

IRON STAIN KIT MSDS

Catalog # 883, kit components:

2% Potassium Ferrocyanide

4% Hydrochloric Acid

Brazilliant!

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: 2% POTASSIUM FERROCYANIDE
--

Catalog number: 883A**General use:** Stock solution used to prepare iron-staining reagent.**Product description:** Aqueous solution of potassium ferrocyanide.**Manufacturer**Anatech Ltd.
1020 Harts Lake Road
Battle Creek, MI 49037
USA**Emergency contact information**

Health:	Anatech Ltd.	800-262-8324	8 am - 5 pm ET, M-F
Transportation:	CHEMTREC	800-424-9300	24 hours

2. INGREDIENT INFORMATION**Component**

Potassium ferrocyanide

CAS #

14459-95-1

Exposure limits

Not established for the solution.

3. HAZARDS IDENTIFICATION

Emergency overview

Pale yellow colored liquid.

Eye and skin irritant. Ingestion may cause adverse effects on gastrointestinal tract. Not likely to pose an inhalation threat under normal conditions of use.

Potential health effects (Human health effects only.)**Primary route(s) of exposure:** Eyes and skin.**Inhalation:** None expected under anticipated conditions of use.**Eye:** May cause redness and irritation.**Skin:** May cause irritation.**Ingestion:** Effects anticipated to be minor.**Chronic effects:** None expected under anticipated conditions of use.**Signs and symptoms:** Eyes may water. May cause gastrointestinal discomfort and nausea.

4. FIRST AID MEASURES

Inhalation: If inhaled, move the exposed person to fresh air at once. Other measures are usually unnecessary. Get medical attention if difficulty in breathing develops.

Eye: In case of contact, promptly wash the eyes with large amounts of water for 20 minutes, occasionally lifting the lower and upper lids. Get medical attention if any discomfort continues.

Skin: In case of contact, flush the contaminated skin with water. If this chemical penetrates the clothing, immediately remove the clothing and flush the skin with water. With prolonged, repeated or extensive exposure, rinse affected area or entire body for at least 15 minutes. Get medical attention if skin irritation develops.

Ingestion: If swallowed, call a poison control center immediately.

5. FIRE FIGHTING MEASURES

Flammable properties

Flash point: Not applicable.

Flammable limit: Not applicable.

Autoignition temperature: Not applicable.

Flammability classification: Not applicable.

Flame propagation: None.

Hazardous products of combustion: May emit highly toxic vapors of cyanides when heated to decomposition.

Extinguishing media: ABC rated portable fire extinguishers should be used. Professional fire fighters may use water spray, dry chemical or carbon dioxide.

Fire fighting instructions: Self-contained breathing apparatuses are necessary for fighting fires involving substantial volumes of this product.

6. ACCIDENTAL RELEASE MEASURES

Wear protective gloves, impermeable aprons and splash-proof goggles. Use a disposable absorbent to remove spilled liquid. Discard absorbents and other contaminated solids in a suitable trash receptacle. Liquid waste may be discarded down the drain with approval by wastewater authorities, or may be removed by a licensed waste hauler.

Comply with all applicable governmental regulations on spill reporting and on the handling and disposal of hazardous waste.

7. HANDLING AND STORAGE

Handling: Wear a plastic or rubber apron, protective gloves and splash-proof goggles. Avoid contact with skin and eyes. Do not continue to wear contaminated clothing after a spill.

Storage: Store at room temperature.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering controls: Good general room ventilation is essential.

Personal protective equipment

Respiratory protection: None needed.

Skin protection: Use nitrile gloves. Do not use latex surgical gloves for protection. An eyewash station and safety shower must be nearby, preferably in the same room, no more than 10 seconds away.

Eye protection: Use splash-proof goggles. Do not use safety glasses. An eyewash station and safety shower must be nearby, preferably in the same room, no more than 10 seconds away.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Pale yellow colored liquid.

Odor: None.

Physical state: Liquid.

pH: 7.70.

Vapor pressure: Not determined.

Vapor density: Not determined.

Boiling point: Not determined.

Freezing point: Not determined.

Solubility in water: Complete.

Specific gravity: 1.011

10. STABILITY AND REACTIVITY

Chemical stability: Stable.

Conditions to avoid: None.

Incompatibility with other materials: Due to the dilute nature of the potassium ferrocyanide, this product is only slightly reactive with oxidizing reagents and strong acids.

Hazardous decomposition products: Hydrogen cyanide, nitrogen oxides and carbon oxides.

Hazardous polymerization: None.

11. TOXICOLOGICAL INFORMATION

Acute effects: No toxicological data is known for 2% Potassium ferrocyanide.

Chronic effects/carcinogenicity: No evidence of carcinogenicity.

12. ECOLOGICAL INFORMATION

No environmental information is known for 2% Potassium ferrocyanide.

13. DISPOSAL CONSIDERATIONS

Proper waste disposal is the generator's responsibility. The local wastewater treatment authorities may permit drain disposal. Follow federal, state (provincial) and local regulations.

14. TRANSPORTATION INFORMATION

DOT (ground and air) and IATA: Not regulated.

15. REGULATORY INFORMATION

OSHA (USA): Under the Hazard Communication Standard and the Laboratory Standard 2% Potassium ferrocyanide is a hazardous material; it is an irritant.

FDA (USA): 2% Potassium ferrocyanide is for in vitro diagnostic use as a general-purpose reagent in histology.

EPA (USA): 2% Potassium ferrocyanide is a reportable substance under SARA Title III.

16. OTHER INFORMATION

Label warnings: Avoid contact with skin and eyes to prevent irritation.

NFPA (National Fire Protection Association) Rating:

General note: These ratings provide information of the hazards and severity of materials to emergency personnel. It is not descriptive of hazards under normal conditions of occupational use, and is even less applicable to anticipated laboratory-scale use.

Health 1: Materials that, under emergency conditions, can cause significant irritation.

Flammability 0: Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

Instability 0: Materials that are normally stable even under fire conditions.

This Material Safety Data Sheet has been prepared in accordance with the requirements of the OSHA Hazard Communication Standard. It conforms to the provisions of the American National Standards Institute (ANSI) Standard Z400.1 (Standard for the Preparation of Material Safety Data Sheets). Information contained herein was obtained from sources that Anatech Ltd. believes are reliable. It is the user's responsibility to determine suitability of the product for his/her own use, and to assure proper use and disposal of it to protect the safety and health of employees and the protection of the environment.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: 4% HYDROCHLORIC ACID

Catalog number: 883B

General use: Stock solution used to prepare iron-staining reagent.

Product description: Aqueous solution of hydrochloric acid.

Manufacturer

Anatech Ltd.
1020 Harts Lake Road
Battle Creek, MI 49037
USA

Emergency contact information

Health:	Anatech Ltd.	800-262-8324	8 am - 5 pm ET, M-F
Transportation:	CHEMTREC	800-424-9300	24 hours

2. INGREDIENT INFORMATION

<u>Component</u>	<u>CAS #</u>	<u>Exposure limits</u>
Hydrochloric acid	7647-01-0	5 ppm (OSHA, NIOSH Ceiling)

3. HAZARDS IDENTIFICATION

Emergency overview

Colorless liquid.
Causes severe skin burns and eye damage.

Potential health effects (Human health effects only.)

Primary route(s) of exposure: Eyes and skin.

Inhalation: None expected under anticipated conditions of use.

Eye: May cause severe eye irritation and permanent eye damage.

Skin: Can cause skin burns or irritation depending upon severity of the exposure.

Ingestion: Can cause damage to mouth, throat and esophagus.

Chronic effects: None expected under anticipated conditions of use.

Signs and symptoms: Eyes will water and become red. Effects on the gastrointestinal tract may include discomfort and nausea. Skin will become red and sensitive.

4. FIRST AID MEASURES

Inhalation: If inhaled, move the exposed person to fresh air at once. Other measures are usually unnecessary. Get medical attention if difficulty in breathing develops.

Eye: In case of contact, promptly wash the eyes with large amounts of water for 20 minutes, occasionally lifting the lower and upper lids. Get medical attention if any discomfort continues.

Skin: In case of contact, flush the contaminated skin with water. If this chemical penetrates the clothing, immediately remove the clothing and flush the skin with water. With prolonged, repeated or extensive exposure, rinse affected area or entire body for at least 15 minutes. Get medical attention if skin irritation develops.

Ingestion: If swallowed, call a poison control center immediately.

5. FIRE FIGHTING MEASURES

Flammable properties

Flash point: Not determined.

Flammable limit: Not applicable.

Autoignition temperature: Not applicable.

Flammability classification: Not applicable.

Flame propagation: None.

Hazardous products of combustion: Chlorine.

Extinguishing media: ABC rated portable fire extinguishers should be used. Professional fire fighters may use water spray, dry chemical or carbon dioxide.

Fire fighting instructions: Self-contained breathing apparatuses are necessary for fighting fires involving substantial volumes of this product.

6. ACCIDENTAL RELEASE MEASURES

Wear protective gloves, impermeable aprons and splash-proof goggles. Use absorbents to neutralize acids and to remove spilled liquids. Discard absorbents and other contaminated solids in a suitable trash receptacle. Liquid waste may be discarded down the drain with approval by wastewater authorities, or may be removed by a licensed waste hauler.

Comply with all applicable governmental regulations on spill reporting and on the handling and disposal of hazardous waste.

7. HANDLING AND STORAGE

Handling: Wear a plastic or rubber apron, protective gloves and splash-proof goggles. Avoid contact with skin and eyes. Do not continue to wear contaminated clothing after a spill.

Storage: Store at room temperature.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering controls: Good general room ventilation is essential.

Personal protective equipment

Respiratory protection: None needed.

Skin protection: Use nitrile gloves. Do not use latex surgical gloves for protection against any hazardous liquid. An eyewash station and safety shower must be nearby, preferably in the same room, no more than 10 seconds away.

Eye protection: Use splash-proof goggles. Do not use safety glasses. An eyewash station and safety shower must be nearby, preferably in the same room, no more than 10 seconds away.

9. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Appearance: Colorless liquid.

Odor: Acrid.

Physical state: Liquid.

pH: 0.40.

Vapor pressure: Not determined.

Vapor density: Not determined.

Boiling point: Not determined.

Freezing point: Not determined.

Solubility in water: Complete.

Specific gravity: 1.0075

10. STABILITY AND REACTIVITY

Chemical stability: Stable.

Conditions to avoid: Heating this solution will give off irritating vapors.

Incompatibility with other materials: This dilute hydrochloric acid solution is only slightly reactive with oxidizing reagents, alkaline materials, organic and inorganic chemicals.

Hazardous decomposition products: Hydrochloric acid fumes, chlorine.

Hazardous polymerization: None.

11. TOXICOLOGICAL INFORMATION

Acute effects: No toxicological data is known.

Chronic effects/carcinogenicity: No evidence of carcinogenicity.

12. ECOLOGICAL INFORMATION

No environmental information is known.

13. DISPOSAL CONSIDERATIONS

Proper waste disposal is the generator's responsibility. Drain disposal may be permitted by your local wastewater treatment authorities. Be sure to follow federal, state (provincial) and local regulations.

14. TRANSPORTATION INFORMATION

Packaging for hazardous shipments must meet the specifications as required by the current editions of International Air Transportation Association (IATA) Dangerous Goods Regulations and the United States Department of Transportation 49 CFR.

DOT (ground and air) and IATA: **Proper Shipping Name:** Hydrochloric acid solution

UN #: 1789

Hazard Class: 8

Packing Group: III

15. REGULATORY INFORMATION

OSHA (USA): Under the Hazard Communication Standard and the Laboratory Standard, 4% Hydrochloric acid is a hazardous material: it is an irritant and corrosive.

FDA (USA): 4% Hydrochloric acid is for in vitro diagnostic use as a general-purpose reagent in histology.

EPA (USA): 4% Hydrochloric acid is a reportable substance under SARA Title III.

16. OTHER INFORMATION

Label warnings: Corrosive; may cause burns to skin and eyes. Avoid contact with skin and eyes to prevent irritation. Use with adequate ventilation.

NFPA (National Fire Protection Association) Rating:

General note: These ratings provide information of the hazards and severity of materials to emergency personnel. It is not descriptive of hazards under normal conditions of occupational use, and is even less applicable to anticipated laboratory-scale use.

Health 1: Materials that, under emergency conditions, can cause significant irritation.

Flammability 0: Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.

Instability 0: Materials that are normally stable even under fire condition

This Material Safety Data Sheet has been prepared in accordance with the requirements of the OSHA Hazard Communication Standard. It conforms to the provisions of the American National Standards Institute (ANSI) Standard Z400.1 (Standard for the Preparation of Material Safety Data Sheets). Information contained herein was obtained from sources that Anatech Ltd. believes are reliable. It is the user's responsibility to determine suitability of the product for his/her own use, and to assure proper use and disposal of it to protect the safety and health of employees and the protection of the environment.

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product name: **BRAZILLIANT!**

Catalog number: 861, 880C, 883C

General use: Nuclear stain for histology and cytology.

Product description: Aqueous solution of Brazilin.

Manufacturer

Anatech Ltd.
1020 Harts Lake Road
Battle Creek, MI 49037
USA

Emergency contact information

Health:	Anatech Ltd.	800-262-8324	8 am - 5 pm ET, M-F
Transportation:	CHEMTREC	800-424-9300	24 hours

2. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS #</u>	<u>Exposure limits</u>
Acetic acid (1.5% v/v)	64-19-7	10 ppm (OSHA, NIOSH, ACGIH 8 hour TWA) 15 ppm (NIOSH, ACGIH 15 minute STEL)
Aluminum ammonium sulfate (9.5%w/v)	17734-24-9	Not established for solutions.
Ethanol (4% v/v)	64-17-5	1000 ppm (OSHA, ACGIH 8 hr TWA)
Brazilin (1% w/v)	474-07-7	Not established.
Sodium iodate (0.02% w/v)	7681-55-2	Not established.

3. HAZARDS IDENTIFICATION

Emergency overview

Red liquid.

Irritant to eyes. Not likely to pose a hazard under normal conditions of use.

Potential health effects

(Human health effects only; animal effects in Section 11: Toxicological Information.)

Primary route(s) of exposure: Eyes and skin.

Inhalation: Inhalation of vapors during normal conditions of use are not likely to present a health hazard.

3. HAZARDS IDENTIFICATION (continued)

Eye: Contact of liquid with eyes may cause irritation.

Skin: Brief contact with skin is nonirritating.

Ingestion: Ingestion is likely to produce adverse effects on the gastrointestinal system.

Chronic effects: None expected under anticipated conditions of use.

Signs and symptoms: Affected skin will be stained red. Eyes may water. Effects on the gastrointestinal tract may include discomfort and nausea.

4. FIRST AID MEASURES

Inhalation: Remove victim to fresh air if coughing or difficulty in breathing is experienced. Consult a physician if symptoms persist or worsen. Administer oxygen or artificial respiration as needed.

Eye: Flush eyes for at least 15 minutes in an eyewash station. If symptoms persist after washing, consult a physician.

Skin: Remove contaminated clothing, including footwear; wash before reuse or discard. For minor exposure, wash affected area with water and mild soap, rinsing thoroughly; apply a good quality skin lotion. In cases of prolonged, repeated or extensive exposure, rinse affected area or entire body for at least 15 minutes. For severe conditions, consult a physician.

Ingestion: Call a poison control center immediately. If victim is conscious, have him/her drink several glasses of water to dilute the solution. Induce vomiting only upon the advice of a physician or poison control authority.

5. FIRE FIGHTING MEASURES

Flammable properties

Flash point: > 145°F (> 62.8°C) closed cup.

Flammable limit: Not determined.

Autoignition temperature: Not determined.

Flammability classification: Class IIIA Combustible liquid (OSHA).

Flame propagation: None.

Hazardous products of combustion: Carbon monoxide and carbon dioxide.

Extinguishing media: ABC rated portable fire extinguishers should be used. Professional fire fighters may use water spray, dry chemical or carbon dioxide.

Fire fighting instructions: Sealed chemical suits and self contained breathing apparatus are necessary for fighting fires involving substantial volumes of this product.

6. ACCIDENTAL RELEASE MEASURES

Wear protective gloves, impermeable aprons and splash-proof goggles. Use a damp sponge or mop to remove spilled liquid. Wash contaminated area with water and decolorize with household bleach. Discard absorbents and other contaminated solids in a trash receptacle. Liquid waste may be discarded down the drain with approval by wastewater authorities, or may be removed by a licensed waste hauler.

Comply with all applicable governmental regulations on spill reporting and on the handling and disposal of hazardous waste.

7. HANDLING AND STORAGE

Handling: Wear a plastic or rubber apron, protective gloves and splash-proof goggles. Avoid contact with skin and eyes. Do not continue to wear contaminated clothing after a spill.

Storage: Store at room temperature.

8. EXPOSURE CONTROLS AND PERSONAL PROTECTION

Engineering controls: Good general room ventilation is essential.

Personal protective equipment

Respiratory protection: None needed.

Skin protection: Anatech Ltd. recommends nitrile gloves. Do not use latex surgical gloves for protection against any hazardous liquid. An eyewash station and safety shower must be nearby, preferably in the same room, no more than 10 seconds away.

Eye protection: Use splash-proof goggles. Do not use safety glasses. An eyewash station and safety shower must be nearby, preferably in the same room, no more than 10 seconds away.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Red liquid.

Odor: Mild acetic acid odor.

Physical state: Liquid.

pH: 2.4 - 2.7.

Vapor pressure: Not determined.

Vapor density: Not determined.

Boiling point: Not determined.

Freezing point: Not determined.

Solubility in water: Complete.

Specific gravity: Not determined.

10. STABILITY AND REACTIVITY

Chemical stability: Stable.

Conditions to avoid: None.

Incompatibility with other materials: Strong oxidants, acids and bases.

Hazardous decomposition products: None.

Hazardous polymerization: None.

11. TOXICOLOGICAL INFORMATION

The following data are from studies using 100% ethanol.

Acute eye effects: 500 mg administered into rabbit eyes for 24 hours produced moderate irritation.

Acute skin effects: Draize test on rabbit skin of 20 mg for 24 hours produced moderate irritation.

Acute oral effects: OSHA considers chemicals to be toxic if their LD₅₀ is at or below 500 mg/kg. LD₅₀ is the dose killing 50% of the test animals in a given time (usually 4 hours). LD₅₀ was 7,060 mg/kg in rats, 3,450 mg/kg in mice and 6,300 mg/kg in rabbits.

Acute inhalation effects: OSHA considers chemicals to be toxic if their LC₅₀ is at or below 20 mg/kg. LC₅₀ is the airborne concentration killing 50% of the test animals. LC₅₀ was 20,000 ppm/10 hours in rats. In man, ethanol produces severe toxic effects at 8,000 ppm and symptoms of illness at 2,000 ppm.

Chronic effects/carcinogenicity: Chronic ethanol ingestion is associated with liver cancer.

Teratology: None known.

Reproductive effects: Ethanol has been linked to birth defects in humans.

Mutagenicity: None known.

12. ECOLOGICAL INFORMATION

Ecotoxicity: The following data are from studies using 100% ethanol.

Toxicity threshold (cell multiplication inhibition test):

Bacteria

Pseudomonas putida: 6,500 mg/l

Algae

Microcystis aeruginosa: 1,450 mg/l

Scenedesmus quadricauda: 5,000 mg/l

Protozoa

Entosiphon sulcatum: 65 mg/l

Uronema parduczi: 6,120 mg/l

12. ECOLOGICAL INFORMATION (continued)

Fish

Fingerling trout: 24 hr LC₅₀: 11,200 mg/l, flow through system

Cheek chub: LD₀: 24 hr in Detroit river water: 7,000 mg/l

LD₁₀₀: 24 hr in Detroit river water: 9,000 mg/l

LC₅₀ > 7,000 mg/l

Guppy: 7 day LC₅₀ = 11,050 mg/l

Fathead minnow: static bioassay in Lake Superior water at 18°C - 22°C (1, 24, 48, 72, 96 hours) >18,000, 18,000, 13,480, 13,480, 13,480 mg/l respectively.

Biological Oxygen Demand (BOD), 5 day: = 37-74% ThOD

Chemical Oxygen Demand (COD) = 90-97% ThOD

Environmental fate: Ethanol is readily biodegradable.

13. DISPOSAL CONSIDERATIONS

Brazilliant! is not hazardous under EPA regulations. Drain disposal is recommended with the permission of local wastewater treatment authorities.

Canadian disposal regulations generally parallel those in the United States.

Follow federal, state (provincial) and local regulations. Proper waste disposal is the generator's responsibility.

14. TRANSPORTATION INFORMATION

DOT (ground and air) and IATA: Not regulated.

15. REGULATORY INFORMATION

OSHA (USA): Under the Hazard Communication Standard and the Laboratory Standard, this product is a hazardous material: it is an irritant.

The OSHA Standards cited above mandate that exposed workers receive proper training in the properties of this product, work practices involved with its handling and disposal, and interpretation of its MSDS.

FDA (USA): *Brazilliant!* is for in vitro diagnostic use as a stain in histology.

EPA (USA): *Brazilliant!* is a reportable substance under SARA Title III.

16. OTHER INFORMATION

Label warnings: Avoid contact with skin and eyes. use with adequate ventilation.

NFPA (National Fire Protection Association) Rating:

General note: This rating is applicable only to safeguard the lives of individuals who may be concerned with fires occurring in an industrial plant or storage location. The ratings provide information to emergency personnel on whether to evacuate the area or how to perform control procedures. It is not descriptive of hazards under normal conditions of occupational use, and is even less applicable to anticipated laboratory-scale use.

Health 0: Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials.

Flammability 1: Materials that must be preheated before ignition can occur.

Instability 0: Materials that are normally stable even under fire conditions.