massachusetts RTK: Isopropyl Alcohol; Acetone New Jersey: Decolorizer

Crystal Violet	California prop. 65: No products were found.
Safranin Stain	California prop. 65: No products were found.
Gram Iodine Solution	California prop. 65: No products were found.
Decolorizer	California prop. 65: No products were found.

### Section 16. Other Information

National Fire  
Protection  
Association  
(U.S.A.)



Fire Hazard

Reactivity

Specific Hazard

#### Other Special Considerations

Crystal Violet	Not available.
Safranin Stain	Not available.
Gram Iodine Solution	Not available.
Decolorizer	Not available.

#### Changed Since Last Revision

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#### Notice to Reader

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