

ALFAAJ67593

## Tyrode's Solution

### SECTION 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

|   |  |
|---|--|
| <b>产品说明:</b><br><b>Product Description:</b>           | <b>Tyrode's Solution</b><br><b>Tyrode's Solution</b>   |
| <b>Cat No. :</b>                                      | <b>J67593</b>  |
| <b>Supplier</b>                                       | Avocado Research Chemicals Ltd.<br>(Part of Thermo Fisher Scientific)<br>Shore Road, Heysham<br>Lancashire, LA3 2XY,<br>United Kingdom<br>Office Tel: +44 (0) 1524 850506<br>Office Fax: +44 (0) 1524 850608   |
| <b>Emergency Telephone Number</b>                     | For information <b>US</b> call: 001-800-227-6701 / <b>Europe</b> call: +32 14 57 52 11<br>Emergency Number <b>US</b> :001-201-796-7100 / <b>Europe</b> : +32 14 57 52 99<br><b>CHEMTREC</b> Tel. No. <b>US</b> :001-800-424-9300 / <b>Europe</b> :001-703-527-3887 |
| <b>E-mail address</b>                                 | begel.sdsdesk@thermofisher.com   |
| <b>Recommended Use</b><br><b>Uses advised against</b> | Laboratory chemicals.<br>No Information available  |

### SECTION 2. HAZARD IDENTIFICATION

|  |                                |   |
|--|--------------------------------|---|
| <b>Physical State</b><br>Liquid  | <b>Appearance</b><br>Colorless | <b>Odor</b><br>No information available |
| <b>Emergency Overview</b><br>The product contains no substances which at their given concentration are considered to be hazardous to health. |                                |   |

#### Classification of the substance or mixture

Based on available data, the classification criteria are not met

#### Label Elements

None required

#### **Physical and Chemical Hazards**

None identified.

#### **Health Hazards**

The product contains no substances which at their given concentration are considered to be hazardous to health.

#### **Environmental hazards**

Contains no substances known to be hazardous to the environment or not degradable in waste water treatment plants. Will likely be mobile in the environment due to its water solubility. The product is water soluble, and may spread in water systems.

This product does not contain any known or suspected endocrine disruptors.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

| Component                | CAS No     | Weight % |
|--------------------------|------------|----------|
| Water                    | 7732-18-5  | 98.76    |
| Sodium chloride          | 7647-14-5  | 0.812    |
| Glucose                  | 50-99-7    | 0.216    |
| Sodium bicarbonate       | 144-55-8   | 0.143    |
| Calcium chloride         | 10043-52-4 | 0.033    |
| Potassium chloride       | 7447-40-7  | 0.022    |
| Magnesium chloride       | 7786-30-3  | 0.01     |
| Sodium phosphate dibasic | 7558-79-4  | 0.003    |

## SECTION 4. FIRST AID MEASURES

**Eye Contact**

Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Get medical attention.

**Skin Contact**

Wash off immediately with plenty of water for at least 15 minutes. Get medical attention immediately if symptoms occur.

**Inhalation**

Remove to fresh air. Get medical attention immediately if symptoms occur.

**Ingestion**

Clean mouth with water and drink afterwards plenty of water. Get medical attention if symptoms occur.

**Most important symptoms and effects**

None reasonably foreseeable.

**Self-Protection of the First Aider**

No special precautions required.

**Notes to Physician**

Treat symptomatically.

## SECTION 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

Not combustible.

**Extinguishing media which must not be used for safety reasons**

No information available.

**Specific Hazards Arising from the Chemical**

None reasonably foreseeable.

**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**

Ensure adequate ventilation. Use personal protective equipment as required.

**Environmental Precautions**

## Tyrode's Solution

Should not be released into the environment. See Section 12 for additional Ecological Information.

**Methods for Containment and Clean Up**

Sweep up and shovel into suitable containers for disposal.

Refer to protective measures listed in Sections 8 and 13.

**SECTION 7. HANDLING AND STORAGE****Handling**

Wear personal protective equipment/face protection. Ensure adequate ventilation. Avoid contact with skin, eyes or clothing. Avoid ingestion and inhalation.

**Storage**

Keep container tightly closed in a dry and well-ventilated place.

**Specific Use(s)**

Use in laboratories

**SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION****Control Parameters****Exposure Controls****Engineering Measures**

None under normal use conditions.

**Personal protective equipment****Eye Protection**

Wear safety glasses with side shields (or goggles) (European standard - EN 166)

**Hand Protection**

Protective gloves

| Glove material | Breakthrough time | Glove thickness | EU standard | Glove comments        |
|----------------|-------------------|-----------------|-------------|-----------------------|
| Natural rubber | See manufacturers | -               | EN 374      | (minimum requirement) |
| Nitrile rubber | recommendations   |                 |             |                       |
| Neoprene       |                   |                 |             |                       |
| PVC            |                   |                 |             |                       |

Inspect gloves before use.

Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. (Refer to manufacturer/supplier for information)

Ensure gloves are suitable for the task: Chemical compatibility, Dexterity, Operational conditions, User susceptibility, e.g. sensitisation effects, also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion.

Remove gloves with care avoiding skin contamination.

**Skin and body protection**

Long sleeved clothing

**Respiratory Protection**

No protective equipment is needed under normal use conditions.

**Large scale/emergency use**

Use a NIOSH/MSHA or European Standard EN 136 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced

**Recommended Filter type:** Particle filter

**Small scale/Laboratory use**

Maintain adequate ventilation

**Hygiene Measures** Handle in accordance with good industrial hygiene and safety practice.

**Environmental exposure controls** No information available.

## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

|  |                          |  |
|--|--------------------------|--|
| <b>Appearance</b>                              | Colorless                |  |
| <b>Physical State</b>                          | Liquid                   |  |
| <b>Odor</b>                                    | No information available |  |
| <b>Odor Threshold</b>                          | No data available        |  |
| <b>pH</b>                                      | No information available |  |
| <b>Melting Point/Range</b>                     | No data available        |  |
| <b>Softening Point</b>                         | No data available        |  |
| <b>Boiling Point/Range</b>                     | No information available |  |
| <b>Flash Point</b>                             | No information available | <b>Method -</b> No information available |
| <b>Evaporation Rate</b>                        | No data available        |  |
| <b>Flammability (solid,gas)</b>                | Not applicable           | Liquid                                   |
| <b>Explosion Limits</b>                        | No data available        |  |
| <b>Vapor Pressure</b>                          | No data available        |  |
| <b>Vapor Density</b>                           | No data available        | (Air = 1.0)                              |
| <b>Specific Gravity / Density</b>              | No data available        |  |
| <b>Bulk Density</b>                            | Not applicable           | Liquid                                   |
| <b>Water Solubility</b>                        | Miscible                 |  |
| <b>Solubility in other solvents</b>            | No information available |  |
| <b>Partition Coefficient (n-octanol/water)</b> |                          |  |
| <b>Autoignition Temperature</b>                | No data available        |  |
| <b>Decomposition Temperature</b>               | No data available        |  |
| <b>Viscosity</b>                               | No data available        |  |
| <b>Explosive Properties</b>                    | No information available |  |
| <b>Oxidizing Properties</b>                    | No information available |  |

## SECTION 10. STABILITY AND REACTIVITY

|                                 |                                 |
|---------------------------------|---------------------------------|
| <b>Stability</b>                | Stable under normal conditions. |
| <b>Hazardous Reactions</b>      | None under normal processing.   |
| <b>Hazardous Polymerization</b> | No information available.       |
| <b>Conditions to Avoid</b>      | None known.                     |
| <b>Materials to avoid</b>       | No information available.       |

**Hazardous Decomposition Products** Hydrogen chloride. Oxides of phosphorus. Calcium oxides. Potassium oxides. Sodium oxides.

## SECTION 11. TOXICOLOGICAL INFORMATION

### Product Information

(a) acute toxicity;  
Toxicology data for the components

| Component | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|-----------|-----------|-------------|-----------------|
| Water     | -         | -           | -               |

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|                          |                           |                               |                            |
|--------------------------|---------------------------|-------------------------------|----------------------------|
| Sodium chloride          | LD50 = 3 g/kg ( Rat )     | LD50 > 10000 mg/kg ( Rabbit ) | LC50 > 42 mg/L ( Rat ) 1 h |
| Glucose                  | 25.8 g/kg ( Rat )         |                               |                            |
| Sodium bicarbonate       | LD50 = 4220 mg/kg ( Rat ) |                               |                            |
| Calcium chloride         | 2301 mg/kg ( Rat )        | LD50 > 5000 mg/kg ( Rabbit )  |                            |
| Potassium chloride       | LD50 = 2600 mg/kg ( Rat ) |                               |                            |
| Magnesium chloride       | LD50 = 2800 mg/kg ( Rat ) | LD50 > 2000 mg/kg ( Rat )     |                            |
| Sodium phosphate dibasic | LD50 = 17 g/kg ( Rat )    |                               |                            |

(b) skin corrosion/irritation; No data available

(c) serious eye damage/irritation; No data available

(d) respiratory or skin sensitization;

Respiratory No data available

Skin No data available

(e) germ cell mutagenicity; No data available

(f) carcinogenicity; No data available

There are no known carcinogenic chemicals in this product

(g) reproductive toxicity; No data available

(h) STOT-single exposure; No data available

(i) STOT-repeated exposure; No data available

Target Organs No information available.

(j) aspiration hazard; No data available

Symptoms / effects, both acute and delayed No information available

## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity effects

Contains no substances known to be hazardous to the environment or that are not degradable in waste water treatment plants.

| Component          | Freshwater Fish  | Water Flea          | Freshwater Algae    | Microtox |
|--------------------|--|---------------------|---------------------|----------|
| Sodium chloride    | Pimephals prome:<br>LC50: 7650 mg/L/96h                        | EC50: 1000 mg/L/48h |                     |          |
| Sodium bicarbonate | LC50: 8250 - 9000<br>mg/L, 96h static<br>(Lepomis macrochirus) | EC50: 2350 mg/L/48h | EC50: 650 mg/L/120h | -        |
| Calcium chloride   | Lepomis macrochirus:<br>LC50: 10650 mg/L/96h                   | EC50: 52 mg/L/48h   |                     |          |
| Potassium chloride | Lepomis macrochirus:<br>LC50: 1060 mg/L /96h                   | EC50: 825 mg/L/48h  | EC50: 2500 mg/L/72h |          |

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|                    |   |                      |                     |   |
|--------------------|---|----------------------|---------------------|---|
|                    | Pimephales promelas:<br>LC50: 750 - 1020 mg/L<br>/96h |                      |                     |   |
| Magnesium chloride | Pimephales promelas:<br>EC50: 2.12 g/L:96H            | EC50 : 1400 mg/L/24h | EC50: 2200 mg/L/72h | EC50 Pseudomonas<br>putida: EC50:26,14<br>g/L/h<br>Photobacterium<br>phosphoreum: EC50:<br>36,3 mg/L/30 min<br>Photobacterium<br>phosphoreum: EC50:<br>77,2 mg/L/24 h |

**Persistence and Degradability****Persistence**

Miscible with water, Persistence is unlikely, based on information available.

**Bioaccumulative Potential**

Bioaccumulation is unlikely

**Mobility in soil**

The product is water soluble, and may spread in water systems Will likely be mobile in the environment due to its water solubility Highly mobile in soils

**Endocrine Disruptor Information**

This product does not contain any known or suspected endocrine disruptors

**Persistent Organic Pollutant**

This product does not contain any known or suspected substance

**Ozone Depletion Potential**

This product does not contain any known or suspected substance

**SECTION 13. DISPOSAL CONSIDERATIONS****Waste from Residues/Unused Products**

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. Consult local, regional, and national hazardous waste regulations to ensure complete and accurate classification.

**Contaminated Packaging**

Empty remaining contents. Dispose of in accordance with local regulations. Do not re-use empty containers.

**Other Information**

Waste codes should be assigned by the user based on the application for which the product was used.

**SECTION 14. TRANSPORT INFORMATION****Road and Rail Transport**

Not Regulated

**IMDG/IMO**

Not regulated

**IATA**

Not regulated

**Special Precautions for User**

No special precautions required

**SECTION 15. REGULATORY INFORMATION****International Inventories**

X = listed, China (IECSC), Europe (EINECS/ELINCS/NLP), U.S.A. (TSCA), Canada (DSL/NDSL), Philippines (PICCS), Japan (ENCS), Japan (ISHL), Australia (AICS), Korea (KECL).

**SAFETY DATA SHEET****Tyrode's Solution**

| Component                | The Inventory of Hazardous Chemicals (2015 Edition) | List of dangerous goods GB 12268 - 2012 | TCSI | IECSC | EINECS    | TSCA | DSL | PICCS | ENCS | ISHL | AICS | KECL     |
|--------------------------|---|---|------|-------|-----------|------|-----|-------|------|------|------|----------|
| Water                    | -   | -                                       | X    | X     | 231-791-2 | X    | X   | X     | X    |      | X    | KE-35400 |
| Sodium chloride          | -   | -                                       | X    | X     | 231-598-3 | X    | X   | X     | X    | X    | X    | KE-31387 |
| Glucose                  | -   | -                                       | X    | X     | 200-075-1 | X    | X   | X     | X    | X    | X    | KE-17727 |
| Sodium bicarbonate       | -   | -                                       | X    | X     | 205-633-8 | X    | X   | X     | X    | X    | X    | KE-31360 |
| Calcium chloride         | -   | -                                       | X    | X     | 233-140-8 | X    | X   | X     | X    | X    | X    | KE-04496 |
| Potassium chloride       | -   | -                                       | X    | X     | 231-211-8 | X    | X   | X     | X    | X    | X    | KE-29086 |
| Magnesium chloride       | -   | -                                       | X    | X     | 232-094-6 | X    | X   | X     | X    | X    | X    | KE-22691 |
| Sodium phosphate dibasic | -   | -                                       | X    | X     | 231-448-7 | X    | X   | X     | X    | X    | X    | KE-12344 |

**National Regulations****SECTION 16. OTHER INFORMATION****Prepared By**

Health, Safety and Environmental Department

**Revision Date**

09-May-2024

**Revision Summary**

New emergency telephone response service provider.

**Training Advice**

Chemical hazard awareness training, incorporating labelling, Safety Data Sheets (SDS), Personal Protective Equipment (PPE) and hygiene.

**Legend****CAS** - Chemical Abstracts Service**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**EINECS/ELINCS** - European Inventory of Existing Commercial Chemical Substances/EU List of Notified Chemical Substances**DSL/NDL** - Canadian Domestic Substances List/Non-Domestic Substances List**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**ENCS** - Japanese Existing and New Chemical Substances**IECSC** - Chinese Inventory of Existing Chemical Substances**AICS** - Australian Inventory of Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**NZIoC** - New Zealand Inventory of Chemicals**WEL** - Workplace Exposure Limit**TWA** - Time Weighted Average**ACGIH** - American Conference of Governmental Industrial Hygienists**IARC** - International Agency for Research on Cancer**DNEL** - Derived No Effect Level**PNEC** - Predicted No Effect Concentration**RPE** - Respiratory Protective Equipment**LD50** - Lethal Dose 50%**LC50** - Lethal Concentration 50%**EC50** - Effective Concentration 50%**NOEC** - No Observed Effect Concentration**POW** - Partition coefficient Octanol:Water**PBT** - Persistent, Bioaccumulative, Toxic**vPvB** - very Persistent, very Bioaccumulative**ICAO/IATA** - International Civil Aviation Organization/International Air Transport Association**IMO/IMDG** - International Maritime Organization/International Maritime Dangerous Goods Code**ADR** - European Agreement Concerning the International Carriage of Dangerous Goods by Road**MARPOL** - International Convention for the Prevention of Pollution from Ships**OECD** - Organisation for Economic Co-operation and Development**ATE** - Acute Toxicity Estimate**BCF** - Bioconcentration factor**VOC** - (Volatile Organic Compound)**Key literature references and sources for data**<https://echa.europa.eu/information-on-chemicals>

Suppliers safety data sheet, Chemadvisor - LOLI, Merck index, RTECS

**Physical hazards**

On basis of test data

**Health Hazards**

Calculation method

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Environmental hazards

Calculation method

**Disclaimer**

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**End of Safety Data Sheet**