SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product No 14774
Product name Chloroquine
Reach registration number This substance/mixture contains only ingredients which have been registered, or are exempt from registration, according to Regulation (EC) No. 1907/2006.

Contains

Formula C_{18}H_{26}ClN_{3}2H_{2}O_{4}P
Molecular Weight 515.92 g/mol

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

Identified uses For research use only

1.3. Details of the supplier of the safety data sheet

Importer (Applicable in EU only) Cell Signaling Technology Europe B.V.
Schuttersveld 2
2316 ZA Leiden
The Netherlands
TEL: +31 (0)71 7200 200
FAX: +31 (0)71 891 0098
Website www.cellsignal.com
E-mail Address info@cellsignal.eu

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

1.4. Emergency telephone number

CHEMTREC 24 hours a day, 7 days a week, 365 days a year
+1 703 527 3887 (INTERNATIONAL) +1 800 424 9300 (NORTH AMERICA)
Europe 112

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Regulation (EC) No. 1272/2008

<table>
<thead>
<tr>
<th>Classification</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute oral toxicity</td>
<td>4 - (H302)</td>
</tr>
<tr>
<td>Reproductive toxicity</td>
<td>1A - (H360)</td>
</tr>
<tr>
<td>Specific target organ toxicity - repeated exposure (STOT RE)</td>
<td>2 - (H373)</td>
</tr>
</tbody>
</table>

For the full text of the H-phrases & EUH-phrases mentioned in this Section, see Section 16
2.2. Label elements

Signal word
Danger

Hazard statement(s)
H360 - May damage fertility or the unborn child
H302 - Harmful if swallowed
H373 - May cause damage to organs through prolonged or repeated exposure

Precautionary statement(s)
P201 - Obtain special instructions before use
P260 - Do not breathe dust/fume/gas/mist/vapors/spray
P264 - Wash face, hands and any exposed skin thoroughly after handling
P281 - Use personal protective equipment as required
P301 + P312 - IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
P308 + P313 - IF exposed or concerned: Get medical advice/attention

2.3. Other hazards
None under normal use conditions.

SECTION 3: Composition/information on ingredients

3.1 Substances

Synonyms
Chloroquine diphosphate;
1,4-pentanediame, N(4)-(7-chloro-4-quinoliny)-N(1),N(1)-diethyl-, phosphate (1:2);
7-Chloro-4-(4-diethylamino-1-methylbutyl-amino)-quinoline, diphosphate;
chloroquine bis(dihydrogenphosphate) dihydrate.

Formula
C₁₈H₂₆ClN₃₂H₃O₄P

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>CAS No</th>
<th>Weight %</th>
<th>EC No</th>
<th>Classification (1272/2008)</th>
<th>REACH Registration Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>chloroquine bis(phosphate)</td>
<td>50-63-5</td>
<td>100</td>
<td>200-055-2</td>
<td>Acute Tox. 4 (H302) Repr. 1A (H302) STOT RE 2 (H373)</td>
<td>no data available</td>
</tr>
</tbody>
</table>

For the full text of the R-phrases mentioned in this Section, see Section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

General advice
If symptoms persist, call a physician. Show this safety data sheet to the doctor in attendance. Do not breathe dust/fume/gas/mist/vapors/spray.

Inhalation
Move to fresh air. Consult a physician. If not breathing, give artificial respiration.

Skin contact
Consult a physician if necessary. Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes.

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

Rinse mouth. Drink plenty of water. If symptoms persist, call a physician. Do NOT induce vomiting. Never give anything by mouth to an unconscious person.

**Protection of first-aiders**

Use personal protective equipment.

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

Toxic symptoms can occur within minutes. These consist of headache, drowsiness, visual disturbances, nausea and vomiting, cardiovascular collapse, shock and convulsions followed by sudden and early respiratory and cardiac arrest.

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

Notes to physician

Treat symptomatically. Early treatment with diazepam (2 mg/kg over 30 min), intubation with artificial ventilation and adrenaline (0.25 ug/kg/min with 0.25 ug/kg/min increments as needed) may improve the prognosis of patients of severe chloroquine poisoning.

---

**SECTION 5: Firefighting measures**

**5.1. Extinguishing media**

**Suitable Extinguishing Media**

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

**Unsuitable Extinguishing Media**

No information available.

**5.2. Special hazards arising from the substance or mixture**

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

**5.3. Advice for firefighters**

Wear self-contained breathing apparatus and protective suit. Use personal protective equipment.

---

**SECTION 6: Accidental release measures**

**6.1. Personal precautions, protective equipment and emergency procedures**

For non-emergency personnel

Evacuate personnel to safe areas. Ensure adequate ventilation.

For emergency responders

Use personal protection recommended in Section 8.

**6.2. Environmental precautions**

Do not flush into surface water or sanitary sewer system.

**6.3. 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**

Use personal protective equipment. Cover powder spill with plastic sheet or tarp to minimize spreading and keep powder dry. Take up mechanically, placing in appropriate containers for disposal. Avoid dust formation. Clean contaminated surface thoroughly.

**6.4. Reference to other sections**

See Sections 8 & 13 for additional information.

---

**SECTION 7: Handling and storage**

**7.1. Precautions for safe handling**

Avoid contact with skin, eyes and clothing. Wear personal protective equipment. Prevent the formation of vapors, mists and aerosols. Do not eat, drink or smoke when using this product. Handle in accordance with good industrial hygiene and safety practice.
7.2. Conditions for safe storage, including any incompatibilities

Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children.

7.3. Specific end use(s)

Use as a laboratory reagent.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

8.2. Exposure controls

Appropriate engineering controls
Showers, eyewash stations, and ventilation systems.

Individual protection measures, such as personal protective equipment
Eye/face protection Tightly fitting safety goggles.
Skin protection
   Hand protection Impervious gloves.
   Other Wear suitable protective clothing.
Respiratory protection In case of inadequate ventilation wear respiratory protection.

Environmental Exposure Controls
Do not allow material to contaminate ground water system.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
<th>Remarks • Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>Solid</td>
<td></td>
</tr>
<tr>
<td>Appearance</td>
<td>Crystalline Powder</td>
<td></td>
</tr>
<tr>
<td>Color</td>
<td>White to off-white</td>
<td></td>
</tr>
<tr>
<td>Odor</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Initial boiling point and boiling range</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Flash point</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Upper flammability limit</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Lower flammability limit</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Vapor density</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Relative density</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Solubility</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Autoignition temperature</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Viscosity</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No information available</td>
<td></td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No information available</td>
<td></td>
</tr>
</tbody>
</table>
9.2. Other information

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Softening point</td>
<td>No information available</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>515.92 g/mol</td>
</tr>
<tr>
<td>Solubility in other solvents</td>
<td>No information available</td>
</tr>
<tr>
<td>VOC content</td>
<td>No information available</td>
</tr>
<tr>
<td>Density</td>
<td>No information available</td>
</tr>
</tbody>
</table>

SECTION 10: Stability and reactivity

10.1. Reactivity
No information available.

10.2. Chemical stability
Stable under normal conditions.

10.3. Possibility of hazardous reactions

<table>
<thead>
<tr>
<th>Hazardous polymerization</th>
<th>Hazardous polymerization does not occur.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hazardous reactions</td>
<td>None under normal processing.</td>
</tr>
</tbody>
</table>

10.4. Conditions to avoid
Extremes of temperature and direct sunlight.

10.5. Incompatible materials
No information available.

10.6. Hazardous decomposition products
None under normal use conditions.

SECTION 11: Toxicological information

11.1. 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.

Acute Toxicity
Without treatment, a dose of 4 grams is usually lethal in adults (fatalities have been reported after ingestion of 2.25 - 3 grams). In children; fatalities have been reported after ingestion of 0.3 - 1 grams.

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>LD50 Oral (Rat)</th>
<th>LD50 Dermal</th>
<th>LC50 Inhalation</th>
</tr>
</thead>
<tbody>
<tr>
<td>chloroquine bis(phosphate)</td>
<td>623 mg/kg</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Information on likely routes of exposure

<table>
<thead>
<tr>
<th>Route</th>
<th>Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inhalation</td>
<td>There is no data available for this product.</td>
</tr>
<tr>
<td>Eye contact</td>
<td>There is no data available for this product.</td>
</tr>
<tr>
<td>Skin contact</td>
<td>There is no data available for this product.</td>
</tr>
<tr>
<td>Ingestion</td>
<td>May be fatal if swallowed.</td>
</tr>
</tbody>
</table>

Symptoms
Toxic symptoms can occur within minutes. These consist of headache, drowsiness, visual disturbances, nausea and vomiting, cardiovascular collapse, shock and convulsions followed by sudden and early respiratory and cardiac arrest.

Skin corrosion/irritation
No information available.

Serious eye damage/eye irritation
No information available.
14774 Chloroquine

Sensitization
No information available.

Mutagenic effects
No information available.

Carcinogenic effects
No information available.

Reproductive toxicity
Radioactively tagged chloroquine administered intravenously to pregnant pigmented CBA mice passed rapidly across the placenta and accumulated selectively in the melanin structures of the fetal eyes. It was retained in the ocular tissues for five months after the drug had been eliminated from the rest of the body.

STOT - single exposure
No information available.

STOT - repeated exposure
May cause disorder and damage to the: Cardiovascular system, Central nervous system, Eyes, Ears.

Neurological effects
Several cases of acute psychosis ascribed to chloroquine have been reported. Symptoms included seizures preceded by blurring of vision, confusion, agitation, aggressiveness, personality changes, psychotic symptoms and depression.

Aspiration Hazard
No information available.

Other information
No information available.

SECTION 12: Ecological information

12.1. Toxicity
No information available.

12.2. Persistence and degradability
No information available.

12.3. Bioaccumulative potential

<table>
<thead>
<tr>
<th>Bioaccumulation</th>
<th>No information available.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bioconcentration factor (BCF)</td>
<td>No information available.</td>
</tr>
</tbody>
</table>

12.4. Mobility in soil
No information available.

12.5. Results of PBT and vPvB assessment
No information available.

12.6. Other adverse effects
No information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

<table>
<thead>
<tr>
<th>Waste from residues / unused products</th>
<th>Dispose of in accordance with local regulations.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contaminated packaging</td>
<td>Empty containers should be taken to an approved waste handling site for recycling or disposal.</td>
</tr>
<tr>
<td>Other information</td>
<td>According to the European Waste Catalogue, Waste Codes are not product specific, but application specific. Waste codes should be assigned by the user based on the application for which the product was used.</td>
</tr>
</tbody>
</table>

SECTION 14: Transport information

14.1 UN number
Not regulated

14.2 UN proper shipping name
Not regulated
SECTION 15: Regulatory information

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

Candidate List of Substances of Very High Concern for Authorization Information

This product does not contain Substances of Very High Concern (SVHC).

SEVESO Directive Information

This product does not contain substances identified in the SEVESO Directive.

International inventories

<table>
<thead>
<tr>
<th>International inventories</th>
<th>Complies</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSCA 8(b)</td>
<td>-</td>
</tr>
<tr>
<td>DSL/NDSL</td>
<td>Complies</td>
</tr>
<tr>
<td>EINECS/ELINCS</td>
<td>Complies</td>
</tr>
<tr>
<td>ENCS</td>
<td>-</td>
</tr>
<tr>
<td>IECSC</td>
<td>Complies</td>
</tr>
<tr>
<td>KECL</td>
<td>-</td>
</tr>
<tr>
<td>PICCS</td>
<td>Complies</td>
</tr>
<tr>
<td>AICS</td>
<td>Complies</td>
</tr>
</tbody>
</table>

International inventories legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances
AICS - Australian Inventory of Chemical Substances

15.2. Chemical safety assessment

For this substance a chemical safety assessment has not been carried out

SECTION 16: Other information

Full text of H-Statements referred to under Sections 2 and 3
14774 Chloroquine

H302 - Harmful if swallowed
H360 - May damage fertility or the unborn child
H373 - May cause damage to organs through prolonged or repeated exposure

Classification procedure: Expert judgment and weight of evidence determination.
Issuing Date: 2014-12-03
Revision Date: 2017-09-12

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.