

Murashige & Skoog Medium mod. No.4 (Micro and Macro elements, NH₄NO₃ Free)

Safety Data Sheet

according to Regulation (EU) 2015/830

Date of issue: 11/11/2016 Revision date 31/07/2018

M0238

Version: 2.0

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

1.1. Product identifier

Product form : Mixture
 Trade name : Murashige & Skoog Medium mod. No.4
 (Micro and Macro elements, NH₄NO₃ Free)
 Product code : M0238
 Product group : Raw material

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

1.2.1. Relevant identified uses

Main use category : Professional use
 Industrial/Professional use spec : For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

Manufacturer

Duchefa Biochemie B.V.
 A. Hofmanweg 71
 2031 BH Haarlem - The Netherlands
 T +31(0)23-5319093 - F +31(0)23-5318027
info@duchefa.nl

1.4. Emergency telephone number

Emergency number : Supplier contact information:
 +31(0)23-5319093 (M-F 09:00-17:00)
 +31(0)6-30109355 (outside office hours)

| Organisation/Company | Address | Comment |
|---|---|---|
| World Health Organization world directory of poison centres | http://apps.who.int/poisoncentres/ | Consult website for a local poison centre |

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Skin corrosion/irritation, Category 2 H315
 Serious eye damage/eye irritation, Category 2 H319
 Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation H335
 Hazardous to the aquatic environment — Chronic Hazard, Category 3 H412

Full text of H statements : see section 16

Adverse physicochemical, human health and environmental effects

No additional information available

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2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP)



GHS07

Signal word (CLP)

: Warning

Hazard statements (CLP)

: H315 - Causes skin irritation.
H319 - Causes serious eye irritation.
H335 - May cause respiratory irritation.
H412 - Harmful to aquatic life with long lasting effects.

Precautionary statements (CLP)

: P261 - Avoid breathing dust.
P273 - Avoid release to the environment
P302+P352 - IF ON SKIN: Wash with plenty of water.
P305+P351 - IF IN EYES: Rinse cautiously with water for several minutes.

Extra phrases

: Based on research by TNO in Rijswijk (The Netherlands), commissioned by Duchefa Biochemie B.V. in Haarlem, the medium has no oxidising or explosive properties. As such the substance is not classified as oxidizing (H272, GHS03).

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substances

Not applicable

3.2. Mixtures

| Name | Product identifier | % | Classification according to Regulation (EC) No. 1272/2008 [CLP] |
|---|---|--------|---|
| Potassium nitrate | (CAS-No.) 7757-79-1 (EC-No.) 231-818-8 | 71,64 | Ox. Sol. 2, H272 |
| Calcium chloride | (CAS-No.) 10043-52-4 (EC-No.) 233-140-8 (EC Index-No.) 017-013-00-2 | 12,52 | Eye Irrit. 2, H319 |
| Magnesium sulfate anhydrous | (CAS-No.) 7487-88-9 (EC-No.) 231-298-2 | 6,81 | Not classified |
| Potassium dihydrogenphosphate | (CAS-No.) 7778-77-0 (EC-No.) 231-913-4 | 6,41 | Not classified |
| Ethylenediaminetetraacetate ferric sodium | (CAS-No.) 15708-41-5 (EC-No.) 239-802-2 | 1,3838 | Not classified |
| Manganese sulfate monohydrate | (CAS-No.) 10034-96-5 (EC-No.) 232-089-9 (EC Index-No.) 025-003-00-4 | 0,6372 | Eye Dam. 1, H318 STOT RE 2, H373 Aquatic Chronic 2, H411 |

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| | | | |
|---|---|--------|---|
| Zinc sulphate | (CAS-No.) 7446-20-0 (EC-No.) 231-793-3 (EC Index-No.) 030-006-00-9 | 0,3243 | Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 |
| Boric acid substance listed as REACH Candidate | (CAS-No.) 10043-35-3 (EC-No.) 233-139-2 (EC Index-No.) 005-007-00-2 | 0,2338 | Repr. 1B, H360FD |
| Potassium iodide | (CAS-No.) 7681-11-0 (EC-No.) 231-659-4 | 0,0313 | Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 |
| Sodium molybdate dihydrate | (CAS-No.) 10102-40-6 (EC-No.) 231-551-7 | 0,0094 | Not classified |
| Cobalt(II) chloride substance listed as REACH Candidate (Cobalt dichloride) | (CAS-No.) 7646-79-9 (EC-No.) 231-589-4 (EC Index-No.) 027-004-00-5 | 0,0009 | Acute Tox. 4 (Oral), H302 Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1B, H350i Repr. 1B, H360F Aquatic Acute 1, H400 Aquatic Chronic 1, H410 |
| Copper sulphate | (CAS-No.) 7758-99-8 (EC-No.) 231-847-6 (EC Index-No.) 029-004-00-0 | 0,0009 | Acute Tox. 4 (Oral), H302 Skin Irrit. 2, H315 Eye Irrit. 2, H319 Aquatic Acute 1, H400 Aquatic Chronic 1, H410 |

Specific concentration limits:

| Name | Product identifier | Specific concentration limits |
|---------------------|---|-------------------------------|
| Boric acid | (CAS-No.) 10043-35-3 (EC-No.) 233-139-2 (EC Index-No.) 005-007-00-2 | (C >= 5,5) Repr. 1B, H360FD |
| Cobalt(II) chloride | (CAS-No.) 7646-79-9 (EC-No.) 231-589-4 (EC Index-No.) 027-004-00-5 | (C >= 0,01) Carc. 1B, H350i |

Full text of H-statements: see section 16

SECTION 4: First aid measures

4.1. Description of first aid measures

| | |
|---------------------------------------|--|
| First-aid measures general | : Seek medical attention if ill effect develops. |
| First-aid measures after inhalation | : Remove victim to fresh air. |
| First-aid measures after skin contact | : Wash skin with mild soap and water. |
| First-aid measures after eye contact | : Rinse with water. |
| First-aid measures after ingestion | : Rinse mouth. |

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

| | |
|-------------------------------------|---------------------------|
| Symptoms/effects after skin contact | : Causes skin irritation. |
| Symptoms/effects after eye contact | : Redness, pain. |

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

No additional information available

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media : Alcohol resistant foam.
Dry chemical powder.
Carbon dioxide (CO₂).
Water spray.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire : Under fire conditions, hazardous fumes will be present:
- CO_x
- NO_x
- SO_x.

5.3. Advice for firefighters

Firefighting instructions : Prevent fire fighting water from entering the environment.
Protection during firefighting : Wear proper protective equipment.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

General measures : Avoid raising powdered materials into airborne dust.

6.1.1. For non-emergency personnel

Emergency procedures : Wear suitable protective clothing.

6.1.2. For emergency responders

No additional information available

6.2. Environmental precautions

Prevent entry to sewers and public waters.

6.3. Methods and material for containment and cleaning up

Methods for cleaning up : Sweep up dry powder and dispose properly.

6.4. Reference to other sections

No additional information available

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Avoid dust formation. Handle in accordance with good industrial hygiene and safety procedures.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store at room temperature
Store in dry, well-ventilated area
Hygroscopic
Keep container tightly closed and dry.

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7.3. Specific end use(s)

For professional use only. Duchefa Biochemie B.V. products are intended only for "in vitro laboratory" research purposes.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Exposure controls

Hand protection:

| Type | Material | Permeation | Thickness (mm) | Standard |
|--------|----------------------|-------------------|----------------|----------|
| Gloves | Nitrile rubber (NBR) | 6 (> 480 minutes) | 0,11 | EN 374 |

Eye protection:

Safety glasses (to European standard EN 166 or equivalent)

Skin and body protection:

In case of possible repeated skin contact wear protective clothing

Respiratory protection:

Where excessive dust may result, wear approved mask. Type P2 (EN 143)

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

| | |
|--|-----------------------------|
| Physical state | : Solid |
| Appearance | : Powder. |
| Colour | : White to slightly yellow. |
| Odour | : Characteristic. Weak. |
| Odour threshold | : No data available |
| pH | : No data available |
| Relative evaporation rate (butylacetate=1) | : No data available |
| Melting point | : No data available |
| Freezing point | : No data available |
| Boiling point | : No data available |
| Flash point | : No data available |
| Auto-ignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Flammability (solid, gas) | : No data available |
| Vapour pressure | : No data available |
| Relative vapour density at 20 °C | : No data available |
| Relative density | : No data available |
| Solubility | : Readily soluble in water. |
| Log Pow | : No data available |
| Viscosity, kinematic | : No data available |
| Viscosity, dynamic | : No data available |

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| | |
|----------------------|---------------------|
| Explosive properties | : No data available |
| Oxidising properties | : No data available |
| Explosive limits | : No data available |

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Stable under normal conditions of storage, handling and use.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

No additional information available

10.4. Conditions to avoid

Moisture.

10.5. Incompatible materials

Strong oxidizers.

10.6. Hazardous decomposition products

Thermal decomposition generates :

- CO_x
- NO_x
- SO_x
- Phosphorus oxides.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

| | |
|-----------------------------------|-------------------------------------|
| Acute toxicity | : Not classified |
| Skin corrosion/irritation | : Causes skin irritation. |
| Serious eye damage/irritation | : Causes serious eye irritation. |
| Respiratory or skin sensitisation | : Not classified |
| Germ cell mutagenicity | : Not classified |
| Carcinogenicity | : Not classified |
| Reproductive toxicity | : Not classified |
| STOT-single exposure | : May cause respiratory irritation. |
| STOT-repeated exposure | : Not classified |
| Aspiration hazard | : Not classified |

SECTION 12: Ecological information

12.1. Toxicity

No additional information available

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12.2. Persistence and degradability

No additional information available

12.3. Bioaccumulative potential

No additional information available

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

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|--|---|
| Component | |
| Boric acid (10043-35-3) | This substance/mixture does not meet the PBT criteria of REACH regulation, annex XIII This substance/mixture does not meet the vPvB criteria of REACH regulation, annex XIII |

12.6. Other adverse effects

Additional information : Prevent entry to sewers and public waters. Avoid release to the environment

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose in a safe manner in accordance with local/national regulations. Avoid release to the environment.

SECTION 14: Transport information

In accordance with ADR / IATA / IMDG

| ADR | IMDG | IATA |
|---|---------------|---------------|
| 14.1. UN number | | |
| Not regulated | Not regulated | Not regulated |
| 14.2. UN proper shipping name | | |
| Not regulated | Not regulated | Not regulated |
| Not regulated | Not regulated | Not regulated |
| 14.3. Transport hazard class(es) | | |
| Not regulated | Not regulated | Not regulated |
| Not regulated | Not regulated | Not regulated |
| 14.4. Packing group | | |
| Not regulated | Not regulated | Not regulated |
| 14.5. Environmental hazards | | |
| Not regulated | Not regulated | Not regulated |
| No supplementary information available | | |

14.6. Special precautions for user

Overland transport

Not regulated

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- Transport by sea

Not regulated

- Air transport

Not regulated

14.7. Transport in bulk according to Annex II of Marpol and the IBC Code

Not applicable

SECTION 15: Regulatory information

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

15.1.1. EU-Regulations

Contains no REACH substances with Annex XVII restrictions

Contains a substance on the REACH candidate list in concentration $\geq 0.1\%$ or with a lower specific limit: Boric acid (EC 233-139-2, CAS 10043-35-3)

Contains no REACH Annex XIV substances

15.1.2. National regulations

Ensure all national/local regulations are observed.

Germany

Reference to AwSV

: Water hazard class (WGK) 1, low hazard to water (Classification according to AwSV, Annex 1)

12th Ordinance Implementing the Federal Immission Control Act - 12.BImSchV

: Is not subject of the 12. BImSchV (Hazardous Incident Ordinance)

Netherlands

SZW-lijst van kankerverwekkende stoffen

: Manganese sulfate monohydrate, Cobalt(II) chloride are listed

SZW-lijst van mutagene stoffen

: Manganese sulfate monohydrate is listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Borstvoeding

: None of the components are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Vruchtbaarheid

: Boric acid, Cobalt(II) chloride are listed

NIET-limitatieve lijst van voor de voortplanting giftige stoffen – Ontwikkeling

: Boric acid is listed

Denmark

Recommendations Danish Regulation

: Young people below the age of 18 years are not allowed to use the product
Pregnant/breastfeeding women working with the product must not be in direct contact with the product
The requirements from the Danish Working Environment Authorities regarding work with carcinogens must be followed during use and disposal

15.2. Chemical safety assessment

No additional information available

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SECTION 16: Other information

Indication of changes:

| | | | |
|-----|--------------------------------|-------|--------------------------|
| 2.2 | Hazard statements (CLP) | Added | H315;H319;H335 |
| 2.2 | Signal word (CLP) | Added | Warning |
| 2.2 | Hazard pictograms (CLP) | Added | GHS07 |
| 2.2 | Precautionary statements (CLP) | Added | P261;P302+P352;P305+P351 |

Abbreviations and acronyms:

| | |
|-------|---|
| ATE | Acute Toxicity Estimate |
| ADR | European Agreement concerning the International Carriage of Dangerous Goods by Road |
| BCF | Bioconcentration factor |
| CLP | Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008 |
| DPD | Dangerous Preparations Directive 1999/45/EC |
| DSD | Dangerous Substances Directive 67/548/EEC |
| IATA | International Air Transport Association |
| IMDG | International Maritime Dangerous Goods |
| LC50 | Median lethal concentration |
| LD50 | Median lethal dose |
| LOAEL | Lowest Observed Adverse Effect Level |
| NOAEC | No-Observed Adverse Effect Concentration |
| PBT | Persistent Bioaccumulative Toxic |
| REACH | Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006 |
| SDS | Safety Data Sheet |

Data sources

: REGULATION (EC) No 1272/2008 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006. TNO (Netherlands Organisation for Applied Scientific Research).

Full text of H- and EUH-statements:

| | |
|---------------------|---|
| Acute Tox. 4 (Oral) | Acute toxicity (oral), Category 4 |
| Aquatic Acute 1 | Hazardous to the aquatic environment — Acute Hazard, Category 1 |
| Aquatic Chronic 1 | Hazardous to the aquatic environment — Chronic Hazard, Category 1 |
| Aquatic Chronic 2 | Hazardous to the aquatic environment — Chronic Hazard, Category 2 |
| Aquatic Chronic 3 | Hazardous to the aquatic environment — Chronic Hazard, Category 3 |
| Carc. 1B | Carcinogenicity (inhalation) Category 1B |
| Eye Dam. 1 | Serious eye damage/eye irritation, Category 1 |
| Eye Irrit. 2 | Serious eye damage/eye irritation, Category 2 |
| Muta. 2 | Germ cell mutagenicity, Category 2 |
| Ox. Sol. 2 | Oxidising Solids, Category 2 |
| Repr. 1B | Reproductive toxicity, Category 1B |
| Repr. 1B | Reproductive toxicity, Category 1B |
| Resp. Sens. 1 | Respiratory sensitisation, Category 1 |
| Skin Irrit. 2 | Skin corrosion/irritation, Category 2 |
| Skin Sens. 1 | Skin sensitisation, Category 1 |
| STOT RE 2 | Specific target organ toxicity — Repeated exposure, Category 2 |

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| | |
|-----------|--|
| STOT SE 3 | Specific target organ toxicity — Single exposure, Category 3, Respiratory tract irritation |
| H272 | May intensify fire; oxidiser. |
| H302 | Harmful if swallowed. |
| H315 | Causes skin irritation. |
| H317 | May cause an allergic skin reaction. |
| H318 | Causes serious eye damage. |
| H319 | Causes serious eye irritation. |
| H334 | May cause allergy or asthma symptoms or breathing difficulties if inhaled. |
| H335 | May cause respiratory irritation. |
| H341 | Suspected of causing genetic defects. |
| H350i | May cause cancer by inhalation. |
| H360F | May damage fertility. |
| H360FD | May damage fertility. May damage the unborn child. |
| H373 | May cause damage to organs through prolonged or repeated exposure. |
| H400 | Very toxic to aquatic life. |
| H410 | Very toxic to aquatic life with long lasting effects |
| H411 | Toxic to aquatic life with long lasting effects. |
| H412 | Harmful to aquatic life with long lasting effects. |

SDS Biochemicals version 2018

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product