Darwin Biological
SAFETY DATA SHEET

Murashige and Skoog Medium

Section 1: Identification of the substance/mixture & of the company/undertaking

1.1 Product Identification

Product Name	Murashige and Skoog Medium
Synonyms	MS Basal Medium
Cat No.	EB-015
REACH No.	This product is a mixture, see section 3
CAS No.	N/A
Molecular Formula	N/A

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

Identified Uses	Laboratory chemicals

1.3. Details of the supplier of the safety data sheet

Company	Darwin Biological
Address	Shawbury House, Shawbury, Shrewsbury, Shropshire, SY4 4NL UK
Contact	01939 250252 | hello@darwinbiological.co.uk
Emergency Phone No.	112

Section 2: Hazard Identification

2.1 Classification of the substance or mixture CLP Classification - Regulation (EC) No 1272/2008

2.2 Label Elements Labelling according Regulation (EC) No 1272/2008

Pictogram	
Signal Word	Warning
Hazard Statement(s)	H272 May intensify fire; oxidizer. H319 Causes serious eye irritation.
Precautionary Statement(s)	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P220 Keep away from clothing and other combustible materials. P264 Wash skin thoroughly after handling. P280 Wear protective gloves/ protective clothing/ eye protection/ face protection. P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P337 + P313 If eye irritation persists: Get medical advice/ attention.

Reduced Labelling (<= 125ml)

Pictogram	
Signal Word	Warning
Hazard Statement(s)	None
Precautionary Statement(s)	None

Section 3: Composition/Information on ingredients

3.1 Substances

Component	*Hazard Classification*	*Concentration*
Ammonium nitrate CAS No: 6484-52-2 EC No: 229-347-8	Ox. Sol. 3; Eye Irrit. 2; H272, H319	>=30 - <50%
Calcium chloride CAS No: 10043-52-4	EC No: 233-140-8 Eye Irrit. 2; H319	>=1 - <10%
Edetate disodium dihydrate CAS No: 6381-92-6 EC No: 205-358-3	Accute Tox. 4 STOT RE 2; H332, H373	>=1 - <10%
Zinc sulfate heptahydrate CAS No: 7446-20-0 EC No: 231-793-3	Accute Tox. 4; Eye Dam. 1; Aquatic Acute 1; Aquatic Chronic 1; H302, H318, H400, H410; M-Factor - Aquatic Acute: 1; M-Factor - Aquatic Chronic: 1	>=0.1 - <0.25%

If none listed, then no components are required to be disclosed

Section 4: First aid measures

General Advice	If unwell seek medical advice, show this SDS/product label.
If inhaled	Move person into fresh air. If not breathing, give artificial respiration. See medical advice
In case of skin contact	Wash off with soap and plenty of water. See medical advice
In case of eye contact	Rinse thoroughly with plenty of water for at least 15 minutes. See medical advice
If swallowed	Do not induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth thoroughly. Seek medical attention.

Section 5: Firefighting measures

5.1 Extinguishing media	Use extinguishing measures that are appropriate to circumstances and the surrounding environment
5.2 Special hazards arising from substances or mixture	Nitrogen oxides (NOx) Ammonia Carbon oxides Nitrogen oxides (NOx) Sulfur oxides Oxides of phosphorus Hydrogen chloride gas Potassium oxides Sodium oxides Magnesium oxide Cobalt/cobalt oxides Calcium oxide Copper oxides Not combustible. Has a fire-promoting effect due to release of oxygen. Ambient fire may liberate hazardous vapours.
5.3 Advice for firefighters	Wear suitable respiratory equipment if necessary
5.4 Further information	Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

Section 6: Accidental release measures

6.1 Personal precaution, protective equipment & emergency procedures	Wear suitable protective clothing. Avoid breathing vapours, mist or gas. Ensure adequate ventilation of the working area.
6.2 Environmental precautions	If safe to do so, prevent further leakage or spillage. Do not let product enter drains.
6.3 Methods & materials for containments & cleaning up	Soak up with inert absorbent material and dispose of as hazardous waste. Transfer to suitable, labelled containers for disposal.

Section 7: Handling and storage

7.1 Precautions for safe handling	Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.
7.2 Conditions for safe storage, including any incompatibilities	Store in cool place out of direct sunlight. Keep container closed in a dry and well-ventilated place. Always store in a properly labelled appropriate container.

Section 8: Exposure controls/personal protection

8.1 Control parameters

Ammonium nitrate **CAS No: 6484-52-2** **EC No: 229-347-8**	Long Term (8hr TWA): N/A	Short Term (15min STEL): N/A
Calcium chloride **CAS No: 10043-52-4**	Long Term (8hr TWA): N/A	Short Term (15min STEL): N/A
Edetate disodium dihydrate **CAS No: 6381-92-6** **EC No: 205-358-3**	Long Term (8hr TWA): N/A	Short Term (15min STEL): N/A
Zinc sulfate heptahydrate **CAS No: 7446-20-0** **EC No: 231-793-3**	Long Term (8hr TWA): N/A	Short Term (15min STEL): N/A

Where no specific short-term exposure limit is listed, a figure three times the long-term exposure should be used. Figures are based upon UK EH40 WEL (Workplace Exposure Limits)

8.2 Exposure Controls

Engineering Measures	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the working day. Ensure adequate ventilation of the working area. Ensure quickly accessible eye-wash stations are available.
Eye / face protection	Wear appropriate well-fitting protective eyeglasses or chemical safety goggles as described by EN166 (EU Standard)
Skin / hand protection	Wear appropriate protective gloves and clothing to prevent skin exposure. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact.
Respiratory protection	Use a EN149 (EU Standard) approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

Section 9: Physical and chemical properties

State	Solid	Chemical Formula	N/A
Appearance	Off-white	Molecular Weight	N/A
Odour	N/A	Relative Density	N/A
Melting Point	N/A	Boiling Point	N/A

Section 10: Stability & Reactivity

10.1 Reactivity	Stable under recommended transport or storage conditions.
10.2 Chemical Stability	Stable under normal conditions. Stable at room temperature.
10.3 Possibility of hazardous reactions	Hazardous reactions will not occur under normal transport or storage conditions. Decomposition may occur on exposure to conditions or materials listed below.
10.4 Conditions to avoid	Keep away from open flames, hot surfaces and sources of ignition.
10.5 Incompatible materials	Strong reducing agents, Strong acids, Powdered metals
10.6 Hazardous decomposition products	No data available

Section 11: Toxicological Information

11.1 Information on toxicological effects

There may be irritation and redness at the site of contact. Ingestion may cause stomach pain and vomiting. Mixture causes serious eye irritation.

Ammonium nitrate

Acute toxicity
LD50 Oral - Rat - male and female - 2,950 mg/kg
(OECD Test Guideline 401)
Symptoms: Nausea, Vomiting, Diarrhea, Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract.
LC50 Inhalation - Rat - 4 h - > 88.8 mg/l - dust/mist
Remarks: (IUCLID)
Symptoms: Symptoms may be delayed., mucosal irritations
LD50 Dermal - Rat - male and female - > 5,000 mg/kg
(OECD Test Guideline 402)

11.2 Additional Information - Components

Skin corrosion/irritation Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Irritating to eyes. - 24 h
(OECD Test Guideline 405)

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse
Result: negative (OECD Test Guideline 429)
Remarks: The value is given in analogy to the following substances: Nitric acid ammonium calcium salt (1:?:?)

Germ cell mutagenicity
Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Result: negative
Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells
Result: negative
Test Type: Ames test
Test system: Escherichia coli/Salmonella typhimurium
Result: negative

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
Acute oral toxicity - Nausea, Vomiting, Diarrhea, Irritations of mucous membranes in the mouth, pharynx, oesophagus and gastrointestinal tract. Acute inhalation toxicity - Symptoms may be delayed., mucosal irritations

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Calcium chloride
Acute toxicity
LD50 Oral - Rabbit - male - 500 - 1,000 mg/kg
(OECD Test Guideline 401)
Oral: No data available
Symptoms: After uptake of large quantities:, Stomach/intestinal disorders, Nausea
Symptoms: Possible damages:, mucosal irritations
LD50 Dermal - Rabbit - male and female - > 5,000 mg/kg Remarks: (ECHA)

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Moderate eye irritation
(OECD Test Guideline 405)

Respiratory or skin sensitization
No data available

Germ cell mutagenicity
Test Type: Mutagenicity (mammal cell test): chromosome aberration.
Test system: Chinese hamster fibroblasts
Result: negative
Test Type: Ames test
Test system: S. typhimurium Result: negative Remarks: (Lit.)

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
Acute oral toxicity - After uptake of large quantities:, Stomach/intestinal disorders, Nausea Acute inhalation toxicity - Possible damages:, mucosal irritations

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Edetate disodium dihydrate
Acute toxicity
LD50 Oral - Rat - male and female - 2,800 mg/kg
(OECD Test Guideline 401)
Remarks: The value is given in analogy to the following substances:
Ethylenedinitrilotetraacetic acid disodium salt
Acute toxicity estimate Inhalation - 1.6 mg/l - dust/mist
(Expert judgment)
Dermal: No data available

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation
(OECD Test Guideline 404)
Remarks: (ECHA) The value is given in analogy to the following substances:
Ethylenedinitrilotetraacetic acid disodium salt

Serious eye damage/eye irritation
Eyes - Rabbit Result: No eye irritation
(OECD Test Guideline 405)
Remarks: (ECHA) The value is given in analogy to the following substances:
Ethylenedinitrilotetraacetic acid disodium salt

Respiratory or skin sensitization
Maximization Test - Guinea pig
Result: negative
(OECD Test Guideline 406)
Remarks: (ECHA) The value is given in analogy to the following substances:
Ethylenedinitrilotetraacetic acid disodium salt

Germ cell mutagenicity
Test Type: Chromosome aberration test in vitro
Test system: Chinese hamster ovary cells
Result: negative
Remarks: (ECHA)
The value is given in analogy to the following substances: Ethylenedinitrilotetraacetic acid trisodium salt
Test Type: In vitro mammalian cell gene mutation test
Test system: mouse lymphoma cells
Result: negative Remarks: (ECHA)

The value is given in analogy to the following substances: Ethylenedinitrilotetraacetic acid disodium salt
The value is given in analogy to the following substances: Ethylenedinitrilotetraacetic acid trisodium salt
Test Type: Ames test
Result: negative Remarks: (ECHA)
The value is given in analogy to the following substances: Ethylenedinitrilotetraacetic acid trisodium salt
Method: OECD Test Guideline 474
Species: Mouse
Remarks: (ECHA)
The value is given in analogy to the following substances: Ethylenedinitrilotetraacetic acid disodium salt

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Inhalation - May cause damage to organs through prolonged or repeated exposure - Respiratory Tract

Aspiration hazard No data available

Zinc sulfate heptahydrate
Acute toxicity
LD50 Oral - Mouse - male - 926 mg/kg
(OECD Test Guideline 401)
Inhalation: No data available
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: Causes serious eye damage.
(OECD Test Guideline 405)

Respiratory or skin sensitization
Local lymph node assay (LLNA) - Mouse
Result: negative Remarks: (ECHA)

Germ cell mutagenicity

Test Type: Ames test
Test system: Salmonella typhimurium
Result: negative Remarks: (ECHA)
Species: Mouse - male and female - Red blood cells (erythrocytes)
Result: negative Remarks: (ECHA)

Carcinogenicity
No data available

Reproductive toxicity
No data available

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Boric acid
Acute toxicity
LD50 Oral - Rat - male and female - 3,450 mg/kg
Remarks: (ECHA)
LC50 Inhalation - Rat - male and female - 4 h - > 2.12 mg/l - dust/mist
(OECD Test Guideline 403)
LD50 Dermal - Rabbit - male and female - > 2,000 mg/kg
Remarks: (ECHA)

Skin corrosion/irritation
Skin - Rabbit
Result: No skin irritation - 24 h
Remarks: (ECHA)

Serious eye damage/eye irritation
Eyes - Rabbit
Result: No eye irritation - 24 h
(OECD Test Guideline 405)

Respiratory or skin sensitization
Buehler Test - Guinea pig
Result: negative
(OECD Test Guideline 406)

Germ cell mutagenicity
Test Type: sister chromatid exchange assay
Test system: Chinese hamster ovary cells
Result: negative
Remarks: (ECHA)
Test Type: Ames test
Test system: S. typhimurium
Result: negative
Test Type: In vitro mammalian cell gene mutation test

Test system: mouse lymphoma cells
Result: negative
Test Type: Mutagenicity (mammal cell test):
Test system: Chinese hamster ovary cells
Result: negative
Method: OECD Test Guideline 474
Species: Mouse - male and female Result: negative

Carcinogenicity
No data available

Reproductive toxicity
May damage fertility. May damage the unborn child.

Specific target organ toxicity - single exposure
No data available

Specific target organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

Section 12: Ecological Information

12.1 Toxicity	No data available
12.2 Persistence & degradability	Biodegradable

Section 13: Disposal Considerations

General Information	Dispose of in compliance with all local and national regulations.
Disposal Methods	Transfer to a suitable container and arrange for collection by specialised disposal company.

Section 14: Transport Information

14.1 UN Number	UN1477
14.2 Shipping Name	Nitrates, Inorganic N.O.S.
14.3 Transport Class	5.1
14.4 Packing Group	III
14.5 Environmental Hazards	N/A

Section 15: Regulatory Information

15.1 Safety, health and environmental regulations/ legislation specific for the substance or mixture	Labelling according to Regulation (EC) No 1272/2008.

Section 16: Other Information

Legal Disclaimer: The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. Darwin Biological shall not be held liable for any damage resulting from handling or from contact with the above product.