

### Product Profile

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| Product Name:  | Minimum Essential Medium- Eagle(MEM-E), Earle's Salts Base, Without L-Glutamine |
| Product Catalog Number                                     | 01-025-1  |
| Concentration:   | 1X  |
| Unit Size Availability:                                    | (A)500ml (B)100ml   |
| Formulation:   | Clear Red-Colored Solution  |
| Optimal Storage Conditions:                                | 2-8°C   |
| Stability: (Under Specified Handling & Storage Conditions) | Please Refer To Product Label   |

**Important Note!** Please read the *MSDS* and *Product Profile* carefully in their entirety before using this material for possible safety precautions and potential hazards.

#### Product Description:

All media consist of an isotonic, buffered, basal nutrient medium providing an energy source along with amino acids, inorganic salts, vitamins and other supplements. All these basic components in addition to other various supplements are part and parcel of a final formulation that segues into a unique and integrated composition that differs only in terms of concentration and proportion of the basic constituents which essentially characterizes each media type. The choice of media usually depends upon the type of cells in culture and MEM-E is one of the more common and simpler formulations like RPMI or DMEM in contrast to the more complex and/or enriched media such as Iscove's, Ham's F-12 or CMRL to name a few. MEM-E was originally developed by Harry Eagle as a result of his research endeavors to determine the essential nutrient requirements of mouse L-cells and HeLa cells in culture. MEM-E is one of the most commonly used of all synthetic cell culture media. and refers to only one of several formulae developed by Eagle to support transformed HeLa cells in monolayer culture. HeLa denotes those epithelial tumor cells originally derived from the first continuously human cervical-cultured carcinoma strain propagated and later commercialized. MEM is simply a modification BME containing higher concentrations of essential nutrients. MEM has been utilized for the cultivation of a wide array of cells grown in monolayers. The optional supplementation of non-essential Amino Acids (NEAA's) to the formulations that incorporate either Hank's or Eagle's Salts has broadened the usefulness of this medium.

Cultured cells require a sterile environment and an optimal nutrient supply for growth and viability. Over the years variously defined basal media have been designed, developed, modified and enriched with a wide spectrum of constituents for supporting a vast range of cell types. Precise media formulations have been specifically developed by optimizing the concentrations of each and every component which performs a uniquely defined function. This cell culture medium, for all intents and purposes, has since been modified and enriched with a diverse complex of salt compounds along with other essential nutrients that segue into a final medium based upon application and technique.

At the minimum, MEM-E Culture Media consists of amino acids, energy sources, inorganic salts, and vitamins among other nutrients. It is basically an unsupplemented medium which promotes the growth of many types of cells which do not require any special nutrients. Development of a Basal Culture Medium is a prerequisite for the attachment, spreading and growth of cells *in vitro*. To maximize success, the *in vitro* culture conditions are designed to mimic such crucial *in vivo* conditions of nutrition, osmolality, pH and temperature. Optimal and critical nutrient components including such inorganic salts (e.g. NaCl, KCl, CaCl<sub>2</sub>), amino acids (e.g. Arginine, Histidine, Lysine), energy sources (e.g. Glucose), and vitamins (e.g. Folic Acid, Thiamine, Riboflavin) are part and parcel that culminate in a perfect milieu for growth and viability.

Unlike the balanced salt solutions that form the basis of many complex media formulations and are utilized to maintain cells for the short term in a viable condition, MEM-E is modified and enriched to promote the growth and viability of cells in culture. MEM-E may be utilized for a broad array of cell lines when properly supplemented. It has demonstrated the ability to support not only normal but also transformed cells in culture which makes it suitable for even cell culture milieu charged with CO<sub>2</sub>.

These variegated components that constitute MEM-E have been developed in order to fulfill the basic cell requirements for five basic and essential ions including: calcium, magnesium, phosphate, potassium and sodium and therefore contain various amounts of CaCl<sub>2</sub>, KCl, MgSO<sub>4</sub>, NaCl, NaHCO<sub>3</sub> and others comprising Earle's Salts. The key constituents of salts are the ions which function in osmolality whereas others such as Calcium and Magnesium are known, among other functions, to serve as cofactors for and support cell attachment and aggregation. Glucose serves as a major carbon and energy source and Phenol Red may serve as a pH indicator in specific cell culture media. MEM-E also contains Sodium Bicarbonate which has an intimate relationship with and plays a major role with CO<sub>2</sub> by helping to maintain optimal physiological pH.

Some Predominant Characteristics of MEM- Earle's Salts Base without L- Glutamine include:

- ◆ Liquid Formulation
- ◆ With Earle's Salts
- ◆ With Sodium Bicarbonate(NaHCO<sub>3</sub>)
- ◆ With Phenol Red(C<sub>19</sub>H<sub>13</sub>NaO<sub>5</sub>S) as pH indicator
- ◆ Sterile-Filtered(0.1µ)
- ◆ Cell Culture-Tested

**Handling/Storage:**

The product should be stored at 2-8°C. The medium should be warmed to room temperature (15-30°C) prior to use. The product should not be left in the light for prolonged periods as it is light-sensitive. When stored in the dark under ideal conditions, the product is stable until the expiry date. The medium is clear and should be devoid of particulates and flocculent debris. If it is cloudy or precipitates are obvious do not use. Any other evidence of deterioration could include: pH shift and color change and/or a decrease in performance parameters.

**Instructions/Procedure:**

- 1) Take a bottle from the proper storage conditions at 2-8°C and read the label.
- 2) Ensure that the cap of the bottle is tight.
- 3) Gently swirl the solution in the bottle.
- 4) Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
- 5) Using aseptic/sterile technique under a laminar-flow culture hood, work according to established protocols.
- 6) As the medium is formulated without L-Glutamine, if required it should be added aseptically prior to use. The same would apply to other supplements such as antibiotics.

**Quality Control**

| Test              | Specification   |
|-------------------|-----------------|
| Cell Culture Test | Test & Record   |
| Cell Line         | Vero            |
| Endotoxins        | Test and Record |
| Osmolality        | 280-310 mOsm/Kg |
| pH                | 7.1-7.6         |
| Sterility         | Sterile         |

**Auxiliary Products**

| Product Name   | Catalog Number | Storage Temperature       |
|--|----------------|---------------------------|
| Basal Medium Eagle (BME), Earle's Salts Base, without L-Glutamine, without Sodium Bicarbonate 10X  | 01-015-5       | 2-8°C                     |
| Minimum Essential Medium Eagle (MEM-H), Hank's Salts Base, without L-Glutamine   | 01-035-1       | 2-8°C                     |
| Earle's Balance Salt Solution 10X Conc., without Sodium Bicarbonate  | 02-010-5       | Room Temperature (15-30°) |
| Earle's Balance Salt Solution without Phenol Red   | 02-011-1       | Room Temperature (15-30°) |
| Earle's Balance Salt Solution without Phenol Red, without Sodium Bicarbonate   | 02-011-5       | Room Temperature (15-30°) |
| L-Glutamine Solution 29.2mg/ml in Saline   | 03-020-1       | -20°C                     |
| L-Alanyl-L-Glutamine Solution(A Dipeptide Substitute)  | 03-022-1       | -20°C                     |
| Penicillin-Streptomycin Solution,10,000 units/ml Penicillin G Sodium Salt,10mg/ml Streptomycin   | 03-031-1       | -20°C                     |
| Sterile Culture-Grade Water  | 03-055-1       | Room Temperature (15-30°) |
| Fetal Bovine Serum   | 04-001-1       | -20°C                     |
| Fetal Bovine Serum(Qualified for Human Embryonic Stem Cells)   | 04-002-1       | -20°C                     |
| Adult Bovine Serum   | 04-003-1       | -20°C                     |
| Serum-Free Cell Freezing Medium  | 05-065-1       | 2-8°C                     |
| <b>Note:</b> For a list of other Antibiotics, Serum, Reagents and Supplements, please refer to our Product Catalog/Product Profiles, Product Guides and Internet Site. |                |                           |

**References:**

- 1) Current Edition Merck Index
- 2) Biological Industries(BI) Specifications
- 3) Darling, D.C. and Morgan, S.J. Animal Cells: Culture and Media, New York: John Wiley & Sons,1994