



## 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>
12776	Malachite Green Phosphate Detection Kit

<b>Kit Component No.</b>	<b>Product name</b>
MTL4720L	Malachite Green Reagent



# Cell Signaling

TECHNOLOGY®

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

**Issuing Date:** 2014-02-20

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**Version:** 1

## SECTION 1. Identification

### Product identifier

**Product No.** MTL4720L  
**Product name** Malachite Green reagent  
**UN number** UN2796

### 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  
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 chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

<b>Acute toxicity - Inhalation (Gases)</b>	Category 3
<b>Skin corrosion/irritation</b>	Category 1
<b>Serious eye damage/eye irritation</b>	Category 1
<b>Carcinogenicity</b>	Category 1A
<b>Specific target organ toxicity - repeated exposure (STOT RE)</b>	Category 2
<b>Corrosive to metals</b>	Category 1

### GHS Label elements, including precautionary statements



**Signal Word**

Danger

**Hazard statement(s)**

Causes severe skin burns and eye damage  
 Toxic if inhaled  
 May cause cancer (inhalation)  
 May cause damage to organs (respiratory system, teeth) through prolonged or repeated exposure (inhalation)  
 May be corrosive to metals

**Precautionary Statement(s)**

Wear protective gloves/protective clothing/eye protection/face protection  
 Wash face, hands and any exposed skin thoroughly after handling  
 Keep only in original container  
 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting  
 IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower  
 Wash contaminated clothing before reuse  
 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing

**Supplementary Hazard Information**

Hazards not otherwise classified (HNOC) None.

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

Chemical Name	CAS No.	Weight %
ammonium molybdenum oxide tetrahydrate	12054-85-2	0.5-1.5
sulfuric acid	7664-93-9	7-13

**SECTION 4. First-aid measures**

**Eye contact** Rinse thoroughly with plenty of water, also under the eyelids. Keep eye wide open while rinsing.

**Skin contact** Immediate medical attention is required. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.

**Inhalation** Move to fresh air. Immediate medical attention is required. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

**Ingestion** Immediate medical attention is required. Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Remove from exposure, lie down this is a test. Clean mouth with water. If swallowed, do not induce vomiting - seek medical advice.

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

No information or data specific to the product on this toxicological (health) effect is available

Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate

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

**Notes to physician** Treat symptomatically.

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**Advice for emergency responders**

<b>General advice</b>	Immediate medical attention is required. Show this safety data sheet to the doctor in attendance.
<b>Protection of First-aiders</b>	Use personal protective equipment. Avoid contact with skin, eyes and clothing.

**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**

The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating gases and vapors. In the event of fire and/or explosion do not breathe fumes. Contact with metals may evolve flammable hydrogen gas.

**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>	Evacuate personnel to safe areas. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Keep people away from and upwind of spill/leak.
<b>Other information</b>	Refer to protective measures listed in Sections 7 and 8.

**Environmental precautions**

Do not allow material to contaminate ground water system. Should not be released into the environment. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

**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>	Dike far ahead of liquid spill for later disposal. Soak up with inert absorbent material. Take up mechanically and collect in suitable container for disposal. Clean contaminated surface thoroughly. Prevent product from entering drains. Dam up. After cleaning, flush away traces with water.

**SECTION 7. Handling and storage****Precautions for safe handling**

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Ensure adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. Handle product only in closed system or provide appropriate exhaust ventilation at machinery.

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

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

**Packaging material** No information available.

**Incompatible products** Incompatible with strong acids and bases. Incompatible with oxidizing agents. Metals. Organic material.

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

**Control parameters**

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH REL
ammonium molybdenum oxide tetrahydrate	TWA respirable fraction: 0.5 mg/m <sup>3</sup>	TWA : 5 mg/m <sup>3</sup>	IDLH : 1000 mg/m <sup>3</sup>
sulfuric acid	TWA thoracic fraction: 0.2 mg/m <sup>3</sup>	TWA : 1 mg/m <sup>3</sup>	IDLH : 15 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** Tightly fitting safety goggles. Face-shield.

**Skin and body protection** Wear protective gloves/clothing.

**Respiratory protection** 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.

**Hygiene measures** When using, do not eat, drink or smoke. Remove and wash contaminated clothing before re-use. Keep away from food, drink and animal feeding stuffs. Contaminated work clothing should not be allowed out of the workplace. Provide regular cleaning of equipment, work area and clothing. Avoid contact with skin, eyes and clothing. For environmental protection, remove and wash all contaminated protective equipment before re-use. Wear suitable gloves and eye/face protection.

**SECTION 9. Physical and chemical properties**

**Information on basic physical and chemical properties**

**Physical state** Liquid

**Appearance** No information available

**Odor** No information available

**Color** Yellow

**Odor Threshold** No information available

**pH** 1

**Melting point/freezing point** No information available

**Initial boiling point and boiling range** No information available

**Flash point** No information available

**Evaporation rate** 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>	Reacts violently with combustible and reducing materials. Reacts violently with water and organic materials with evolution of heat. Reacts violently with bases and is corrosive to most common metals forming a flammable/explosive gas (hydrogen).
<b>Hazardous polymerization</b>	None under normal processing.

### Conditions to Avoid

Exposure to air or moisture over prolonged periods.

### Incompatible Materials

Incompatible with strong acids and bases. Incompatible with oxidizing agents. Metals. Organic material.

### Hazardous Decomposition Products

Thermal decomposition can lead to release of irritating gases and vapors.

## SECTION 11. Toxicological information

### Information on likely routes of exposure

<b>Inhalation</b>	Corrosive to respiratory system.
<b>Eye contact</b>	Corrosive to the eyes and may cause severe damage including blindness.
<b>Skin contact</b>	Corrosive to skin.
<b>Ingestion</b>	Ingestion causes burns of the upper digestive and respiratory tract.

### 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
sulfuric acid	= 2140 mg/kg ( Rat )	-	= 347 ppm ( Rat ) 1 h

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

**Symptoms** Inhalation of corrosive fumes/gases may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate.

**Corrosivity** This product is corrosive to living tissue.

**Sensitization** May cause sensitization of susceptible persons.

**Mutagenic effects** No information available.

**Carcinogenicity** Exposure to strong inorganic mists containing sulfuric acid may cause cancer by inhalation

Chemical Name	IARC	NTP	OSHA
sulfuric acid 7664-93-9	1	Known	X

**Legend:**

IARC: (International Agency for Research on Cancer) Group 1 - Carcinogenic to Humans

NTP: (National Toxicity Program) Known - Known Carcinogen

OSHA: (Occupational Safety & Health Administration) X - Present

**Reproductive toxicity** No information available.

**STOT - single exposure** No information available.

**STOT - repeated exposure** Causes damage to organs through prolonged or repeated exposure: Respiratory system, Teeth.

**Chronic Toxicity** Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Avoid repeated exposure. Possible risks of irreversible effects.

**Target Organ Effects** Eyes, Respiratory system, Skin, Teeth.

**Neurological effects** No information available.

**Aspiration Hazard** No information available.

**SECTION 12. Ecological information**

**Ecotoxicity**

Chemical Name	Toxicity to algae	Toxicity to fish	Toxicity to daphnia and other aquatic invertebrates
sulfuric acid	-	LC50 500 mg/L (Brachydanio rerio) 96 h	EC50 29 mg/L (Daphnia magna) 24 h

**Persistence and degradability** No information available.

**Bioaccumulation** No information available.

**Mobility** No information available

**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**

**DOT**

**UN number** UN2796  
**UN proper shipping name** Sulfuric acid  
**Transport hazard class(es)** 8  
**Packing Group** II  
**Special precautions for user** A3, A7, B2, B15, IB2, N6, N34, T8, TP2  
**Emergency Response Guide Number** 157

**IATA**

**UN number** UN2796  
**UN proper shipping name** Sulphuric acid  
**Transport hazard class(es)** 8  
**Packing Group** II

**IMDG/IMO**

**UN number** UN2796  
**UN proper shipping name** Sulphuric acid  
**Transport hazard class(es)** 8  
**Packing group** II  
**EmS No.** F-A, S-B

**SECTION 15. Regulatory information**

**North American Inventory Listing**

Component	TSCA	DSL	NDSL
sulfuric acid 7664-93-9 ( 7-13 )	Listed	Listed	Not Listed

**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 %
sulfuric acid - 7664-93-9	7664-93-9	1.0

**SARA 311/312 Hazard Categories**

**Acute Health Hazard** Yes  
**Chronic Health Hazard** 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)
sulfuric acid 7664-93-9	1000 lb	-	-	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
sulfuric acid 7664-93-9	1000 lb	1000 lb

**California Proposition 65**

This product contains the following Proposition 65 chemicals:

Chemical Name	California Prop. 65
sulfuric acid 7664-93-9	Carcinogen

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

Chemical Name	New Jersey	Massachusetts	Pennsylvania
sulfuric acid 7664-93-9	Listed	Listed	Listed

**U.S. EPA Label Information**

This product does not contain any substances regulated as pesticides.

**SECTION 16. Other information**

**Issuing Date:** 2014-02-20  
**Revision Date:** 2014-02-20  
**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