



SAFETY DATA SHEET

1. CHEMICAL IDENTIFICATION AND COMPANY INFORMATION

PRODUCT NAME: Murashige & Skoog (MS) Basal Medium w/Vitamins
SKU NUMBER: MSM5L, MSM10L, MSM50L, MSM100L
COMPANY INFO: Plant Cell Technology, Inc.
1601 Connecticut Ave NW, Suite 400, Washington, DC, 20009
Phone: +1 (202) 506-5608
www.plantcelltechnology.com

EMERGENCY PHONE NUMBER: 1-800-535-5053 - US Only
(INFOTRAC): 1-353-323-3500 - International

RECOMMENDED USE: *For laboratory use only.* Supports or facilitates plant growth and/or shoot proliferation in two or more plant tissue cultures (both in monocotyledons and dicotyledons).

INSTRUCTION FOR USE: 1. Dissolve 4.54 gms of dehydrated medium in 600 ml of distilled or deionized water at room temperature (15-30°C).
2. Rinse media vial with small quantity of distilled water to remove traces of powder. Add the desired heat stable supplements prior to autoclaving. Continue stirring until the powder has dissolved. Sometimes media does not dissolve completely unless the pH is reduced. For these, lower the pH to about 3.0 to facilitate dissolution of media. The pH of medium is adjusted by using 1N HCL/ 1N NaOH/ 1N KOH. Make up the final volume to 1000 mL with distilled water.
3. Mix gently, heat, and rotate between intervals until the solution becomes clear. Do not boil, reheat and allow to cool below 50°C during dispensing. Dispense the medium into suitable containers, plug or cap, then autoclave at 15 psi (121°C) for 15 minutes, using a slow exhaust cycle. Higher temperatures and/or longer times are not recommended.
4. Cool the autoclaved culture vessels containing medium to 45-50°C and aseptically add desired sterile heat-labile substrates.

Note: Media should be prepared according to formula mentioned on the label however; it is recommended to use an entire container at once. Heat-labile substrates should be added, after autoclaving.

2. HAZARDS IDENTIFICATION

GHS Classifications:



Signal Word: **DANGER**

Hazard Statements:

H272 - Oxidizing liquids, oxidizing solids (Category 2).
H315 - Skin irritation (Category 2).
H319 - Serious eye damage/eye irritation (Category 2A).
H335 - Specific target organ toxicity, single exposure; respiratory tract irritation (Category 3).
H373 - Specific target organ toxicity, repeated exposure (Category 2).

Precautionary Statements:

P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
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.
P221 - Take any precaution to avoid mixing with combustibles.
P260 - Do not breathe dust/fume/gas/mist/vapors/spray.
P264 - Wash hands thoroughly after handling.
P273 - Avoid release to the environment.
P280 - Wear protective gloves/protective clothing/eye protection/face protection.
P314 - Get medical advice/attention if you feel unwell.
P391 - Collect spillage.
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.
P370, P378 - In case of fire: Use appropriate extinguishing methods to extinguish.
P405 - Store locked up.
P501 - Dispose of content/container to appropriate waste containers.

Hazards not otherwise classified (HNOC) or not covered by GHS: None.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: MS Basal Medium
CAS No.: N/A
Formula: N/A
Molecular Weight: N/A
EC No.: N/A

Specifications:

Appearance of Powder: White to light tan with homogenous mixture of free-flowing powder.

Appearance of Solution: Colorless to slight yellow, clear, complete.

Formula concentration: 4.54 g/L

pH: 4.2; \pm 0.6

Ingredient	mg/L	CAS Number
Ammonium Nitrate	1650.000	6484-52-2
Boric Acid	6.200	10043-35-3
Biotin	0.050	58-85-5
Calcium Chloride	440.000	10035-04-8
Cobalt Chloride	0.025	7791-13-1
Copper Sulphate	0.250	7758-98-7
EDTA Disodium Salt	37.300	139-33-3
Ferrous Sulphate	27.80	13463-43-9
Folic Acid	0.500	59-30-3
Glycine	2.000	56-40-6
Magnesium Sulphate	180.690	7487-88-9
Manganese Sulphate	16.900	10034-96-5
Myo-inositol	100.000	87-89-8
Nicotinic Acid	5.000	59-67-6
Potassium Dihydrogen Phosphate	170.000	7778-77-0
Potassium Iodide	0.830	761-11-0
Potassium Nitrate	1900.000	7440-09-7
Pyridoxine Hydrochloride	0.500	58-56-0
Sodium Molybdate	0.250	10102-40-6
Thiamine Hydrochloride	0.500	67-03-8
Zinc Sulphate	8.600	7446-20-0

4. FIRST AID MEASURES

POTENTIAL HEALTH EFFECTS

Eye: Dust accumulation may cause irritation. Rinse immediately with plenty of water on & under the eyelids, for at least 15 minutes. **Get medical attention if irritation persists.**

Skin: May cause skin irritation. Wash off with plenty of water for at least 15 minutes. **Get medical attention if symptoms occur.**

Ingestion: If swallowed, wash out mouth with water. Never give by mouth to unconscious person. Do not eat. **Get medical attention if symptoms occur.**

Inhalation: May cause respiratory tract irritation. Remove victim to fresh air. If not breathing, institute CPR. If breathing is difficult, ensure clear airway and give oxygen. **Get medical attention if symptoms occur.**

EMERGENCY OVERVIEW

Target Organs: None known.

5. FIRE FIGHTING MEASURES

Suitable Extinguishing Media: Water spray, carbon dioxide, dry chemical powder, or appropriate foam. Use extinguishing media suitable for surrounding fire.

Special Protective Equipment and Precaution for Firefighter: In the event of a fire, wear full protective clothing and NIOSH approved self-contained breathing apparatus. Evacuate the area, and fight fire from a safe distance.

Hazardous Combustion Products: Nitrogen oxides (NO_x), hydrogen chloride gas, calcium oxides, sulfur oxides, magnesium oxides, potassium oxides, phosphorous oxides.

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment and Emergency Procedures:	Use personal protective equipment recommended in Section 8. Avoid dust formation. Avoid breathing vapours, mist, or gas. Ensure adequate ventilation especially in confined areas. Evacuate personnel to safe areas. Avoid breathing dust.
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Environmental Precautions:	Prevent further leakage or spillage if safe to do so. Do not let product enter drains, and prevent exposure to the environment.
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Method of Containment and Cleanup:	Wear suitable protective clothing. Avoid dust formation. Carefully sweep up and remove. Place material in a dry container and cover. Remove from the area. Flush spill area with water.
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7. HANDLING AND STORAGE

Precaution for Safe Handling:	Avoid contact with skin and eyes. Avoid dust formation and aerosols. Avoid incompatible substances. Wash thoroughly after use.
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Conditions for Safe Storage:	Keep in a tightly closed container and store in a cool, dry, and well-ventilated area.
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Incompatibilities:	No data available.
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Recommended Storage Temperature:	Room temperature, unless the medium is prepared. If medium is prepared, store it at 2-8° C and away from direct light.
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8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Guidelines:	This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.
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Engineering Controls:	Handle in accordance to general industrial hygiene and safety practice. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.
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Personal Protective Equipment (PPE):

Eye/Face Protection:	Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133, or European Standard EN166. Have eye-washing facilities readily available where eye contact can occur.
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Skin Protection:	Wear appropriate gloves to prevent skin exposure.
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Body Protection:	Lab coat, and appropriate protective clothing to minimize contact with skin.
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Respiratory Protection:	Follow the OSHA respirator regulations found in 29 CFR 1910.14 or European Standard EN149. Always use a NIOSH or European Standard EN149 approved respirator when necessary.
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9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State:	Solid powder.
Appearance:	White to tan powder.
Odor:	Odorless.
Odor Threshold:	No data available.
pH:	4.8; \pm 0.2
Melting Point/Range:	No data available.
Boiling Point/Range:	No data available.
Flash Point:	No data available.
Evaporation Rate:	N/A
Flammability (solid, gas):	No data available.

Flammability or Explosive Limits:

Upper: No data available.
Lower: No data available.

Vapor Pressure: No data available.
Vapor Density: No data available.
Specific Gravity: No data available.
Solubility: Soluble in water.
Partition Coefficient; n-octanol/water: No data available.
Autoignition Temperature: Not applicable.
Decomposition Temperature: No data available.
Viscosity: Not applicable.

10. STABILITY AND REACTIVITY

Reactivity: No data available.
Chemical Stability: Stable under recommended storage conditions.
Conditions to Avoid: Moisture.
Incompatible Materials: Reducing agents, powdered metals, strong acids, strong oxidizing agents, boron oxides, zinc, calcium oxide, methyl vinyl ether, calcium chloride is attacked by bromine trifluoride.
Hazardous Decomposition Products: Hazardous decomposition products formed under fire conditions: nitrogen oxides, hydrogen chloride gas, calcium oxides, sulfur oxides, magnesium oxides, potassium oxides, phosphorous oxides. **In the event of a fire see Section 5.**
Hazardous Polymerization: No data available.

11. TOXICOLOGICAL INFORMATION

Carcinogenicity^{NTP}: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
Epidemiology: No data available.
Teratogenicity: No data available.
Reproductive Effect: No data available.
Neurotoxicity: No data available.
Mutagenicity: No data available.
Other Studies: Toxicological properties have not been fully investigated.

12. ECOLOGICAL INFORMATION

Ecotoxicity: Do not empty into drains.
Environmental Fate: No data available.
Physical/Chemical: No data available.
Persistence and Degradability: Soluble in water, Persistence is unlikely based on information available.
Bioaccumulation/Accumulation: No data available.
Mobility: No data available.
Other: No data available.

13. DISPOSAL CONSIDERATION

Waste Disposal Methods:

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

14. TRANSPORT INFORMATION

Domestic US D.O.T.:

Proper Shipping Name:	CHEMICALS, N.O.S. (NON-REGULATED).
Hazard Class:	N/A
UN/NA:	N/A
Labels:	N/A

IMDG:

Proper Shipping Name:	CHEMICALS, N.O.S. (NON-REGULATED).
Hazard Class:	N/A
UN/NA:	N/A
Labels:	N/A

IATA:

Proper Shipping Name:	CHEMICALS, N.O.S. (NON-REGULATED).
Hazard Class:	N/A
UN/NA:	N/A
Labels:	N/A

15. REGULATORY INFORMATION

US FEDERAL TSCA:

This chemical is not listed in the TSCA.

SARA TITLE III:

Section 302 Ingredients:	No.
Section 304 Ingredients:	No.
Section 311/312 Hazard:	Acute Health Hazard, Chronic Health Hazard, Reactivity Hazard.
Section 313 Ingredients:	Ammonium nitrate, CAS #: 6464-52-2.

STATE:

Massachusetts Right to Know Components:	Copper sulphate; CAS #: 7758-98-7.
New Jersey Right to Know Components:	Copper sulphate; CAS #: 7758-98-7. Ammonium nitrate; CAS #: 6484-52-2

California Pop. 65 Components:

This product contains nickel which is known to the State of California to cause cancer, birth defects, or other reproductive harm.

16. OTHER INFORMATION

SDS Revision Date: 2/16/2024

Plant Cell Technology provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. The above information is intended to be used only as a guide to the appropriate precautionary handling of this material by a properly trained person. Plant Cell Technology shall not be held liable for any damage resulting from handling or from contact with the above product.

This product is intended for LABORATORY USE ONLY. Our Products may NOT BE USED as drugs, cosmetics, agricultural or pesticidal products, food additives or as household chemicals.