Material Safety Data Sheet

Product Name:

**Dulbecco’s Modified Eagle Medium (DMEM): Nutrient Mixture F-12 (Ham’s) (1:1), without L-Glutamine, with Sodium Bicarbonate 1.2 gm/L, with HEPES 15 mM, with Sodium Pyruvate 55 mg/L**

Product Number: 01-170-1

Available Sizes/Quantities:

- (A) 500 ml
- (B) 100 ml

Identification:

Dulbecco’s Modified Eagle Medium (DMEM): Nutrient Mixture F-12 (Ham’s) (1:1), without L-Glutamine, with Sodium Bicarbonate 1.2gm/L, with HEPES, 15mM, with Sodium Pyruvate, 55mg/L

**Important Note:** Before using this product, read and understand both MSDS and Product Profiles in their entirety before handling this material for safety guidelines and potential hazards. Review most up-to-date and approved procedures. When using potentially toxic material, work in pairs.

**Section 1: Substance/Product Identification**

Product Number: 01-170-1

Available Sizes/Quantities: (A) 500 ml; (B) 100 ml

**Section 2: Use**

**Emergency Overview:**

This product contains substances which may be hazardous to health, but at their given concentrations, are not considered overtly detrimental when handled, stored and disposed of according to international safe laboratory practices, protocols, guidelines and regulations. It may cause an allergic skin reaction, skin irritation and/or dermatitis to sensitive individuals.

**Section 3: Hazards**

As part of the evolution of the Material Safety Data Sheet (MSDS) from a workplace document to a general source of product safety information, it is incumbent upon us, to provide a realistic assessment, among other things, of not only the available pertinent safety and comprehensive health data in order to assist the end-user in ascertaining the necessary information to comply with all local, state and Federal regulations regarding the use and disposal of any chemical waste and/or their by-products, but also ecotoxicity or environmental fate information.

**Section 4: Precautions**

**Section 5: First Aid Measures**

**Section 6: Material and Chemical Compatibility**

**Section 7: Disposal Considerations**

**Section 8: Technical Information**

**Section 9: Handling and Storage**

**Section 10: Other Information**

**Section 11: Product Number:**

**Section 12: Form:**

Clear Red-Colored Solution

*Biological Industries*, Kibbutz Beit Haemek 25115 Israel

Telephone: 972-4-9960-595 Fax: 972-4-9968-896

Web Site: [www.bioind.com](http://www.bioind.com)

E-Mail: info@bioind.com

Print Date: 10/2009

Pages 1 of 9
Use of Substance/Preparation: In vitro use only!

Precautionary Measures to Minimize Risks and Potential Hazards:

1. Read and Understand the Material Safety Data Sheet (MSDS) in its entirety before handling this product to familiarize one with the potentially hazardous effects of all chemical materials, especially mixtures. Read and Understand the product labels and/or product insert before coming in contact with the product.
2. Work according to Internationally Accepted Safety Standards and Protocols.
3. Don the necessary Personal Protection Equipment as required before coming in contact with the product.
4. Do not handle the product until all safety precautions have been read and understood.
5. Keep away from heat/hot surfaces/sparks/open flames—No Smoking!
6. Use explosion-proof electrical/lighting/ventilation equipment.
7. Use only non-sparking tools.
8. Take precautionary measures against electro-static discharge.
9. Use only in well-ventilated areas.
10. The purpose of OSHA 29 CFR § 1910.1200-Hazard Communication is to ensure that the hazards of all chemicals produced or imported are evaluated, and that information concerning their hazards are transmitted to employers and employees...Means of comprehensive hazard communication are to include container labeling and other forms of warning, MSDS sheets and employee training. (Molinelli, Material Safety Data Sheets: The Writer’s Desk Reference, pps.329-345)

11. Dispose of any chemical residues, spills or accompanying rubbish into a properly labeled, leak-proof container. Disposal should be made in accordance with existing procedures/protocols/guidelines currently in place by following all Local, State and/or Federal Regulations involving Health, Safety and the Environment.
12. Contaminated equipment disposal as per protocols.
13. Always Return Products to Proper Storage.
14. Wash thoroughly after handling.

General Hazard Warnings While Using Chemicals At Reduced Concentrations

Most often the Acute or Chronic Effects of a particular chemical are unknown especially at lower concentrations and/or as components of mixtures. Mixtures present a unique challenge to individuals preparing the Material Safety Data Sheets (MSDS) particularly in describing the potential toxic effects from excessive exposure. It is prudent to use available information on individual toxicities to describe the effects or potential effects from the mixture by extrapolating the chemical characteristics of the raw materials and applying them to the mixtures. Although the final concentrations may be relatively low when compared to the more concentrated raw materials, the level of exposure (i.e. prolonged/repeated/direct/indirect) and duration of exposure (minimum/medium/maximum) are all important considerations when evaluating personal and imminent risk. As most mixtures have not been tested as to their effects or potential effects as are the Chemical Raw Materials, it is better to err on the side of good judgment by taking all the necessary precautions rather than trying to fix the problem after a tragedy has occurred.

Section 3: Precautionary Measures/ Hazard/Risk Assessment

Emergency Overview/Safety Guidelines  Hazard X Exposure (Time) = Risk

Signal Words: Caution*, May Be Harmful To Sensitive Individuals!

*Caution* Indicates a Potentially Hazardous Situation that if not Avoided, may Result in Minor/Moderate Injury. It may also be used to alert against Unsafe Practices. Important Notice: This MSDS has been prepared in accordance with the accepted standards and norms regarding workplace safety. This includes the inclusion of all known and/or potential hazards of the product or its ingredients regardless of the potential risk. The precautionary statements and warnings included may not apply in all cases. Your Personal Protection Equipment (PPE) will vary depending upon the potential for exposure in the work-setting. Always work according to internationally recognized laboratory procedures, safety standards and protocols.

Signal Word: Caution! The components of this product may be potentially hazardous, however, at their given concentrations they are not considered to be detrimental to health when handled properly. Nevertheless, due diligence and care should always be exercised when using this or any other product.

Andersen’s Modified General Rules of Exposure

<table>
<thead>
<tr>
<th>Potential Routes Of Exposure</th>
<th>Basic Rules</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dermal Contact (including Hands, Skin &amp; Face Protection)</td>
<td>Avoid Contact</td>
</tr>
<tr>
<td>Eye Contact</td>
<td>Avoid Contact</td>
</tr>
<tr>
<td>Oral (Ingestion Per Os)</td>
<td>Do Not Ingest It</td>
</tr>
<tr>
<td>Respiratory (Inhalation)</td>
<td>Do Not Breathe It</td>
</tr>
</tbody>
</table>

For In vitro use only. Use according to instructions only. Handle with care in keeping with safe laboratory guidelines.

Important Note: To the best of our knowledge, the pharmico-toxological dynamics of this material have not been thoroughly investigated. Appropriate personal protective equipment (PPE) should be selected based on the task being performed and the risks involved such as the toxicity of the materials used in the final product. Appropriate protective equipment must be worn to prevent injury/exposure. Protective Clothing: Use appropriate coverall and/or apron, mask, protective eye-gear/face-mask, and chemical resistant gloves.

*Caution* Indicates a Potentially Hazardous Situation that if not Avoided, may Result in Minor/Moderate Injury. It may also be used to alert against Unsafe Practices.
Section 3: Precautionary Measures/ Hazard/Risk Assessment (Contd)

A. Possible/Potential Toxicological Effects & Routes of Exposure

- Eye Contact/Irritation
- Inhalation (via the Respiratory Tract)
- Dermal/Skin Contact and/or Absorption
- Ingestion (Oral Cavity & Gastrointestinal Tract)
- Target Organs: Otootoxicity (Auditory Vestibulotoxin)/ Nephrotoxicity(Kidneys)/Neuromuscular-Blocking Activity/Allergic Reaction/Immune & Reproductive Systems/Liver/Blood Profile/Bone Marrow/Mucous Membranes

NFPA & HMIS Classification is based upon the latest available updates and expanded company as well as other technical literature including interpretation of said information. Interpretation does vary from company to company. However, in all cases, the lower the rating number or personal protection letter, the less the magnitude of the hazard or risk when handled by trained personnel and stored properly during normal use. This general information is intended only for rapid identification of potential hazards or possible risks to the user who must then consider this MSDS in its entirety as well as other personal safeguards and laboratory practices before using this product.

Significance of Ratings

Please Note - These Ratings Are Recommendations Only. The NFPA & HMIS have not officially rated this particular product. However, this product may warrant the use of personal protective equipment.

Ratings

<table>
<thead>
<tr>
<th>HR</th>
<th>NFPA</th>
<th>HMIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
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<td>0</td>
</tr>
<tr>
<td>Flammability</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Reactivity</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Personal Protection</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Specific Hazards: NDA

Specific Hazards: A = Allergen; B = Biohazard; C = Carcinogen; CO = Corrosive; EH = Environmental Hazard; Ex = Explodable; F = Flammable; H = Highly Flammable; Ox = Oxidizer; PB = Potential Biohazard; R = Reproductive; RD = Radioactive; S = Sensitizer; T = Toxic; T = Highly Toxic; WR = Water-Reactive; X = Harmful Irritant; X = Harmful Caution

The Recommended Personal Protection Equipment (PPE) Suggested is as follows. “= Highly Recommended

Product DMEM F-12 [1:1]

Symbol | Personal Protection | Required (PPE)
---|---|---
A | Apron | Chemical-Resistant Gloves
B | Mask | Splash Goggles

Some MSDSs provide insufficient information especially regarding eye protection. Since eyes are extremely sensitive to the slightest insult, they should be protected at all times. Therefore, appropriate eye protection should be provided so that no worker will experience eye exposure to a chemical substance. As a general rule, the use of goggles should be required regardless of whether the chemical is a gas, liquid or solid.

Important Note: No action shall be taken involving personal risk and/or without appropriate training! In case of accidental exposure/injury, always seek medical attention immediately. Always consult a physician for any type of exposure or injury. Present this MSDS to the attending physician.

OCULAR EXPOSURE (EYE CONTACT)

Check for and remove any contact lenses. Prompt first aid, followed by proper medical care will help to reduce damage. Immediately wash the victim’s eyes with a gentle stream of clean, running water. Hold eyelids open to assure thorough rinsing. Continue flushing the eyes for a minimum of 15 minutes.

Inhalation Exposure

If inhalation occurs, move exposed individual away from contaminated area into fresh air immediately. Check pulse and respiration. If not breathing, give artificial respiration or cardio-pulmonary resuscitation (CPR) at once and continue until breathing resumes or until professional help arrives. If breathing is difficult, give oxygen. Once breathing is restored, remove contaminated clothing bag and dispose properly. Keep victim covered and warm.

Dermal Exposure

Symptoms may include redness, itching and pain via skin contact. Skin absorption through intact skin may not be significant. Symptoms of skin absorption may parallel inhalation and ingestion routes of entry. In any case, flush with copious amounts of water for a minimum of 15 minutes. If chemical burns cause the skin to become red and painful, use extreme care in washing using large quantities of water. Cover the burned area with a clean cloth. Otherwise, thoroughly wash the affected area using soap or mild detergent to prevent further contamination. Remove contaminated clothing and shoes. Keep victim covered and warm.

ORAL CAVITY & GASTROINTESTINAL TRACT (INGESTION)

If swallowed, and the victim is conscious and alert, rinse mouth and give 2-4 cups of water or milk gradually to dilute the swallowed toxicant. Discontinue dilution if it makes the victim nauseous. Vomiting is contraindicated (i.e., Do not induce vomiting) if the swallowed toxicant is acidic, alkal (caustic/corrosive) or petroleum-based or if the victim is comatose or convulsive.
Section 7: Handling/Storage Conditions

Keep container tightly closed, always in original labeled packaging. Keep Away From Heat & Light. Store the container intended for such emergencies. Washington spill site and collect for proper disposal. 

Section 8: Exposure Controls/Personal Protection

Refer to Section 3: Precautionary Measures/Hazard Assessment & Personal Protection Equipment/Measures

Chemical Name | OSHA PEL (TWA) | OSHA PEL (CEILING) | ACGIH OEL (TWA) | ACGIH OEL (CEILING) | NDA=No Data Available
--- | --- | --- | --- | --- | ---
DMEM F-12 (1:1) | NDA | NDA | NDA | NDA |

Engineering Controls:
No special ventilation requirements are required. However, if this product contains ingredients with exposure limits (PELs), use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure below any recommended or statutory limits. Safety Shower/Eye Bath/Mechanical Exhaust Required. Always work under an Inspected/Certified Chemical Fume Hood/Laminar Flow Unit. Ensure adequate ventilation especially in confined areas.

Caution: Isolate, then vent, drain, wash and/or purge systems or equipment before maintenance and repair. On a routine and periodical basis according to protocols, check immediate work vicinity for oxygen deficiencies!

Respiratory Equipment: Respiratory protection is used when the ambient air concentration of a chemical may be at a high enough level to cause health problems in case of brief exposure, wear appropriate NIOSH/MSHA/CEN (EU)-approved respirator. Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 149) Respirator (OSHA Reg. 29CFR 1910.134); For prolonged exposure, use respiratory protective device that is independent of the circulating air. Ensure Proper Fit!

Eye-Protection/Face Shield: Wear Chemical Goggles

Safety Glasses/Splash Goggles with Side-Shields and/or Face Shield as described by OSHA’s eye and face protection regulations in 29 CFR 1910.133 or European Standard EN 166.

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Telephone: 972-4-9960-595   Fax: 972-4-9968-896
Section 8: Exposure Controls/Personal Protection (Cont’d)

Hand Protection: Glove selection is based upon some of the following factors:
♦ Material Degradation
♦ Penetration Times
♦ Rates of Diffusion

Chemical-resistant gloves according to EU Directive 89/689/EEC.

Hygiene Measures: Follow established QA protocols regarding safety, hygiene and precautionary measures to the letter. Please dispose of contaminated clothing, packaging, chemical residues in a proper manner conducive to standard operating procedures (SOP’s) upon conclusion of the work period. Wash thoroughly after handling.

Industrial-Hygiene (IH):
Application of Skin-Protective Barrier Cream (SPBC) is recommended.

Hygiene Measures:
Follow established QA protocols regarding safety, hygiene and precautionary measures to the letter. Please dispose of contaminated clothing, packaging, chemical residues in a proper manner conducive to standard operating procedures (SOP’s) upon conclusion of the work period. Wash thoroughly after handling.

Section 9: Physico-Chemical Properties

Important Health Safety/Environmental Information:
CRM=Chemical Raw Material; NDA=No Data Available

Appearance/Color: Red-Colored Solution
Osmolality (1:10): 288-318mOsm/kg
pH: 7.1-7.5
Physical State: Liquid Solution

No other relevant Physico-Chemical Properties are available or in our database at this time.

Section 10: Stability & Reactivity

Hazardous Combustion/Decomposition Products
Toxic Fumes of Carbon Monoxide (CO), Carbon Dioxide (CO₂), Nitrous Oxide (NO₂) and Sulfur Dioxide (SO₂)

Hazardous Polymerization:
Not Known To Occur

Incompatibilities:
Strong Oxidizing Agents/Strong Reducing Agents/Strong Acids/Strong Bases
Reactive with Oxidizing Agents

Stability/Reactivity:
The product is stable under normal temperatures and pressures. Hygroscopic; Keep Container Tightly Closed

Conditions to Avoid:
Direct Sunlight/UV Radiation/Dust/Fume/Mist/Spray Generation and Excess Heat/Ignition Sources/May Discolor on Exposure to Light

Section 11: Toxicology & Toxico-Dynamic Considerations

Refer To Section 3: Precautionary Measures/Hazard/Risk Assessment

Acute Toxicity:
DMEM F-12 (1:1) may be irritating to eyes and skin. This is dependent upon dose-response, concentration, type of formulation and/or repeated or prolonged exposure. May be hazardous via skin/eye/ingestion and/or inhalation contact (Irritant/Permeator Sensitizer) NDA=No Data Available; CRM=Chemical Raw Material

<table>
<thead>
<tr>
<th>Material</th>
<th>LD₅₀ Oral (Rat)</th>
<th>LD₅₀ Dermal (Rat)</th>
<th>LD₅₀ Dust Inhalation (Rabbit/Rat)</th>
<th>LD₅₀ (IP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DMEM F-12 (1:1)</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
</tr>
</tbody>
</table>

The Importance of LD₅₀
The Lethal Dose (50%) is a statistically calculated dose of a chemical that causes death in 50% of the animals tested, based on the objective observation of lethality. Put simply, it is a screening method for toxic evaluation of chemical substances.

Important! It must be noted that interpretation of results and extrapolation to humans of conclusions based on the results of experimental studies in animal models is often inferred when toxic exposure and subsequent observation is well-documented. The conclusions derived must be viewed only as an inexact approximation due to the number of endogenous and exogenous factors involved that might directly and indirectly influence the experimentation as well as the effect of species variability and strain. Most importantly, and in all cases, due diligence and reasonable care must be practiced at all times when handling any product with suspect or potential hazards.

Acute Toxicity/Ratings/Reaction: May be Hazardous To Humans and Animal Life if Not Handled or Disposed of Properly!

DMEM F-12 (1:1) may be irritating to eyes, skin, mucous membranes, upper respiratory tract. This is dependent upon dose-response, concentration, type of formulation and/or repeated or prolonged exposure. It may be hazardous via skin/eye/ingestion and/or inhalation contact (Irritant/Permeator Sensitizer)

May Be Hazardous to sensitive individuals in the following situations:

Body System/Effects | Signs/ Symptoms/Effects
---|---
Behavioral | May Cause Convulsions/Altered Reflex/Somnolence/General Depression/Peripheral Nerve Sensory Changes
Dermal Contact | Avoid skin contact, protect bare skin. May Be Corrosive/Irritant/Permeator/Sensitizer and cause Inflammation/Blistering/Enthema/Redness/Scarring/Dermatologic Lesions (e.g. Edematous, Vesicular or Bullae)
a. Skin Absorption: | May be absorbed via skin contact
Eye Contact | Avoid Eye Contact; May Cause Corneal Damage/Blindness/Redness/Lacrimation/Pruritis or Itching; Ptosis (Drooping of the Upper Eyelid)
Ingestion | May Cause Irritation To G-1 Tract Characterized by Burning Sensation, Coughing, Sneezing
Inhalation | Irritant to Mucous Membranes/Upper Respiratory Tract; Allergic Respiratory Reaction; Toxic To Lungs; May Cause Irritation To Respiratory Tract Characterized by Burning Sensation, Coughing, Dyspnea/Hyperpnea, Sneezing;
Section 11: Toxicology & Toxico-Dynamic Considerations (Cont'd)

Sensitization

Such factors as: direct or indirect contact, dose-response, concentration, type of formulation and/or repeated or prolonged exposure as well as individual sensitization proclivities may be hazardous via skin/eye/ingestion and/or inhalation contact (Irritant/Permeator/Sensitizing Effects).

Avoid skin and eye contact!

Chronic/Developmental Toxicity:

There is no toxicological data available for human models for DMEM F-12 (1:1) and therefore the components of this product may contain potentially hazardous ingredients, but at their given concentrations, are considered not to be overtly detrimental to health and safety but must be handled by trained personnel in laboratory procedures. Due diligence and care should always be exercised when using this or any other product. Repeated exposure to the Chemical Raw Material (CRM). Symptoms of Overexposure might include: Headache, Nausea, Tiredness, Vertigo (dizziness), Vomiting (Emesis) and Unconsciousness. Repeated or prolonged exposure may produce target organ damage. There is no evidence that DMEM F-12 (1:1) is carcinogenic, mutagenic and teratogenic in humans, these like other similar potentially hazardous reagents/mixtures may be embryotoxic and mutagenic in certain laboratory animals under certain circumstances. Repeated/Chronic inhalation exposure may result in chronic respiratory irritation. Reproductive Toxicity: Female: NDA; Male: NDA; NDA

NTP Carcinogenicity*

<table>
<thead>
<tr>
<th>Known</th>
<th>Anticipated</th>
</tr>
</thead>
<tbody>
<tr>
<td>NDA</td>
<td>NDA</td>
</tr>
</tbody>
</table>

Components of this product present at existing levels are not specifically identified per se as a carcinogen or potential carcinogen to the best of our knowledge at this time.

Mutagenicity  NDA
Sensitization NDA
Teratogenity  NDA

Important Note: To the best of our knowledge at this time, the physico-chemical properties have not been thoroughly investigated and as such, all materials and mixtures may present unknown hazards to health, safety and environment and should be used with caution. No components of this product present at levels greater than or equal to 0.1% is identified as probable, possible or as a confirmed human carcinogen.

Section 12: Ecological Information

Do Not Allow To Enter Sewage System, Ground Water or Soil!

| Abiotic Degradation(Air)       | NDA         |
| Biaccumulation(BA) Bioaccumulative Potential | NDA         |
| Biodegradation(BD)/Persistence | NDA         |
| Potential Environmental Effects | NDA         |
| Ecotoxicity Effects           | NDA         |
| Mobility                       | NDA         |

Summary and Review of Aquatic Ecotoxicity:

<table>
<thead>
<tr>
<th>Organism</th>
<th>Effects &amp; Acute Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Algae &amp; Bacteria</td>
<td>NDA</td>
</tr>
<tr>
<td>Fish</td>
<td>NDA</td>
</tr>
<tr>
<td>Mollusks(e.g. Pteropods)</td>
<td>NDA</td>
</tr>
<tr>
<td>Zooplankton(e.g. Cladocerans, Foraminiferans, Radiolarians, Dinoflagellates)</td>
<td>NDA</td>
</tr>
</tbody>
</table>

The Environmental Dynamics of this material have not been fully investigated.

Disposal Considerations

The introduction/generation of waste should be avoided or minimized to the extent possible. Avoid dispersal of spilled material, runoff and contact with drainage systems, soil and waterways. Contact a licensed professional waste disposal service for proper removal according to local, state and/or federal environmental regulations. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber. Handle contaminated packaging in the same way as the substance itself. Do not re-use empty containers. Disposal of this product or any by-products thereof should at all times comply with waste disposal legislation and environmental protection as per local, regional and national regulations. It is the responsibility of not only the principal investigator to determine the final product waste identification and compliance with those regulations but also in coordination and under the supervision of a professionally certified/licensed waste disposal expert.

European Union: When disposal is required, this product should be considered according to the European Waste Catalog (European Commission Decision of 03/05/01 modifying Directives 94/3/CE and 75/442/CE)

United States: Chemical Waste Generators (CWG) must determine whether a discarded chemical is classified as a hazardous waste. US EPA Guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, Waste Generators must consult Municipal or Local, State and Federal Hazardous Waste Regulations to ensure complete and accurate classification.
Section 14: Transport Information

Contact Biological Industries for Transport Information. NR=Not Regulated; •=Packing Group

<table>
<thead>
<tr>
<th>Regulatory Information</th>
<th>UN Number</th>
<th>Proper Shipping Class</th>
<th>Class</th>
<th>PG •</th>
<th>Label</th>
<th>Additional Information</th>
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</thead>
<tbody>
<tr>
<td>DOT Classification</td>
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<td>DOT</td>
<td>Not Regulated as a hazardous material for Road Transport as RPQ's</td>
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<tr>
<td>TDG Classification</td>
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<td>TDG</td>
<td>Not Regulated as a hazardous material for Transport of Dangerous Goods as RPQ's</td>
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<td>ADR/RID (Cross-Border)</td>
<td>Not Regulated as a hazardous material for Land Transport as RPQ's</td>
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<tr>
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<td>Not Regulated as a hazardous material for Maritime Transport as RPQ's</td>
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<tr>
<td>IATA-DGR/ICAO-TI Class</td>
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<td></td>
<td>IATA-DGR/ICAO-TI</td>
<td>Not Regulated as a hazardous material For Air Transport as RPQ's</td>
</tr>
</tbody>
</table>

Section 15: Regulatory Information

UN ID/Number: N/A; CAS#: NDA; Special Provisions for Transport: N/A

Chemical Name | AICS | DSL | EINECS | NDSL | PICCS | TSCA | WHMIS |
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>DMEM F-12 (1:1)</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
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</tbody>
</table>

Hazard Communication Standard (HCS) OSHA Classification: Irritant, Sensitizing Agent, Target-Organ Effects: This product may not be Hazardous by Definition of HCS (29CFR 1910.1200) (CRM)
EINECS: This product is not on the European Inventory of Existing Commercial Chemical Substances
Hazard Symbol(s): NDA
Caution: Substance not yet fully investigated.
Classification: Harmful/Irritant

R-Phrase(s)
- European Regulations:
  - R-32: May Be Harmful If Swallowed
  - R-36/37/38: May Be Irritating To Eyes, Respiratory System And Skin.
  - R-42: May Cause Sensitization by Inhalation.
  - R-61: May Cause Harm to the Unborn Child.

S-Phrase(s)
- S-2: Keep Out Of Reach of Children
- S-22: N/A
- S-24: Avoid Contact With Skin.
- S-26: In Case Of Contact With Eyes, Rinse Immediately With Plenty Of Water And Seek Medical Advice.
- S-36/37: Wear Suitable Protective Clothing, Gloves, Eye/Face Protection.
- S-38: In Case Of Insufficient Ventilation, Wear Suitable Respiratory Equipment
- S-45: In Case Of An Accident, Or If You Feel Unwell, Seek Medical Advice Immediately. (Present Original Label To The Attending Physician).

United States Regulatory Information:
- Toxic Substances Control Act (TSCA): As a solution, it is not listed on TSCA B(b) inventory: No SNUR under TSCA
- Health and Safety Reporting List: Not listed
- Chemical Test Rules: Section 12b: Not listed

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Section 15: Regulatory Information (Cont'd)

**Superfund Amendments and Reauthorization Act of 1986 (SARA):**

<table>
<thead>
<tr>
<th>Immediate Hazard</th>
<th>Delayed Hazard</th>
<th>Fire Hazard</th>
<th>Pressure Hazard</th>
<th>Reactivity Hazard</th>
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<tbody>
<tr>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
<td>NDA</td>
</tr>
</tbody>
</table>

If a particular box or boxes is indicated by a "Yes", this product contains EPCRA 313 Chemical(s) subject to the reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 (40 CFR 372).

**SARA Section 302/304/311/312 (Extremely Hazardous Substances):** No TPQ's

**SARA Section 302/304 (Emergency Planning & Notification):** No TPQ’s

**SARA Section 302/304 (Hazardous Chemicals):** As a solution, No TPQ’s

**SARA Section 311/312 MSDS Distribution; Chemical Inventory; Hazard Identification**

As a solution, no delayed, apparent chronic health hazard, when handled properly.

**SARA Section 313 (Specific Toxic Chemical Listings):** The material does not contain any chemical components with known CAS numbers that exceed the minimum threshold reporting levels established by SARA Title III, as per Section 313 (i.e. at a level of 1% or more).

**SARA Section 353 (Extremely Hazardous Substances):** NDA

**SARA Codes:** As a solution, No CAS Number

**Clean Air Act (CAA):**

Clean Air Act (CAA) 112: Accidental Release Prevention - NPF

**Clean Air Act (CAA):** 112 Regulated Flammable Substances - NPF

Clean Air Act (CAA): 112 Regulated Toxic Substances - NPF

This material does not contain any hazardous air pollutants. This material does not contain any Class One or Class Two Ozone Depleters.

**Clean Water Act (CWA):**

Clean Water Act (CWA): 307-NPF

Clean Water Act (CWA): 311-NPF

Not listed as a Hazardous Substance (HS) at the present concentration.

**OSHA:** Not Considered Highly Hazardous (HH) at the present concentration.

**Chemical Raw Materials (CRM) are Hazardous by Definition in re: Hazard Communication Standard (29 CFR 1910.1200):**

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**General Precautions and Disclaimer:**

1. This product has been thoroughly tested and approved by Biological Industries’ Quality Control protocols and standards. **Before** using this product, read and carefully observe the safety precautions and potential hazards, if any, the MSDS may stipulate.

2. The technical information contained herein is based on extensive testing and is to the best of our knowledge true and accurate but does not purport to be all-inclusive and shall be used only as a guide. And as such Biological Industries’ makes no other warranties of any kind whatsoever, and specifically disclaims and excludes all other warranties of any kind or nature, directly or indirectly, expressed or implied are provided. Biological Industries shall have no liability for direct, indirect, consequential or incidental damages arising from the use, results of use, or inability to use its products as they were intended in as much as aseptic technique, conditions of handling, use and storage is beyond our control once the product is delivered.

3. The use of this product **does not guarantee** the successful outcome of any diagnostic testing procedures.

4. Do not use **after** the expiration date indicated on the product label.

5. Avoid exposure to light. Store under specified conditions.

6. **Deterioration of liquid media** may be recognized by any of the following characteristics, among others including: (a) color change, (b) presence of clumping/floculent debris/granulation/particulates precipitates or sediments (c), Insolubility (d). And/or decrease in expected performance parameters. Any material described above should not be used and therefore discarded.

7. Notwithstanding the aforementioned information presented here, exclusive reliance must be placed on the end-user. Biological Industries therefore, makes no guarantee as to the accuracy or completeness of this information which is offered solely on the basis of customer service for your reflection, scrutiny and verification.
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ACC</td>
<td>American Chemical Council</td>
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<tr>
<td>ACGIH</td>
<td>American Conference Of Governmental Industrial Hygienists</td>
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<td>CAA</td>
<td>Clean-Air Act</td>
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<tr>
<td>CAS</td>
<td>Chemical Abstracts Service</td>
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<td>CERCLA</td>
<td>Comprehensive Environmental Response Compensation Liability Act of 1980</td>
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<td>CHEMTREC</td>
<td>Chemical Transportation Emergency Center</td>
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<td>CWA</td>
<td>Clean Water Act</td>
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<tr>
<td>DOT</td>
<td>US Department Of Transportation</td>
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<td>EC</td>
<td>European Community</td>
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<tr>
<td>EC50</td>
<td>Half Maximal Effective Concentration</td>
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<td>EINECS</td>
<td>European Inventory Of Existing Commercial Chemical Substances</td>
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<td>EL</td>
<td>Exposure Limit</td>
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<td>EPA</td>
<td>Environmental Protection Agency</td>
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<td>EU</td>
<td>European Union</td>
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<td>FFP</td>
<td>Fire-Fighting Procedures</td>
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<td>HazMat</td>
<td>Hazardous Material</td>
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<td>HMIS</td>
<td>Hazardous Materials Identification System</td>
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<td>IARC</td>
<td>International Agency For Research (Cancer)</td>
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<td>IATA/IATA-DGR</td>
<td>International Air Transport Association</td>
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<td>IMDG</td>
<td>Intermodal Transport Of Dangerous Goods</td>
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<td>LC50</td>
<td>Lethal Concentration</td>
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<td>LD50</td>
<td>Lethal Dose</td>
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<td>LEL</td>
<td>Lower Explosion Limit</td>
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<tr>
<td>N/A</td>
<td>Not Applicable</td>
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<tr>
<td>NDA</td>
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<tr>
<td>NFPA</td>
<td>National Fire Protection Association</td>
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<td>NIOSH</td>
<td>National Institute of Occupational Safety and Health</td>
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<td>NTP</td>
<td>National Toxicology Program</td>
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<td>OSHA</td>
<td>Occupational Safety and Health Administration</td>
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<td>PPE</td>
<td>Personal Protection Equipment</td>
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<td>RCRA</td>
<td>Resource Conservation &amp; Recovery Act 1976</td>
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<td>R-Phrases</td>
<td>Risk Phrases</td>
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<td>RQ</td>
<td>Reportable Quantity</td>
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<td>Superfund Amendment Reauthorization Act</td>
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