



## Safety Data Sheet - Cover Page

The products listed below meet the criteria for classification as hazardous in accordance with The Globally Harmonized System of Classification and Labelling of Chemicals (GHS). Please refer to the indicated Safety Data Sheet (SDS) for information concerning hazards and appropriate protective measures. SDS for products not classified as hazardous are available on request. Visit [www.cellsignal.com](http://www.cellsignal.com) for additional technical information and support.

<b>Kit No.</b>	<b>Product name</b>
9860	Senescence beta-Galactosidase Staining Kit

<b>Kit Component No.</b>	<b>Product name</b>
11674	10X Fixative Solution
11675	10X Staining Solution
11676	100X Solution A
11677	100X Solution B



# Cell Signaling

TECHNOLOGY®

**SAFETY DATA SHEET (SDS):** According to the OSHA Hazard Communication Standard 29 CFR 1910.1200

**Issuing Date:** 2014-04-22

**Revision Date:** 2014-11-03

**Version:** 1

## SECTION 1. Identification

### Product identifier

**Product number** 11674  
**Product name** 10X Fixative Solution

### Recommended use of the chemical and restrictions on use

**Identified uses** This product is intended for research purposes only.  
**Uses advised against** This product is not intended for use in diagnostic procedures or therapeutics.  
This product is not intended for use in humans or animals.

### Manufacturer, importer, supplier

**Manufacturer address** Cell Signaling Technology, Inc.  
3 Trask Lane  
Danvers, MA 01923  
United States  
TEL: +1 978 867 2300  
FAX: +1 978 867 2400  
**Website** www.cellsignal.com  
**Email address** support@cellsignal.com  
**Company phone number** 978-867-2300  
**Emergency telephone number** In case of emergency call CHEMTREC 1-800-424-9300

## SECTION 2. Hazard(s) identification

### Classification

This substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<b>Acute oral toxicity</b>	Category 4
<b>Acute inhalation toxicity</b>	Category 3
<b>Skin corrosion/irritation</b>	Category 2
<b>Serious eye damage/eye irritation</b>	Category 1
<b>Respiratory sensitization</b>	Category 1
<b>Skin sensitization</b>	Category 1
<b>Carcinogenicity</b>	Category 1A
<b>Specific target organ toxicity - single exposure (STOT SE)</b>	Category 2

### GHS Label elements, including precautionary statements



**Signal Word**

Danger

**Hazard statement(s)**

Harmful if swallowed  
 Toxic if inhaled  
 Causes skin irritation  
 Causes serious eye damage  
 May cause allergy or asthma symptoms or breathing difficulties if inhaled  
 May cause an allergic skin reaction  
 May cause cancer  
 May cause damage to organs

**Precautionary Statement(s)**

Do not handle until all safety precautions have been read and understood  
 Use personal protective equipment as required  
 Wash face, hands and any exposed skin thoroughly after handling  
 Contaminated work clothing should not be allowed out of the workplace  
 Do not breathe dust/fume/gas/mist/vapors/spray  
 IF exposed or concerned: Get medical advice/attention  
 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell  
 Rinse mouth  
 IF ON SKIN: Wash with plenty of soap and water  
 Take off contaminated clothing and wash before reuse  
 If skin irritation or rash occurs: Get medical advice/attention  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 Immediately call a POISON CENTER or doctor/physician  
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing  
 Call a POISON CENTER or doctor/physician  
 Store locked up  
 Store in a well-ventilated place. Keep container tightly closed

**Supplementary Hazard Information**

**Hazards not otherwise classified (HNOC)** None

### SECTION 3. Composition/information on ingredients

Chemical Name	CAS No	Weight %
glutaraldehyde	111-30-8	1-5
methanol	67-56-1	5-10
formaldehyde (stabilised)	50-00-0	10-30

### SECTION 4. First-aid measures

<b>Eye contact</b>	Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.
<b>Skin contact</b>	Wash skin with soap and water.
<b>Inhalation</b>	Move to fresh air.
<b>Ingestion</b>	Rinse mouth.

**Most important symptoms and effects, both acute and delayed**

Low-dose acute exposure can result in headache, rhinitis, and dyspnea; higher doses may cause severe mucous membrane irritation, burning, and lacrimation, and lower respiratory effects such as bronchitis, pulmonary edema, or pneumonia. Sensitive individuals may experience asthma and dermatitis, even at very low doses. Ocular exposure to formaldehyde vapors produces irritation and lacrimation. Depending on the concentration, formaldehyde solutions may cause transient discomfort and irritation or more severe effects, including corneal opacification and loss of vision. Formaldehyde is absorbed through intact skin and may cause irritation or allergic dermatitis. Ingestion may cause corrosive injury to the gastrointestinal mucosa, with nausea, vomiting, pain, bleeding, and perforation. Systemic effects include metabolic acidosis, CNS depression and coma, respiratory distress, and renal failure.

#### **Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

#### **Advice for emergency responders**

<b>General advice</b>	For further assistance, contact your local Poison Control Center.
<b>Protection of first-aiders</b>	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

### **SECTION 5. Fire-fighting measures**

#### **Extinguishing media**

<b>Suitable Extinguishing Media</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Unsuitable Extinguishing Media</b>	CAUTION: Use of water spray when fighting fire may be inefficient.

#### **Specific hazards arising from the chemical**

No information available.

#### **Explosion Data**

<b>Sensitivity to Mechanical Impact</b>	None.
<b>Sensitivity to Static Discharge</b>	None.

#### **Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

### **SECTION 6. Accidental release measures**

#### **Personal precautions, protective equipment and emergency procedures**

<b>For non-emergency personnel</b>	Ensure adequate ventilation.
<b>Other information</b>	No information available.

#### **Environmental precautions**

See Section 12 for additional information.

#### **Methods and material for containment and cleaning up**

<b>Methods for containment</b>	Prevent further leakage or spillage if safe to do so.
<b>Methods for cleaning up</b>	Pick up and transfer to properly labeled containers.

### **SECTION 7. Handling and storage**

#### **Precautions for safe handling**

Handle in accordance with good industrial hygiene and safety practice.

**Conditions for safe storage, including any incompatibilities**

<b>Technical measures/Storage conditions</b>	Keep containers tightly closed in a dry, cool and well-ventilated place.
<b>Packaging material</b>	No information available.
<b>Incompatible products</b>	Strong oxidizing agents, strong acids, and strong bases.

**SECTION 8. Exposure controls/personal protection****Control parameters**

Occupational exposure limit values			
Chemical Name	ACGIH TLV	OSHA PEL	NIOSH REL
glutaraldehyde	Ceiling: 0.05 ppm	-	Ceiling: 0.2 ppm Ceiling: 0.8 mg/m <sup>3</sup>
methanol	S* STEL: 250 ppm TWA: 200 ppm	TWA: 200 ppm TWA: 260 mg/m <sup>3</sup>	IDLH: 6000 ppm TWA: 200 ppm TWA: 260 mg/m <sup>3</sup> STEL: 250 ppm STEL: 325 mg/m <sup>3</sup>
formaldehyde (stabilised)	Ceiling: 0.3 ppm	TWA: 0.75 ppm STEL: 2 ppm	IDLH: 20 ppm TWA: 0.016 ppm Ceiling: 0.1 ppm

**Appropriate engineering controls**

Showers, eyewash stations, and ventilation systems.

**Individual protection measures, such as personal protective equipment**

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substance.

<b>Eye/face protection</b>	Safety glasses with side-shields.
<b>Skin and body protection</b>	Wear protective gloves/clothing.
<b>Respiratory protection</b>	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
<b>Hygiene measures</b>	Do not eat, drink or smoke when using this product. Remove and wash contaminated clothing before re-use.

**SECTION 9. Physical and chemical properties****Information on basic physical and chemical properties**

<b>Physical state</b>	Liquid
<b>Appearance</b>	Clear
<b>Odor</b>	Pungent Characteristic
<b>Color</b>	Light yellow
<b>Odor Threshold</b>	0.83 ppm
<b>pH</b>	5.8 @ 20 °C
<b>Melting point/freezing point</b>	No information available
<b>Initial boiling point and boiling range</b>	No information available
<b>Flash point</b>	No information available.
<b>Evaporation rate</b>	No information available

<b>Flammability (solid, gas)</b>	No information available
<b>Upper flammability limit</b>	No information available.
<b>Lower flammability limit</b>	No information available.
<b>Vapor pressure</b>	No information available
<b>Vapor density</b>	No information available
<b>Relative density</b>	No information available
<b>Solubility</b>	No information available.
<b>Solubility in other solvents</b>	No information available
<b>Partition coefficient: n-octanol/water</b>	No information available
<b>Autoignition temperature</b>	No information available
<b>Decomposition temperature</b>	No information available.
<b>Explosive properties</b>	No information available
<b>Oxidizing properties</b>	No information available
<b>VOC content</b>	No information available
<b>Viscosity</b>	No information available.
<b>Density</b>	No information available.

## SECTION 10. Stability and reactivity

### Reactivity

No information available.

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

<b>Hazardous reactions</b>	None under normal processing.
<b>Hazardous polymerization</b>	None under normal processing.

### Conditions to Avoid

No information available.

### Incompatible Materials

Strong oxidizing agents, strong acids, and strong bases.

### Hazardous Decomposition Products

None known based on information supplied.

## SECTION 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	May cause irritation of respiratory tract. May cause allergy or asthma symptoms or breathing difficulties if inhaled.
<b>Eye contact</b>	May cause irreversible damage to eyes.
<b>Skin contact</b>	Harmful in contact with skin. Repeated or prolonged skin contact may cause allergic reactions with susceptible persons.
<b>Ingestion</b>	Harmful if swallowed.

### Information on toxicological effects

This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound is not well defined.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
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glutaraldehyde	134 mg/kg ( Rat )	> 2000 mg/kg ( Rat )	0.48 mg/L ( Rat ) 4 h
methanol	1187 mg/kg ( Rat )	15800 mg/kg (Rabbit)	83.2 mg/L ( Rat ) 4 h
formaldehyde (stabilised)	100 mg/kg ( Rat )	270 mg/kg ( Rat )	250 ppm ( Rat ) 4 h

### Delayed and immediate effects as well as chronic effects from short and long-term exposure

#### Symptoms

Low-dose acute exposure can result in headache, rhinitis, and dyspnea; higher doses may cause severe mucous membrane irritation, burning, and lacrimation, and lower respiratory effects such as bronchitis, pulmonary edema, or pneumonia. Sensitive individuals may experience asthma and dermatitis, even at very low doses. Ocular exposure to formaldehyde vapors produces irritation and lacrimation. Depending on the concentration, formaldehyde solutions may cause transient discomfort and irritation or more severe effects, including corneal opacification and loss of vision. Formaldehyde is absorbed through intact skin and may cause irritation or allergic dermatitis. Ingestion may cause corrosive injury to the gastrointestinal mucosa, with nausea, vomiting, pain, bleeding, and perforation. Systemic effects include metabolic acidosis, CNS depression and coma, respiratory distress, and renal failure.

#### Skin corrosion/irritation Serious eye damage/eye irritation

Irritating to skin.  
Risk of serious damage to eyes.

#### Sensitization Mutagenic effects Carcinogenicity

May cause sensitization by inhalation and skin contact.  
No information available.  
No component of this product present at levels greater than or equal to 0.1% is identifiable as probable, possible or confirmed carcinogen by IARC, ACGIH, NTP, or OSHA.

Chemical Name	IARC	NTP	OSHA
formaldehyde (stabilised) 50-00-0	1	Known	X

#### Reproductive toxicity STOT - single exposure STOT - repeated exposure Neurological effects Aspiration Hazard

No information available.  
Respiratory system. Nasal Cavities. Central nervous system. Bone marrow.  
No information available.  
No information available.  
No information available.

## SECTION 12. Ecological information

### Ecotoxicity

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
glutaraldehyde	EC50 0.61 mg/L (Desmodesmus subspicatus) 72 h	LC50 2.6 - 4.8 mg/L (Oncorhynchus mykiss) 96 h	EC50 0.56 - 1.0 mg/L (Daphnia magna) 48 h
methanol	EC50 22,000 mg/l (Scenedesmus capricornutum) 96 h	LC50 13500 - 17600 mg/L (Lepomis macrochirus) 96 h	EC50 > 10000 mg/l (Daphnia magna) 48 h
formaldehyde (stabilised)	-	LC50 1.51 mg/L (Lepomis macrochirus) 96 h	LC50 2 mg/L (Daphnia magna) 48 h

#### Persistence and degradability Bioaccumulation Mobility

Product is biodegradable.  
Not likely to bioaccumulate.  
Will likely be mobile in the environment due to its water solubility but will likely degrade over time

Chemical Name	Octanol-Water Partition Coefficient
glutaraldehyde	0.22
methanol	-0.77
formaldehyde (stabilised)	0.35

### Other adverse effects

No information available.

### SECTION 13. Disposal considerations

#### Waste Disposal Methods

Dispose of in accordance with all applicable national environmental laws and regulations.

#### Disposal considerations

Do not empty into drains; dispose of this material and its container in a safe way.

### SECTION 14. Transport information

This material is subject to regulation as a hazardous material for shipping when offered or intended by aircraft.

#### IATA


<b>UN number</b>	UN3334
<b>UN proper shipping name</b>	Aviation regulated liquid, n.o.s. (formaldehyde, methanol)
<b>Transport hazard class(es)</b>	9
<b>Packing group</b>	III
<b>ERG code</b>	9A

### SECTION 15. Regulatory information

#### North American Inventory Listing

Chemical Name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL
glutaraldehyde	Listed	Not Listed	Listed	Not Listed
methanol	Listed	Not Listed	Listed	Not Listed
formaldehyde (stabilised)	Listed	Not Listed	Listed	Not Listed

#### Canadian Workplace Hazardous Materials Information System (WHMIS) Classification

	Class D1B - Toxic Material at $\geq 1\%$ Class D2A - Very Toxic Material at $\geq 0.1\%$ Class D2B - Toxic Material at $\geq 1\%$
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#### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS No	SARA 313 - Threshold Values %
methanol	67-56-1	1.0
formaldehyde (stabilised)	50-00-0	0.1

#### SARA 311/312 Hazard Categories

<b>Acute Health Hazard</b>	Yes
<b>Chronic Health Hazard</b>	Yes
<b>Fire Hazard</b>	No
<b>Sudden Release of Pressure Hazard</b>	No
<b>Reactive Hazard</b>	No



**Clean Water Act**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances	CWA - Bioaccumulative Chemicals of Concern (BCCs)
formaldehyde (stabilised)	100 lb	Not Listed	Not Listed	Listed	Not Listed

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
methanol	5000 lb	Not Listed
formaldehyde (stabilised)	100 lb	100 lb

**California Proposition 65**

This product contains the following Proposition 65 chemicals:

Chemical Name	California Prop. 65
methanol	Developmental
formaldehyde (stabilised)	Carcinogen

**U.S. State Right-to-Know Regulations**

This product contains the following U.S. State Right to Know chemicals:

Chemical Name	New Jersey	Massachusetts	Pennsylvania
disodium hydrogenorthophosphate	Listed	Listed	Listed
glutaraldehyde	Listed	Listed	Listed
methanol	Listed	Listed	Listed
formaldehyde (stabilised)	Listed	Listed	Listed

**U.S. FIFRA Label Information**

This product does not contain any substances regulated as pesticides.

**US Commerce Department - Export Administration Regulations Information**

This product does not contain any substances regulated under the Chemical Weapons Convention (CWC).

**U.S. Drug Enforcement Administration Information**

This product does not contain any substances regulated under the DEA.

<b>SECTION 16. Other information</b>
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**Disclaimer**

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet



# Cell Signaling

TECHNOLOGY®

**SAFETY DATA SHEET (SDS):** According to the OSHA Hazard Communication Standard 29 CFR 1910.1200

**Issuing Date:** 2014-09-09

**Revision Date:** 2014-10-21

**Version:** 1

## SECTION 1. Identification

### Product identifier

**Product number** 11675  
**Product name** 10X Staining Solution

### Recommended use of the chemical and restrictions on use

**Identified uses** This product is intended for research purposes only.  
**Uses advised against** This product is not intended for use in diagnostic procedures or therapeutics.  
This product is not intended for use in humans or animals.

### Manufacturer, importer, supplier

**Manufacturer address** Cell Signaling Technology, Inc.  
3 Trask Lane  
Danvers, MA 01923  
United States  
TEL: +1 978 867 2300  
FAX: +1 978 867 2400

**Website** www.cellsignal.com  
**Email address** support@cellsignal.com  
**Company phone number** 978-867-2300  
**Emergency telephone number** In case of emergency call CHEMTREC 1-800-424-9300

## SECTION 2. Hazard(s) identification

### Classification

This substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<b>Skin corrosion/irritation</b>	Category 2
<b>Serious eye damage/eye irritation</b>	Category 1

### GHS Label elements, including precautionary statements



### **Signal Word**

Danger

### **Hazard statement(s)**

Causes skin irritation  
Causes serious eye damage

**Precautionary Statement(s)**

Wash face, hands and any exposed skin thoroughly after handling

Wear protective gloves/protective clothing/eye protection/face protection

IF ON SKIN: Wash with plenty of soap and water

If skin irritation occurs: Get medical advice/attention

Take off contaminated clothing and wash before reuse

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

Immediately call a POISON CENTER or doctor/physician

**Supplementary Hazard Information**

Hazards not otherwise classified (HNOC) None.

**SECTION 3. Composition/information on ingredients**

Chemical Name	CAS No	Weight %
citric acid	77-92-9	5-10
sodium chloride	7647-14-5	7-13
trisodium orthophosphate	7601-54-9	7-13

**SECTION 4. First-aid measures**

<b>Eye contact</b>	Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing.
<b>Skin contact</b>	Wash off immediately with plenty of water for at least 15 minutes. If symptoms persist, call a physician. Immediate medical attention is not required. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.
<b>Inhalation</b>	Move to fresh air. If symptoms persist, call a physician. Immediate medical attention is not required. IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing.
<b>Ingestion</b>	Do NOT induce vomiting. Drink plenty of water. Immediate medical attention is not required. Rinse mouth. Clean mouth with water. Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician. If swallowed, do not induce vomiting - seek medical advice.

**Most important symptoms and effects, both acute and delayed**

No information available.

**Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

**Advice for emergency responders**

<b>General advice</b>	Show this safety data sheet to the doctor in attendance. Immediate medical attention is not required. If symptoms persist, call a physician.
<b>Protection of first-aiders</b>	Use personal protective equipment.

**SECTION 5. Fire-fighting measures****Extinguishing media**

<b>Suitable Extinguishing Media</b>	Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Unsuitable Extinguishing Media</b>	CAUTION: Use of water spray when fighting fire may be inefficient.

**Specific hazards arising from the chemical**

No information available.

### **Explosion Data**

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

### **Protective Equipment and Precautions for Firefighters**

Wear self-contained breathing apparatus and protective suit. Wear self contained breathing apparatus for fire fighting if necessary.

## **SECTION 6. Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

**For non-emergency personnel** Use personal protective equipment. Avoid contact with the skin and the eyes. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

**Other information** No information available.

### **Environmental precautions**

Prevent entry into waterways, sewers, basements or confined areas. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

### **Methods and material for containment and cleaning up**

**Methods for containment** Prevent further leakage or spillage if safe to do so.

**Methods for cleaning up** Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. After cleaning, flush away traces with water. Prevent product from entering drains. Dam up.

## **SECTION 7. Handling and storage**

### **Precautions for safe handling**

Wear personal protective equipment. Use only in area provided with appropriate exhaust ventilation. Prevent the formation of vapors, mists and aerosols.

### **Conditions for safe storage, including any incompatibilities**

**Technical measures/Storage conditions** Keep out of the reach of children. Keep container tightly closed. Keep containers tightly closed in a cool, well-ventilated place. Keep in properly labeled containers.

**Packaging material** No information available.

**Incompatible products** None known based on information supplied.

## **SECTION 8. Exposure controls/personal protection**

### **Control parameters**

This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

### **Appropriate engineering controls**

Showers, eyewash stations, and ventilation systems.

### **Individual protection measures, such as personal protective equipment**

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substance.

<b>Eye/face protection</b>	Tightly fitting safety goggles. Face-shield.
<b>Skin and body protection</b>	Wear protective gloves/clothing.
<b>Respiratory protection</b>	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
<b>Hygiene measures</b>	When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use. Provide regular cleaning of equipment, work area and clothing.

## SECTION 9. Physical and chemical properties

### Information on basic physical and chemical properties

<b>Physical state</b>	Liquid
<b>Appearance</b>	Clear
<b>Odor</b>	No information available
<b>Color</b>	Colorless
<b>Odor Threshold</b>	No information available
<b>pH</b>	5.8 @ 20 °C
<b>Melting point/freezing point</b>	No information available
<b>Initial boiling point and boiling range</b>	No information available
<b>Flash point</b>	No information available.
<b>Evaporation rate</b>	No information available
<b>Flammability (solid, gas)</b>	No information available
<b>Upper flammability limit</b>	No information available.
<b>Lower flammability limit</b>	No information available.
<b>Vapor pressure</b>	No information available
<b>Vapor density</b>	No information available
<b>Relative density</b>	No information available
<b>Solubility</b>	No information available.
<b>Solubility in other solvents</b>	No information available
<b>Partition coefficient: n-octanol/water</b>	No information available
<b>Autoignition temperature</b>	No information available
<b>Decomposition temperature</b>	No information available.
<b>Explosive properties</b>	No information available
<b>Oxidizing properties</b>	No information available
<b>VOC content</b>	No information available
<b>Viscosity</b>	No information available.
<b>Density</b>	No information available.

## SECTION 10. Stability and reactivity

### Reactivity

No information available.

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

<b>Hazardous reactions</b>	None under normal processing.
<b>Hazardous polymerization</b>	None under normal processing.

### Conditions to Avoid

No information available.

### Incompatible Materials

None known based on information supplied.

### **Hazardous Decomposition Products**

None known based on information supplied.

## **SECTION 11. Toxicological information**

### **Information on likely routes of exposure**

<b>Inhalation</b>	Inhalation of vapors in high concentration may cause irritation of respiratory system.
<b>Eye contact</b>	May cause irreversible damage to eyes.
<b>Skin contact</b>	Contact with skin may cause irritation.
<b>Ingestion</b>	Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

### **Information on toxicological effects**

This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound is not well defined.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
citric acid	3000 mg/kg ( Rat )	-	-
sodium chloride	3000 mg/kg ( Rat )	> 10000 mg/kg ( Rabbit )	> 42000 mg/m <sup>3</sup> ( Rat ) 1 h
trisodium orthophosphate	>2000 mg/kg (Rat)	>2000 mg/kg ( Rabbit )	-

### **Delayed and immediate effects as well as chronic effects from short and long-term exposure**

<b>Symptoms</b>	No information available.
<b>Skin corrosion/irritation</b>	Irritating to skin.
<b>Serious eye damage/eye irritation</b>	Risk of serious damage to eyes.
<b>Sensitization</b>	No information available.
<b>Mutagenic effects</b>	No information available.
<b>Carcinogenicity</b>	No component of this product present at levels greater than or equal to 0.1% is identifiable as probable, possible or confirmed carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>Reproductive toxicity</b>	No information available.
<b>STOT - single exposure</b>	No information available.
<b>STOT - repeated exposure</b>	No information available.
<b>Neurological effects</b>	No information available.
<b>Aspiration Hazard</b>	No information available.

## **SECTION 12. Ecological information**

### **Ecotoxicity**

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
citric acid	-	LC50 1516 mg/L (Lepomis macrochirus) 96 h	EC50 120 mg/L (Daphnia magna) 72 h

sodium chloride	-	LC50 4747 - 7824 mg/L (Oncorhynchus mykiss) 96 h LC50 12946 mg/L (Lepomis macrochirus) 96 h LC50 5560 - 6080 mg/L (Lepomis macrochirus) 96 h LC50 6420 - 6700 mg/L (Pimephales promelas) 96 h LC50 7050 mg/L (Pimephales promelas) 96 h LC50 6020 - 7070 mg/L (Pimephales promelas) 96 h	EC50 340.7 - 469.2 mg/L (Daphnia magna) 48 h EC50 1000 mg/L (Daphnia magna) 48 h
trisodium orthophosphate	-	LC50 28.5 mg/L (Gambusia affinis) 96 h	-

**Persistence and degradability** Readily biodegradable.  
**Bioaccumulation** Not likely to bioaccumulate.  
**Mobility** Expected to have very high mobility in soil.

Chemical Name	Octanol-Water Partition Coefficient
citric acid	-1.72

**Other adverse effects**

No information available.

### SECTION 13. Disposal considerations

**Waste Disposal Methods**

Should not be released into the environment.

**Disposal considerations**

Do not empty into drains; dispose of this material and its container in a safe way.

### SECTION 14. Transport information

This material is not subject to regulation as a hazardous material for shipping.

### SECTION 15. Regulatory information

**North American Inventory Listing**

Chemical Name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL
citric acid	Listed	Not Listed	Listed	Not Listed
sodium chloride	Listed	Not Listed	Listed	Not Listed
trisodium orthophosphate	Listed	Not Listed	Listed	Not Listed

**Canadian Workplace Hazardous Materials Information System (WHMIS) Classification**

	Class E - Corrosive Material at $\geq 1\%$ Class D2B - Toxic Material at $\geq 1\%$
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**SARA 313**



Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

### SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

### Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances	CWA - Bioaccumulative Chemicals of Concern (BCCs)
trisodium orthophosphate	5000 lb	Not Listed	Not Listed	Listed	Not Listed

### CERCLA

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302):

Chemical Name	Hazardous Substances RQs	Extremely Hazardous Substances RQs
trisodium orthophosphate	5000 lb	Not Listed

### California Proposition 65

This product does not contain any Proposition 65 chemicals.

### U.S. State Right-to-Know Regulations

This product contains the following U.S. State Right to Know chemicals:

Chemical Name	New Jersey	Massachusetts	Pennsylvania
trisodium orthophosphate	Listed	Listed	Listed

### U.S. FIFRA Label Information

This product does not contain any substances regulated as pesticides.

### US Commerce Department - Export Administration Regulations Information

This product does not contain any substances regulated under the Chemical Weapons Convention (CWC).

### U.S. Drug Enforcement Administration Information

This product does not contain any substances regulated under the DEA.

## SECTION 16. Other information

Issuing Date: 2014-09-09  
Revision Date: 2014-10-21  
Disclaimer

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The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet



# Cell Signaling

TECHNOLOGY®

**SAFETY DATA SHEET (SDS):** According to the OSHA Hazard Communication Standard 29 CFR 1910.1200

**Issuing Date:** 2014-09-05

**Revision Date:** 2014-10-16

**Version:** 1

## SECTION 1. Identification

### Product identifier

**Product number** 11676  
**Product name** 100X Solution A

### Recommended use of the chemical and restrictions on use

**Identified uses** This product is intended for research purposes only.  
**Uses advised against** This product is not intended for use in diagnostic procedures or therapeutics.  
This product is not intended for use in humans or animals.

### Manufacturer, importer, supplier

**Manufacturer address** Cell Signaling Technology, Inc.  
3 Trask Lane  
Danvers, MA 01923  
United States  
TEL: +1 978 867 2300  
FAX: +1 978 867 2400

**Website** www.cellsignal.com  
**Email address** support@cellsignal.com  
**Company phone number** 978-867-2300  
**Emergency telephone number** In case of emergency call CHEMTREC 1-800-424-9300

## SECTION 2. Hazard(s) identification

### Classification

This substance/mixture is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

### GHS Label elements, including precautionary statements

#### **Signal Word**

None

#### **Hazard statement(s)**

None

#### **Precautionary Statement(s)**

None

### Supplementary Hazard Information

**Hazards not otherwise classified (HNOC)** Contact with acids liberates very toxic gas. Harmful to aquatic life with long lasting effects.

## SECTION 3. Composition/information on ingredients

**Chemical nature** Liquid solution containing an inorganic compound  
**Synonyms** Potassium ferricyanide trihydrate; tetrapotassium iron(2+) hexacyanide trihydrate; iron(2+) potassium cyanide hydrate(1:4:6:3)

Chemical Name	CAS No	Weight %
tetrapotassium iron (2+) hexacyanide trihydrate	14459-95-1	10-30

#### SECTION 4. First-aid measures

**Eye contact** Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.  
**Skin contact** Wash skin with soap and water.  
**Inhalation** Move to fresh air.  
**Ingestion** Clean mouth with water and afterwards drink plenty of water.

#### Most important symptoms and effects, both acute and delayed

No information available.

#### Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

#### Advice for emergency responders

**General advice** For further assistance, contact your local Poison Control Center.  
**Protection of first-aiders** Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

#### SECTION 5. Fire-fighting measures

#### Extinguishing media

**Suitable Extinguishing Media** Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.  
**Unsuitable Extinguishing Media** CAUTION: Use of water spray when fighting fire may be inefficient.

#### Specific hazards arising from the chemical

No information available.

#### Explosion Data

**Sensitivity to Mechanical Impact** None.  
**Sensitivity to Static Discharge** None.

#### Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

#### SECTION 6. Accidental release measures

#### Personal precautions, protective equipment and emergency procedures

**For non-emergency personnel** Ensure adequate ventilation.  
**Other information** No information available.

#### Environmental precautions

See Section 12 for additional information.

#### **Methods and material for containment and cleaning up**

<b>Methods for containment</b>	Prevent further leakage or spillage if safe to do so.
<b>Methods for cleaning up</b>	Pick up and transfer to properly labeled containers.

### **SECTION 7. Handling and storage**

#### **Precautions for safe handling**

Handle in accordance with good industrial hygiene and safety practice.

#### **Conditions for safe storage, including any incompatibilities**

<b>Technical measures/Storage conditions</b>	Keep containers tightly closed in a dry, cool and well-ventilated place.
<b>Packaging material</b>	No information available.
<b>Incompatible products</b>	Strong acids. Strong oxidizing agents.

### **SECTION 8. Exposure controls/personal protection**

#### **Control parameters**

<b>Occupational exposure limit values</b>			
<b>Chemical Name</b>	<b>ACGIH TLV</b>	<b>OSHA PEL</b>	<b>NIOSH REL</b>
tetrapotassium iron (2+) hexacyanide trihydrate	TWA : 1 mg/m <sup>3</sup>	TWA : 5 mg/m <sup>3</sup> S*	IDLH : 25 mg/m <sup>3</sup> TWA : 1 mg/m <sup>3</sup>

#### **Appropriate engineering controls**

Showers, eyewash stations, and ventilation systems.

#### **Individual protection measures, such as personal protective equipment**

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substance.

<b>Eye/face protection</b>	Safety glasses with side-shields.
<b>Skin and body protection</b>	Wear protective gloves/clothing.
<b>Respiratory protection</b>	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
<b>Hygiene measures</b>	Handle in accordance with good industrial hygiene and safety practice.

### **SECTION 9. Physical and chemical properties**

#### **Information on basic physical and chemical properties**

<b>Physical state</b>	Liquid
<b>Appearance</b>	Clear
<b>Odor</b>	No information available
<b>Color</b>	Yellow
<b>Odor Threshold</b>	No information available
<b>pH</b>	9.13 @ 20 °C
<b>Melting point/freezing point</b>	No information available

<b>Initial boiling point and boiling range</b>	No information available
<b>Flash point</b>	No information available.
<b>Evaporation rate</b>	No information available
<b>Flammability (solid, gas)</b>	No information available
<b>Upper flammability limit</b>	No information available.
<b>Lower flammability limit</b>	No information available.
<b>Vapor pressure</b>	No information available
<b>Vapor density</b>	No information available
<b>Relative density</b>	No information available
<b>Solubility</b>	No information available.
<b>Solubility in other solvents</b>	No information available
<b>Partition coefficient: n-octanol/water</b>	No information available
<b>Autoignition temperature</b>	No information available
<b>Decomposition temperature</b>	No information available.
<b>Explosive properties</b>	No information available
<b>Oxidizing properties</b>	No information available
<b>VOC content</b>	No information available.
<b>Viscosity</b>	No information available.
<b>Density</b>	No information available.

## SECTION 10. Stability and reactivity

### Reactivity

No information available.

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

<b>Hazardous reactions</b>	Produces cyanides when reacting with strong acids.
<b>Hazardous polymerization</b>	None under normal processing.

### Conditions to Avoid

No information available.

### Incompatible Materials

Strong acids. Strong oxidizing agents.

### Hazardous Decomposition Products

None under normal use. Decomposes when heated, producing hydrogen cyanide.

## SECTION 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	There is no data available for this product.
<b>Eye contact</b>	There is no data available for this product.
<b>Skin contact</b>	There is no data available for this product.
<b>Ingestion</b>	There is no data available for this product.

### Information on toxicological effects

This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound is not well defined.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
tetrapotassium iron (2+) hexacyanide trihydrate	3613 mg/kg ( Rat )	-	-

#### Delayed and immediate effects as well as chronic effects from short and long-term exposure

<b>Symptoms</b>	No information available.
<b>Sensitization</b>	No information available.
<b>Mutagenic effects</b>	No information available.
<b>Carcinogenicity</b>	No component of this product present at levels greater than or equal to 0.1% is identifiable as probable, possible or confirmed carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>Reproductive toxicity</b>	No information available.
<b>STOT - single exposure</b>	No information available.
<b>STOT - repeated exposure</b>	No information available.
<b>Neurological effects</b>	No information available.
<b>Aspiration Hazard</b>	No information available.

### SECTION 12. Ecological information

#### Ecotoxicity

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
tetrapotassium iron (2+) hexacyanide trihydrate	-	LC50 19 mg/L (Poecilia reticulata) 96 h	EC50 32 mg/L (Daphnia)48 h

<b>Persistence and degradability</b>	Not readily biodegradable.
<b>Bioaccumulation</b>	No information available.
<b>Mobility</b>	No information available

#### Other adverse effects

Identified as a suspected endocrine disruptor.

### SECTION 13. Disposal considerations

#### Waste Disposal Methods

Dispose of in accordance with all applicable national environmental laws and regulations.

#### Disposal considerations

Do not empty into drains; dispose of this material and its container in a safe way.

### SECTION 14. Transport information

This material is not subject to regulation as a hazardous material for shipping.

### SECTION 15. Regulatory information

#### North American Inventory Listing

Chemical Name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL
tetrapotassium iron (2+) hexacyanide trihydrate	Not Listed	Not Listed	Not Listed	Not Listed

### Canadian Workplace Hazardous Materials Information System (WHMIS) Classification

This product does not meet the criteria for classification under the Hazardous Products Act.

### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS No	SARA 313 - Threshold Values %
tetrapotassium iron (2+) hexacyanide trihydrate	14459-95-1	1.0

### SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

### Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances	CWA - Bioaccumulative Chemicals of Concern (BCCs)
tetrapotassium iron (2+) hexacyanide trihydrate	Not Listed	Listed	Listed	Not Listed	Not Listed

### CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

### California Proposition 65

This product does not contain any Proposition 65 chemicals.

### U.S. State Right-to-Know Regulations

This product contains the following U.S. State Right to Know chemicals:

Chemical Name	New Jersey	Massachusetts	Pennsylvania
tetrapotassium iron (2+) hexacyanide trihydrate	Listed	Not Listed	Listed

### U.S. FIFRA Label Information

This product does not contain any substances regulated as pesticides.

### US Commerce Department - Export Administration Regulations Information



This product does not contain any substances regulated under the Chemical Weapons Convention (CWC).

**U.S. Drug Enforcement Administration Information**

This product does not contain any substances regulated under the DEA.

**SECTION 16. Other information**

**Issuing Date:** 2014-09-05

**Revision Date:** 2014-10-16

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet



# Cell Signaling

TECHNOLOGY®

**SAFETY DATA SHEET (SDS):** According to the OSHA Hazard Communication Standard 29 CFR 1910.1200

**Issuing Date:** 2014-09-05

**Revision Date:** 2014-10-16

**Version:** 1

## SECTION 1. Identification

### Product identifier

**Product number** 11677  
**Product name** 100X Solution B

### Recommended use of the chemical and restrictions on use

**Identified uses** This product is intended for research purposes only.  
**Uses advised against** This product is not intended for use in diagnostic procedures or therapeutics.  
This product is not intended for use in humans or animals.

### Manufacturer, importer, supplier

**Manufacturer address** Cell Signaling Technology, Inc.  
3 Trask Lane  
Danvers, MA 01923  
United States  
TEL: +1 978 867 2300  
FAX: +1 978 867 2400

**Website** www.cellsignal.com  
**Email address** support@cellsignal.com  
**Company phone number** 978-867-2300  
**Emergency telephone number** In case of emergency call CHEMTREC 1-800-424-9300

## SECTION 2. Hazard(s) identification

### Classification

This substance/mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<b>Skin corrosion/irritation</b>	Category 2
<b>Serious eye damage/eye irritation</b>	Category 2

### GHS Label elements, including precautionary statements



### **Signal Word**

Warning

### **Hazard statement(s)**

Causes skin irritation  
Causes serious eye irritation

**Precautionary Statement(s)**

Wash face, hands and any exposed skin thoroughly after handling

Wear protective gloves/protective clothing/eye protection/face protection

IF ON SKIN: Wash with plenty of soap and water

If skin irritation occurs: Get medical advice/attention

Take off contaminated clothing and wash before reuse

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing

If eye irritation persists: Get medical advice/attention

**Supplementary Hazard Information**

**Hazards not otherwise classified (HNOC)** Contact with acids liberates very toxic gas.

**SECTION 3. Composition/information on ingredients****Chemical nature**

Liquid solution containing an inorganic compound

**Synonyms**

Potassium cyanoferrate; Potassium ferricyanate; Potassium ferricyanide; Red prussiate; Tripotassium ferric hexacyanide; Tripotassium ferricyanide;

Chemical Name	CAS No	Weight %
tripotassium hexacyanoferrate	13746-66-2	10-30

**SECTION 4. First-aid measures****Eye contact**

Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician.

**Skin contact**

Wash skin with soap and water.

**Inhalation**

Move to fresh air.

**Ingestion**

Clean mouth with water and afterwards drink plenty of water.

**Most important symptoms and effects, both acute and delayed**

No information available.

**Indication of any immediate medical attention and special treatment needed**

Treat symptomatically.

**Advice for emergency responders****General advice**

For further assistance, contact your local Poison Control Center.

**Protection of first-aiders**

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

**SECTION 5. Fire-fighting measures****Extinguishing media****Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media**

CAUTION: Use of water spray when fighting fire may be inefficient.

**Specific hazards arising from the chemical**

No information available.

**Explosion Data**

**Sensitivity to Mechanical Impact** None.

**Sensitivity to Static Discharge** None.

### **Protective Equipment and Precautions for Firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## **SECTION 6. Accidental release measures**

### **Personal precautions, protective equipment and emergency procedures**

**For non-emergency personnel** Ensure adequate ventilation.  
**Other information** No information available.

### **Environmental precautions**

See Section 12 for additional information.

### **Methods and material for containment and cleaning up**

**Methods for containment** Prevent further leakage or spillage if safe to do so.  
**Methods for cleaning up** Pick up and transfer to properly labeled containers.

## **SECTION 7. Handling and storage**

### **Precautions for safe handling**

Handle in accordance with good industrial hygiene and safety practice.

### **Conditions for safe storage, including any incompatibilities**

**Technical measures/Storage conditions** Keep containers tightly closed in a dry, cool and well-ventilated place.  
**Packaging material** No information available.  
**Incompatible products** Strong acids, Strong oxidizing agents, Ammonia, chromium trioxide, Sodium nitrate.

## **SECTION 8. Exposure controls/personal protection**

### **Control parameters**

<b>Occupational exposure limit values</b>			
<b>Chemical Name</b>	<b>ACGIH TLV</b>	<b>OSHA PEL</b>	<b>NIOSH REL</b>
tripotassium hexacyanoferrate	TWA : 1 mg/m <sup>3</sup>	TWA : 5 mg/m <sup>3</sup> S*	IDLH : 25 mg/m <sup>3</sup> TWA : 1 mg/m <sup>3</sup>

### **Appropriate engineering controls**

Showers, eyewash stations, and ventilation systems.

### **Individual protection measures, such as personal protective equipment**

Personal protective equipment (PPE) needs to be selected depending on the implemented engineering controls, frequency/duration of work activities and the concentrations of the hazardous substance.

**Eye/face protection** Safety glasses with side-shields.  
**Skin and body protection** Wear protective gloves/clothing.

<b>Respiratory protection</b>	If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
<b>Hygiene measures</b>	Handle in accordance with good industrial hygiene and safety practice.

## SECTION 9. Physical and chemical properties

### Information on basic physical and chemical properties

<b>Physical state</b>	Liquid
<b>Appearance</b>	Clear
<b>Odor</b>	No information available
<b>Color</b>	Orange
<b>Odor Threshold</b>	No information available
<b>pH</b>	5.75 @ 20 °C
<b>Melting point/freezing point</b>	No information available
<b>Initial boiling point and boiling range</b>	No information available
<b>Flash point</b>	No information available.
<b>Evaporation rate</b>	No information available
<b>Flammability (solid, gas)</b>	No information available
<b>Upper flammability limit</b>	No information available.
<b>Lower flammability limit</b>	No information available.
<b>Vapor pressure</b>	No information available
<b>Vapor density</b>	No information available
<b>Relative density</b>	No information available
<b>Solubility</b>	No information available.
<b>Solubility in other solvents</b>	No information available
<b>Partition coefficient: n-octanol/water</b>	No information available
<b>Autoignition temperature</b>	No information available
<b>Decomposition temperature</b>	No information available.
<b>Explosive properties</b>	No information available
<b>Oxidizing properties</b>	No information available
<b>VOC content</b>	No information available
<b>Viscosity</b>	No information available.
<b>Density</b>	No information available.

## SECTION 10. Stability and reactivity

### Reactivity

No information available.

### Chemical stability

Stable under recommended storage conditions.

### Possibility of hazardous reactions

<b>Hazardous reactions</b>	None under normal processing. Produces cyanides when reacting with strong acids. Risk of explosion in contact with: Ammonia, chromium trioxide, Sodium nitrate.
<b>Hazardous polymerization</b>	None under normal processing.

### Conditions to Avoid

Extremes of temperature and direct sunlight.

### Incompatible Materials

Strong acids, Strong oxidizing agents, Ammonia, chromium trioxide, Sodium nitrate.

**Hazardous Decomposition Products**

None under normal use. Decomposes when heated, producing hydrogen cyanide.

**SECTION 11. Toxicological information****Information on likely routes of exposure**

<b>Inhalation</b>	Inhalation of vapors in high concentration may cause irritation of respiratory system.
<b>Eye contact</b>	Contact with eyes may cause irritation.
<b>Skin contact</b>	Contact with skin may cause irritation.
<b>Ingestion</b>	Ingestion may cause irritation to mucous membranes.

**Information on toxicological effects**

This material should only be handled by, or under the close supervision of, those properly qualified in the handling and use of potentially hazardous chemicals. It should be borne in mind that the toxicological and physiological properties of this compound is not well defined.

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
tripotassium hexacyanoferrate	2970 mg/kg ( Mouse )	-	-

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

<b>Symptoms</b>	No information available.
<b>Skin corrosion/irritation</b>	Irritating to skin.
<b>Serious eye damage/eye irritation</b>	Causes serious eye irritation.
<b>Sensitization</b>	No information available.
<b>Mutagenic effects</b>	No information available.
<b>Carcinogenicity</b>	No component of this product present at levels greater than or equal to 0.1% is identifiable as probable, possible or confirmed carcinogen by IARC, ACGIH, NTP, or OSHA.
<b>Reproductive toxicity</b>	No information available.
<b>STOT - single exposure</b>	No information available.
<b>STOT - repeated exposure</b>	No information available.
<b>Neurological effects</b>	No information available.
<b>Aspiration Hazard</b>	No information available.

**SECTION 12. Ecological information****Ecotoxicity**

Product does not present an aquatic toxicity hazard based on known or supplied information.

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
tripotassium hexacyanoferrate	-	LC50 869 mg/l (Oncorhynchus mykiss) 96 h	EC50 549 mg/l (Daphnia magna) 48 h

<b>Persistence and degradability</b>	No information available.
<b>Bioaccumulation</b>	No information available.
<b>Mobility</b>	No information available.

**Other adverse effects**

Identified as a suspected endocrine disruptor.

### SECTION 13. Disposal considerations

#### Waste Disposal Methods

Dispose of in accordance with all applicable national environmental laws and regulations.

#### Disposal considerations

Do not empty into drains; dispose of this material and its container in a safe way.

### SECTION 14. Transport information


This material is not subject to regulation as a hazardous material for shipping.

### SECTION 15. Regulatory information

#### North American Inventory Listing

Chemical Name	TSCA 8(b)	TSCA 12(b)	DSL	NDSL
tripotassium hexacyanoferrate	Listed	Not Listed	Listed	Not Listed

#### Canadian Workplace Hazardous Materials Information System (WHMIS) Classification

	Class D2B - Toxic Material at $\geq 1\%$
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#### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

Chemical Name	CAS No	SARA 313 - Threshold Values %
tripotassium hexacyanoferrate	13746-66-2	1.0

#### SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	No
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

#### Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42):

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances	CWA - Bioaccumulative Chemicals of Concern (BCCs)
tripotassium hexacyanoferrate	Not Listed	Listed	Listed	Not Listed	Not Listed

#### CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

#### **California Proposition 65**

This product does not contain any Proposition 65 chemicals.

#### **U.S. State Right-to-Know Regulations**

This product contains the following U.S. State Right to Know chemicals:

<b>Chemical Name</b>	<b>New Jersey</b>	<b>Massachusetts</b>	<b>Pennsylvania</b>
tripotassium hexacyanoferrate	Listed	Not Listed	Listed

#### **U.S. FIFRA Label Information**

This product does not contain any substances regulated as pesticides.

#### **US Commerce Department - Export Administration Regulations Information**

This product does not contain any substances regulated under the Chemical Weapons Convention (CWC).

#### **U.S. Drug Enforcement Administration Information**

This product does not contain any substances regulated under the DEA.

### **SECTION 16. Other information**

**Issuing Date:** 2014-09-05

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#### **Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet