

# SAFETY DATA SHEET

P3311 pH triode combination electrode, Part Number 5190-3990

## Section 1. Identification

This product is considered an article. This Safety Data Sheet is written based on the encapsulated substance or mixture in this article.

### 1.1 Product identifier

**Product name** : P3311 pH triode combination electrode, Part Number 5190-3990  
**Part no. (chemical kit)** : 5190-3990  
**Part no.** : \* P3311 electrode P3311  
 Reference solution 5190-0545-1  
**Validation date** : 4/30/2018

### 1.2 Relevant identified uses of the substance or mixture and uses advised against

**Material uses** :  Reagents and Standards for Analytical Chemistry Laboratory Use  
 \* P3311 electrode Electrodes. (1 x 7 ml)  
 Reference solution 1 x 30 ml

### 1.3 Details of the supplier of the safety data sheet

**Supplier/Manufacturer** : Agilent Technologies, Inc.  
 5301 Stevens Creek Blvd  
 Santa Clara, CA 95051, USA  
 800-227-9770

### 1.4 Emergency telephone number

**In case of emergency** : CHEMTREC®: 1-800-424-9300

**Note \*** : \* This product is considered an article. This Safety Data Sheet is written based on the encapsulated substance or mixture in this article. This article, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. The substance or mixture is encapsulated in the article. Only if released due to use or processing of the article in a manner not in accordance with the product's directions for use it may present potential health and safety hazards.

## Section 2. Hazards identification

This article, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. The substance or mixture is encapsulated in the article. Only if released due to use or processing of the article in a manner not in accordance with the product's directions for use it may present potential health and safety hazards.

### 2.1 Classification of the substance or mixture


**OSHA/HCS status** :  P3311 electrode This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).  
 Reference solution This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

### Classification of the substance or mixture

**P3311 electrode**  
 H319 EYE IRRITATION - Category 2A  
 H371 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (kidneys) - Category 2

**Reference solution**  
 H320 EYE IRRITATION - Category 2B

## Section 2. Hazards identification

<p><b>Ingredients of unknown toxicity</b> : P3311 electrode</p> <p style="padding-left: 200px;">Reference solution</p>	<p>Percentage of the mixture consisting of ingredient (s) of unknown dermal toxicity: 10 - 30%</p> <p>Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 10 - 30%</p> <p>Percentage of the mixture consisting of ingredient (s) of unknown dermal toxicity: 10 - 30%</p> <p>Percentage of the mixture consisting of ingredient (s) of unknown inhalation toxicity: 10 - 30%</p>
<p><b>2.2 GHS label elements</b></p>	
<p><b>Hazard pictograms</b> : P3311 electrode</p>	
<p><b>Signal word</b> : * P3311 electrode</p> <p style="padding-left: 200px;">Reference solution</p>	<p>Warning</p> <p>Warning</p>
<p><b>Hazard statements</b> : P3311 electrode</p> <p style="padding-left: 200px;">Reference solution</p>	<p>H319 - Causes serious eye irritation.</p> <p>H371 - May cause damage to organs. (kidneys)</p> <p>H320 - Causes eye irritation.</p>
<p><b>Precautionary statements</b></p>	
<p><b>Prevention</b> : P3311 electrode</p> <p style="padding-left: 200px;">Reference solution</p>	<p>P280 - Wear eye or face protection.</p> <p>P260 - Do not breathe vapor.</p> <p>P270 - Do not eat, drink or smoke when using this product.</p> <p>P264 - Wash hands thoroughly after handling.</p> <p>P264 - Wash hands thoroughly after handling.</p>
<p><b>Response</b> : P3311 electrode</p> <p style="padding-left: 200px;">Reference solution</p>	<p>P308 + P311 - IF exposed or concerned: Call a POISON CENTER or physician.</p> <p>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P337 + P313 - If eye irritation persists: Get medical attention.</p> <p>P305 + P351 + P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.</p> <p>P337 + P313 - If eye irritation persists: Get medical attention.</p>
<p><b>Storage</b> : P3311 electrode</p> <p style="padding-left: 200px;">Reference solution</p>	<p>P405 - Store locked up.</p> <p>Not applicable.</p>
<p><b>Disposal</b> : P3311 electrode</p> <p style="padding-left: 200px;">Reference solution</p>	<p>P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.</p> <p>Not applicable.</p>
<p><b>Supplemental label elements</b> : P3311 electrode</p> <p style="padding-left: 200px;">Reference solution</p>	<p>None known.</p> <p>None known.</p>
<p><b>2.3 Other hazards</b></p>	
<p><b>Hazards not otherwise classified</b> : P3311 electrode</p> <p style="padding-left: 200px;">Reference solution</p>	<p>None known.</p> <p>None known.</p>

## Section 3. Composition/information on ingredients

This article, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. The substance or mixture is encapsulated in the article. Only if released due to use or processing of the article in a manner not in accordance with the product's directions for use it may present potential health and safety hazards.

**Substance/mixture** : \* P3311 electrode Mixture (encapsulated in article)  
Reference solution Mixture

Ingredient name	%	CAS number
<b>* P3311 electrode</b>		
Glycerol	≥10 - ≤25	56-81-5
Potassium chloride	≤10	7447-40-7
Ethenediol	≤5	107-21-1
Disodium hydrogenorthophosphate	≤3	7558-79-4
<b>Reference solution</b>		
Potassium chloride	≥10 - ≤25	7447-40-7


Any concentration shown as a range is to protect confidentiality or is due to batch variation.

**There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.**

Occupational exposure limits, if available, are listed in Section 8.

## Section 4. First aid measures

### 4.1 Description of necessary first aid measures

**Eye contact** :  P3311 electrode

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Get medical attention. If necessary, call a poison center or physician.

Reference solution

Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. If irritation persists, get medical attention.

**Inhalation** :  P3311 electrode

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Get medical attention following exposure or if feeling unwell. If necessary, call a poison center or physician. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Reference solution

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give

## Section 4. First aid measures

**Skin contact** :  P3311 electrode

mouth-to-mouth resuscitation. Get medical attention if adverse health effects persist or are severe. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Continue to rinse for at least 10 minutes. Get medical attention following exposure or if feeling unwell. If necessary, call a poison center or physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Reference solution

Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**Ingestion** :  P3311 electrode

Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention following exposure or if feeling unwell. If necessary, call a poison center or physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Reference solution

Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Get medical attention if adverse health effects persist or are severe. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

### 4.2 Most important symptoms/effects, acute and delayed

#### Potential acute health effects

**Eye contact** :  P3311 electrode  
Reference solution

Causes serious eye irritation.  
Causes eye irritation.

## Section 4. First aid measures

<b>Inhalation</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Skin contact</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Ingestion</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.

### Over-exposure signs/symptoms

<b>Eye contact</b>	: * P3311 electrode  Reference solution	Adverse symptoms may include the following: pain or irritation watering redness Adverse symptoms may include the following: irritation watering redness
<b>Inhalation</b>	: * P3311 electrode Reference solution	No specific data. No specific data.
<b>Skin contact</b>	: * P3311 electrode Reference solution	No specific data. No specific data.
<b>Ingestion</b>	: * P3311 electrode Reference solution	No specific data. No specific data.

### 4.3 Indication of immediate medical attention and special treatment needed, if necessary

<b>Notes to physician</b>	: * P3311 electrode  Reference solution	Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled. Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
<b>Specific treatments</b>	: * P3311 electrode Reference solution	No specific treatment. No specific treatment.
<b>Protection of first-aiders</b>	: * P3311 electrode  Reference solution	No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.

See toxicological information (Section 11)

## Section 5. Fire-fighting measures

### 5.1 Extinguishing media

<b>Suitable extinguishing media</b>	: * P3311 electrode Reference solution	Use an extinguishing agent suitable for the surrounding fire. Use an extinguishing agent suitable for the surrounding fire.
<b>Unsuitable extinguishing media</b>	: * P3311 electrode Reference solution	None known. None known.

### 5.2 Special hazards arising from the substance or mixture

## Section 5. Fire-fighting measures

<b>Specific hazards arising from the chemical</b>	: * P3311 electrode Reference solution	In a fire or if heated, a pressure increase will occur and the container may burst. In a fire or if heated, a pressure increase will occur and the container may burst.
<b>Hazardous thermal decomposition products</b>	: * P3311 electrode Reference solution	Decomposition products may include the following materials: carbon dioxide carbon monoxide phosphorus oxides halogenated compounds metal oxide/oxides Decomposition products may include the following materials: halogenated compounds metal oxide/oxides
 <b>5.3 Advice for firefighters</b>		
<b>Special protective actions for fire-fighters</b>	: * P3311 electrode Reference solution	Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.
<b>Special protective equipment for fire-fighters</b>	: * P3311 electrode Reference solution	Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode. Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

## Section 6. Accidental release measures

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

<b>For non-emergency personnel</b>	: * P3311 electrode Reference solution	No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid breathing vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
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## Section 6. Accidental release measures


<b>For emergency responders</b> :	* P3311 electrode	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
	Reference solution	If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".
<b>6.2 Environmental precautions</b> :	* P3311 electrode	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
	Reference solution	Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).
<b>6.3 Methods and materials for containment and cleaning up</b>		
<b>Methods for cleaning up</b> :	* P3311 electrode	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.
	Reference solution	Stop leak if without risk. Move containers from spill area. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

## Section 7. Handling and storage

### 7.1 Precautions for safe handling

<b>Protective measures</b> :	☑ P3311 electrode	Put on appropriate personal protective equipment (see Section 8). Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.
	Reference solution	Put on appropriate personal protective equipment (see Section 8). Do not ingest. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

## Section 7. Handling and storage

<b>Advice on general occupational hygiene</b>	: * P3311 electrode  Reference solution	Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures. Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.
<b>7.2 Conditions for safe storage, including any incompatibilities</b>	:  P3311 electrode  Reference solution	Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.  Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.
<b>7.3 Specific end use(s)</b>		
<b>Recommendations</b>	: * P3311 electrode Reference solution	Industrial applications, Professional applications. Industrial applications, Professional applications.
<b>Industrial sector specific solutions</b>	: * P3311 electrode Reference solution	Not applicable. Not applicable.

## Section 8. Exposure controls/personal protection

Since the hazardous ingredient in this article is encapsulated, the risk of exposure by inhalation, ingestion, skin contact and eyes contact is minimum.

### 8.1 Control parameters

#### Occupational exposure limits



## Section 8. Exposure controls/personal protection

Ingredient name	Exposure limits
<p>▶ <b>P3311 electrode</b> Glycerol</p> <p>Potassium chloride Ethenediol</p> <p>Disodium hydrogenorthophosphate</p> <p><b>Reference solution</b> Potassium chloride</p>	<p><b>OSHA PEL 1989 (United States, 3/1989).</b> TWA: 5 mg/m<sup>3</sup> 8 hours. Form: Respirable fraction TWA: 10 mg/m<sup>3</sup> 8 hours. Form: Total dust</p> <p><b>OSHA PEL (United States, 6/2016).</b> TWA: 5 mg/m<sup>3</sup> 8 hours. Form: Respirable fraction TWA: 15 mg/m<sup>3</sup> 8 hours. Form: Total dust</p> <p>None.</p> <p><b>OSHA PEL 1989 (United States, 3/1989).</b> CEIL: 50 ppm CEIL: 125 mg/m<sup>3</sup></p> <p><b>ACGIH TLV (United States, 3/2017).</b> STEL: 10 mg/m<sup>3</sup> 15 minutes. Form: Inhalable fraction. Aerosol only. STEL: 50 ppm 15 minutes. Form: Vapor fraction TWA: 25 ppm 8 hours. Form: Vapor fraction</p> <p>None.</p> <p>None.</p>

### 8.2 Exposure controls

#### Appropriate engineering controls

- : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.

#### Environmental exposure controls

- : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

### Individual protection measures

#### Hygiene measures

- : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.

#### Eye/face protection

- : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles.

#### Skin protection

#### Hand protection

- : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.

## Section 8. Exposure controls/personal protection

- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

## Section 9. Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

#### Appearance

<b>Physical state</b>	: * P3311 electrode Reference solution	Liquid. Liquid.
<b>Color</b>	: * P3311 electrode Reference solution	Not available. White.
<b>Odor</b>	: * P3311 electrode Reference solution	Not available. Not available.
<b>Odor threshold</b>	: * P3311 electrode Reference solution	Not available. Not available.
<b>pH</b>	: * P3311 electrode Reference solution	6 6
<b>Melting point</b>	: P3311 electrode Reference solution	-25°C (-13°F) Not available.
<b>Boiling point</b>	: P3311 electrode Reference solution	110°C (230°F) Not available.
<b>Flash point</b>	: * P3311 electrode Reference solution	Not available. Not available.
<b>Evaporation rate</b>	: * P3311 electrode Reference solution	Not available. Not available.
<b>Flammability (solid, gas)</b>	: * P3311 electrode Reference solution	Not applicable. Not applicable.
<b>Lower and upper explosive (flammable) limits</b>	: * P3311 electrode Reference solution	Not available. Not available.
<b>Vapor pressure</b>	: * P3311 electrode Reference solution	Not available. Not available.
<b>Vapor density</b>	: * P3311 electrode Reference solution	Not available. Not available.
<b>Relative density</b>	: * P3311 electrode Reference solution	1.1 1
<b>Solubility</b>	: * P3311 electrode  Reference solution	Soluble in the following materials: cold water and hot water. Easily soluble in the following materials: cold water and hot water.
<b>Partition coefficient: n-octanol/water</b>	: * P3311 electrode Reference solution	Not available. Not available.
<b>Auto-ignition temperature</b>	: * P3311 electrode Reference solution	Not available. Not available.
<b>Decomposition temperature</b>	: * P3311 electrode Reference solution	Not available. Not available.

## Section 9. Physical and chemical properties

<b>Viscosity</b>	: * P3311 electrode	Not available.
	Reference solution	Not available.

## Section 10. Stability and reactivity

<b>10.1 Reactivity</b>	: * P3311 electrode	No specific test data related to reactivity available for this product or its ingredients.
	Reference solution	No specific test data related to reactivity available for this product or its ingredients.
<b>10.2 Chemical stability</b>	: * P3311 electrode	The product is stable.
	Reference solution	The product is stable.
<b>10.3 Possibility of hazardous reactions</b>	: * P3311 electrode	Under normal conditions of storage and use, hazardous reactions will not occur.
	Reference solution	Under normal conditions of storage and use, hazardous reactions will not occur.
<b>10.4 Conditions to avoid</b>	: * P3311 electrode	No specific data.
	Reference solution	No specific data.
<b>10.5 Incompatible materials</b>	: * P3311 electrode	May react or be incompatible with oxidizing materials.
	Reference solution	May react or be incompatible with oxidizing materials.
<b>10.6 Hazardous decomposition products</b>	: * P3311 electrode	Under normal conditions of storage and use, hazardous decomposition products should not be produced.
	Reference solution	Under normal conditions of storage and use, hazardous decomposition products should not be produced.

## Section 11. Toxicological information

### 11.1 Information on toxicological effects

#### Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
<b>* P3311 electrode</b>				
Glycerol	LD50 Oral	Rat	12600 mg/kg	-
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-
Ethanediol	LD50 Oral	Rat	4700 mg/kg	-
Disodium hydrogenorthophosphate	LD50 Oral	Rat	17000 mg/kg	-
<b>Reference solution</b>				
Potassium chloride	LD50 Oral	Rat	2600 mg/kg	-

#### Irritation/Corrosion

## Section 11. Toxicological information

Product/ingredient name	Result	Species	Score	Exposure	Observation
<b>* P3311 electrode</b> Glycerol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Potassium chloride	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
Ethanediol	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	1 hours 100 milligrams	-
	Eyes - Moderate irritant	Rabbit	-	6 hours 1440 milligrams	-
Disodium hydrogenorthophosphate	Skin - Mild irritant	Rabbit	-	555 milligrams	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
<b>Reference solution</b> Potassium chloride	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-

### Sensitization

Not available.

### Mutagenicity

**Conclusion/Summary** : Not available.

### Carcinogenicity

**Conclusion/Summary** : Not available.

### Reproductive toxicity

**Conclusion/Summary** : Not available.

### Teratogenicity

**Conclusion/Summary** : Not available.

### Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
<input checked="" type="checkbox"/> <b>P3311 electrode</b> Ethanediol	Category 2 Category 3	Oral Not applicable.	kidneys Respiratory tract irritation

### Specific target organ toxicity (repeated exposure)

Not available.

### Aspiration hazard

Not available.

**Information on the likely routes of exposure** : \* P3311 electrode  
Reference solution

Routes of entry anticipated: Oral, Dermal, Inhalation.  
Routes of entry anticipated: Oral, Dermal, Inhalation.

## Section 11. Toxicological information

### Potential acute health effects

<b>Eye contact</b>	: *P3311 electrode Reference solution	Causes serious eye irritation. Causes eye irritation.
<b>Inhalation</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Skin contact</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Ingestion</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.

### Symptoms related to the physical, chemical and toxicological characteristics

<b>Eye contact</b>	: *P3311 electrode  Reference solution	Adverse symptoms may include the following: pain or irritation watering redness Adverse symptoms may include the following: irritation watering redness
<b>Inhalation</b>	: * P3311 electrode Reference solution	No specific data. No specific data.
<b>Skin contact</b>	: * P3311 electrode Reference solution	No specific data. No specific data.
<b>Ingestion</b>	: * P3311 electrode Reference solution	No specific data. No specific data.

### Delayed and immediate effects and also chronic effects from short and long term exposure

#### Short term exposure

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

#### Long term exposure

<b>Potential immediate effects</b>	: Not available.
<b>Potential delayed effects</b>	: Not available.

#### Potential chronic health effects

<b>General</b>	: *P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Carcinogenicity</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Mutagenicity</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Teratogenicity</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Developmental effects</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.
<b>Fertility effects</b>	: * P3311 electrode Reference solution	No known significant effects or critical hazards. No known significant effects or critical hazards.

### Numerical measures of toxicity

#### Acute toxicity estimates

## Section 11. Toxicological information

Route	ATE value
<b>P3311 electrode</b> Oral	10258.8 mg/kg
<b>Reference solution</b> Oral	11158.8 mg/kg

## Section 12. Ecological information

### 12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
<b>P3311 electrode</b> Glycerol Potassium chloride	Acute LC50 54000 mg/l Fresh water Acute EC50 1337000 µg/l Fresh water Acute EC50 9.24 g/L Fresh water	Fish - Oncorhynchus mykiss Algae - Navicula seminulum Algae - Desmodesmus subspicatus	96 hours 96 hours 72 hours
Ethanediol	Acute EC50 141460 µg/l Fresh water Acute LC50 12.92 mg/l Fresh water	Daphnia - Daphnia magna Crustaceans - Pseudosida ramosa - Neonate	48 hours 48 hours
Disodium hydrogenorthophosphate	Acute LC50 880 mg/l Fresh water Acute LC50 6900000 µg/l Fresh water	Fish - Pimephales promelas Crustaceans - Ceriodaphnia dubia - Neonate	96 hours 48 hours
<b>Reference solution</b> Potassium chloride	Acute LC50 41000000 µg/l Fresh water Acute LC50 8050000 µg/l Fresh water Acute LC50 3580000 µg/l Fresh water	Daphnia - Daphnia magna - Neonate Fish - Pimephales promelas Daphnia - Daphnia magna	48 hours 96 hours 48 hours
	Acute EC50 1337000 µg/l Fresh water Acute EC50 9.24 g/L Fresh water	Algae - Navicula seminulum Algae - Desmodesmus subspicatus	96 hours 72 hours
	Acute EC50 141460 µg/l Fresh water Acute LC50 12.92 mg/l Fresh water	Daphnia - Daphnia magna Crustaceans - Pseudosida ramosa - Neonate	48 hours 48 hours
	Acute LC50 880 mg/l Fresh water	Fish - Pimephales promelas	96 hours

### 12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
<b>P3311 electrode</b> Glycerol	301D Ready Biodegradability - Closed Bottle Test	93 % - 30 days	-	-
Ethanediol	OECD 301C Ready Biodegradability - Modified MITI Test (I)	90 to 100 % - 10 days	-	-

## Section 12. Ecological information

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
*P3311 electrode			
Potassium chloride	-	-	Readily
Ethenediol	-	-	Readily
<b>Reference solution</b>			
Potassium chloride	-	-	Readily

### 12.3 Bioaccumulative potential

Product/ingredient name	LogP <sub>ow</sub>	BCF	Potential
* P3311 electrode			
Glycerol	-1.76	-	low
Potassium chloride	-0.46	-	low
Ethenediol	-1.36	-	low
Disodium hydrogenorthophosphate	-5.8	-	low
<b>Reference solution</b>			
Potassium chloride	-0.46	-	low

### 12.4 Mobility in soil

**Soil/water partition coefficient (K<sub>oc</sub>)** : Not available.

**12.5 Other adverse effects** : No known significant effects or critical hazards.

## Section 13. Disposal considerations

### 13.1 Waste treatment methods

**Disposal methods** : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.









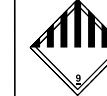

**Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.**

**The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.**

**Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.**

## Section 14. Transport information

This Safety Data Sheet is written based on the encapsulated substance or mixture in this article. Since the hazardous ingredient is encapsulated, the risk of exposure by inhalation, ingestion, skin contact and eyes contact is minimum.

	DOT Classification	TDG Classification	Mexico Classification	IMDG	IATA
UN number	UN3082	UN3082	UN3082	UN3082	UN3082
UN proper shipping name	Environmentally hazardous substance, liquid, n.o.s.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	SUBSTANCIA LIQUIDA POTENCIALMENTE PELIGROSA PARA EL MEDIO AMBIENTE, N.E. P.	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S.	Environmentally hazardous substance, liquid, n. o.s.
Transport hazard class(es)	9  	9  	9  	9  	9  
Packing group	III	III	III	III	III
Environmental hazards	Yes.	Yes.	Yes.	Yes.	Yes.

### Additional information

#### DOT Classification

- Non-bulk packages of this product are not regulated as hazardous materials unless transported by inland waterway. This product is not regulated as a hazardous material when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of §§ 173.24 and 173.24a.

**Limited quantity** Yes.

**Packaging instruction** Exceptions: 155. Non-bulk: 203. Bulk: 241.

**Special provisions** 8, 146, 173, 335, IB3, T4, TP1, TP29

#### TDG Classification

- Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.43-2.45 (Class 9), 2.7 (Marine pollutant mark). Non-bulk packages of this product are not regulated as dangerous goods when transported by road or rail.

**Explosive Limit and Limited Quantity Index** 5

**Special provisions** 16, 99

#### Mexico Classification

- The environmentally hazardous substance mark is not required when transported in sizes of ≤5 L or ≤5 kg.

**Special provisions** 274, 331, 335

#### IMDG

- This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 4.1.1.1, 4.1.1.2 and 4.1.1.4 to 4.1.1.8.

**Emergency schedules** F-A, S-F

**Special provisions** 274, 335, 969

#### IATA

- This product is not regulated as a dangerous good when transported in sizes of ≤5 L or ≤5 kg, provided the packagings meet the general provisions of 5.0.2.4.1, 5.0.2.6.1.1 and 5.0.2.8.

**Quantity limitation** Passenger and Cargo Aircraft: 450 L. Packaging instructions: 964.

Cargo Aircraft Only: 450 L. Packaging instructions: 964. Limited Quantities - Passenger Aircraft: 30 kg. Packaging instructions: Y964.

**Special provisions** A97, A158, A197



## Section 14. Transport information

**Special precautions for user** : **Transport within user's premises**: always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

**Transport in bulk according to Annex II of MARPOL and the IBC Code** : Not available.

## Section 15. Regulatory information

### 15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

**U.S. Federal regulations** : **TSCA 8(a) CDR Exempt/Partial exemption**: Not determined  
**Clean Water Act (CWA) 307**: Silver chloride  
**Clean Water Act (CWA) 311**: Disodium hydrogenorthophosphate

**Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs)** : Listed

**Clean Air Act Section 602 Class I Substances** : Not listed

**Clean Air Act Section 602 Class II Substances** : Not listed

**DEA List I Chemicals (Precursor Chemicals)** : Not listed

**DEA List II Chemicals (Essential Chemicals)** : Not listed

#### SARA 302/304

#### Composition/information on ingredients

No products were found.


**SARA 304 RQ** : Not applicable.

#### SARA 311/312

**Classification** :  P3311 electrode  
Reference solution

EYE IRRITATION - Category 2A  
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (kidneys) - Category 2  
EYE IRRITATION - Category 2B

#### Composition/information on ingredients

Name	%	Classification
 <b>P3311 electrode</b>		
Glycerol	≥10 - ≤25	EYE IRRITATION - Category 2A
Potassium chloride	≤10	EYE IRRITATION - Category 2A
Ethanediol	≤5	ACUTE TOXICITY (oral) - Category 4 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (kidneys) (oral) - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
Silver chloride	≤3	CORROSIVE TO METALS - Category 1
Disodium hydrogenorthophosphate	≤3	EYE IRRITATION - Category 2A
<b>Reference solution</b>		EYE IRRITATION - Category 2A

## Section 15. Regulatory information

Potassium chloride	≥10 - ≤25	
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### SARA 313


	Product name	CAS number	%
Form R - Reporting requirements	* P3311 electrode		
	Ethanediol	107-21-1	≤5
	Silver chloride	7783-90-6	≤3
Supplier notification	* P3311 electrode		
	Ethanediol	107-21-1	≤5
	Silver chloride	7783-90-6	≤3

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

### State regulations

- Massachusetts** : The following components are listed: GLYCERINE MIST; ETHYLENE GLYCOL; 1, 2-DIHYDROXYETHANE
- New York** : The following components are listed: Ethylene glycol
- New Jersey** : The following components are listed: GLYCERIN; 1,2,3-PROPANETRIOL; ETHYLENE GLYCOL; 1,2-ETHANEDIOL
- Pennsylvania** : The following components are listed: 1,2,3-PROPANETRIOL; 1,2-ETHANEDIOL

### California Prop. 65

 **WARNING:** This product can expose you to Ethylene Glycol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to [www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov).

Ingredient name	No significant risk level	Maximum acceptable dosage level
*P3311 electrode Ethylene Glycol	-	Yes.

### International regulations

#### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

#### Montreal Protocol (Annexes A, B, C, E)

Not listed.

#### Stockholm Convention on Persistent Organic Pollutants

Not listed.

#### Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

#### UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

### Inventory list

- Australia** : All components are listed or exempted.
- Canada** : All components are listed or exempted.
- China** : All components are listed or exempted.
- Europe** : All components are listed or exempted.
- Japan** : **Japan inventory (ENCS):** All components are listed or exempted.  
**Japan inventory (ISHL):** All components are listed or exempted.

## Section 15. Regulatory information

Malaysia	: <input checked="" type="checkbox"/> Not determined.
New Zealand	: All components are listed or exempted.
Philippines	: All components are listed or exempted.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: <input checked="" type="checkbox"/> Not determined.
Turkey	: Not determined.
United States	: All components are listed or exempted.
Viet Nam	: <input checked="" type="checkbox"/> Not determined.

## Section 16. Other information

### History

Date of issue	: 04/30/2018
Date of previous issue	: 07/26/2016
Version	: 4

### Procedure used to derive the classification

Classification	Justification
<input checked="" type="checkbox"/> <b>P3311 electrode</b> EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (kidneys) - Category 2	Calculation method Calculation method
<b>Reference solution</b> EYE IRRITATION - Category 2B	Calculation method

Indicates information that has changed from previously issued version.

### Notice to reader

**Disclaimer:** The information contained in this document is based on Agilent's state of knowledge at the time of preparation. No warranty as to its accurateness, completeness or suitability for a particular purpose is expressed or implied.

**Note \*** : \* This product is considered an article. This Safety Data Sheet is written based on the encapsulated substance or mixture in this article. This article, when used under reasonable conditions and in accordance with the directions for use, should not present a health hazard. The substance or mixture is encapsulated in the article. Only if released due to use or processing of the article in a manner not in accordance with the product's directions for use it may present potential health and safety hazards.