Product Profile

Product Name:	*MEM Non-Essential Amino Acids Solution, 100X Conc.*
Product Catalog Number	*01-340-1*
Unit Size Availability:	100ml
Concentration:	100X
Formulation:	Clear Liquid Solution
Specified Storage Conditions:	2-8°C
Stability: (Under Ideal Handling Storage)	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:
Living organisms differ considerably with respect to their ability to synthesize Amino Acids and the forms of nitrogen which they may utilize for such a purpose. The higher vertebrates do not possess the ability to synthesize all the common Amino Acids like some of the more versatile higher plants or microorganisms like *E. coli* that can. Humans and the albino rat can make only ten(10) of the twenty(20) AA's required for protein synthesis. These collectively are known as the Non-Essential Amino Acids (NEAA's), the remainder being the Essential Amino Acids (EAA's). Amino acids are the building blocks (i.e. linear chains of amino acids) of proteins and proteins have a variety of functions in metabolism, may be precursors for the biosynthesis of other biological molecules, function with coenzymes, are critical to life and are therefore needed by every living organism. An amino acid is a molecule containing both amine and carboxyl functional groups. Proteins are chains of amino acids linked together by peptide bonds. Chemically speaking, they are carboxylic acids which have an amine group attached to it. Next to water, protein makes up the largest portion of our body weight as it is contained in all the muscles, body organs, hair, nails and other body systems. There are more than 500 amino acids which occur in nature of which humans can produce 10 of 20 amino acids; the others must be supplied by the diet. Unlike fat and complex carbohydrates, the human body does not store excess amino acids as a reserve; they must be supplied in the diet every day. Concentrated supplements like MEM NEAA's 100X add nutrients that cells might not encounter thereby reducing the overall biosynthetic burden *to* cell cultures *in vitro*.

Amino acids are incorporated into proteins. At a minimum, basal medium must contain those essential amino acids (EAA's) that cannot be synthesized by the cells including L-Cysteine and L-Tyrosine at a rate to meet the metabolic requirements of the cells in culture. Individual requirements vary for the cell type being cultured. Some more specialized media often have non-essential amino acids (NEAA's) added to ensure that amino acids do not limit the maximum cell concentration attainable in order to compensate a particular cell type which is unable to manufacture them of if they leach rapidly into the medium.

As the selection of a nutrient medium or supplementation thereof is strongly influenced, among others, by many factors, of note are three major considerations:

- ◊ Cell Type
- ◊ Type of Culture(e.g., Clonal, Monolayer, Suspension)
- ◊ Degree of Chemical Definition

It is recommended to review the extensive literature concerning cell-culture media and its supplementation and the physiological parameters required for each specific cell-line as per their essential niche requirements.

Predominant Characteristics o f MEM Non-Essential Amino Acids Solution, 100 X Conc., includes:

- § Liquid 100X Concentrate
- § Stimulates Growth and Prolongs Cell Viability
- § Commonly Used In Cell Culture System Applications and Formulations
- § Relatively Long-Storage When Handled and Stored Properly Under Defined Conditions

Storage & Stability:
This product should be stored under specified conditions @ 2-8°C and used within the expiration date indicated on the product label. Do *not use* after the expiration date as specified on the label. *Deterioration of liquid media* may be recognized by any of the following characteristics, among others including: (a). color change, (b). granulation/ clumping, (c). insolubility, (d). and/or decrease in expected performance parameters. Any material described above should not be used and therefore discarded.
*MEM Non-Essential Amino Acids Solution 100 X Co*nc., is relatively stable when handled and stored under specified conditions as stipulated on the label. Do not expose to light for prolonged periods as it is light-sensitive. For prolonged storage, store in the dark.
Instructions/Procedure:

1) Take a bottle of *MEM Non-Essential Amino Acids Solution 100X Conc.*, from specified storage conditions at 2-8°C and read the label. Warm to Room Temperature (15-30°C) prior to use.
2) Ensure that the cap of the bottle is tight.
3) Gently swirl the solution in the bottle to ensure homogeneity.
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 and work according to established protocols.
6) *MEM Non-Essential Amino Acids Solution, 100X Conc.* should be diluted to a working concentration of 1X before use.

Quality Control:

Test	Specifications:
Appearance:	Clear Solution
Cell Culture:	Pass Test
Endotoxins:	Test & Record
pH:	3.2-3.7
Sterility:	Sterile

Auxiliary Products

Product Name	Catalog Number	Storage Temperature
Grace's Insect Cell Medium	01-155-1	2-8°C
BME Amino Acids Solutions ,100X Conc., Without L-Glutamine	01-315-1	2-8°C
Basal Medium Eagle Vitamins Solution, 100X Conc.,	01-316-1	-20°C
MEM Amino Acids Solutions,50X Conc., Without L-Glutamine	01-325-1	2-8°C
MEM Vitamins Solution, 100X Conc.	01-326-1	-20°C
SDS Solution	01-890-1	Room Temperature(15-30°)
Dulbecco's Phosphate Buffered Saline(DPBS) without Calcium and Magnesium	02-023-1	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°)
Cell Dissociation Solution, Non-Enzymatic	03-071-1	2-8°C
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
Colchicine Solution, 10µg/ml in DPBS	12-003-1	-20°C
Colcemid Solution, 10µg/ml in DPBS	12-004-1	-20°C
Potassium Chloride(KCl) Solution(0.075M)	12-005-1	2-8°C
Phytohemaglglutin-M(PHA-M), Lyophilized	12-006-1	2-8°C
Note: 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) Sullivan Jr. John B. Krieger, Gary R. Hazardous Materials Toxicology: Clinical Principles of Environmental Health. Williams & Wilkins: Baltimore, Maryland, pps.157, 940-945.
2) Barile, Frank A. Clinical Toxicology: Principles and Mechanisms. CRC Press: Boca Raton, Florida, 2004.
3) Lackie, J. M. The Dictionary of Cell & Molecular Biology, Academic Press: London, 2007
4) O'Neil, Maryadele *et. al*., The Merck Index, 14th Edition, Whitehouse Station, New Jersey,2006
5) Biological Industries (BI) Specifications
6) Current Edition USP/E Ph
7) Martindale The Extra Pharmacopeia, 28th Edition, Royal Pharmaceutical Society: London, England
8) Freshney, R.I. Animal Cell Culture: A Practical Approach, IRL Press, Oxford, p.25.