Product Profile

Product Name:	*RPMI 1640,with 25mM Hepes ,with L-Glutamine*
Product Catalog Number	*01-106-1*
Unit Size Availability:	(A)500ml ;(B)100ml
Concentration:	*1X*
Formulation:	Clear , Red-Colored Solution
Specified Storage Conditions:	2-8°C
Stability: (Under Specified Handling & Storage)	*Please Refer to the 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:

RPMI Medium 1640, with25mM Hepes, with L-Glutamine has been specifically developed for the long-term culture of blood cells, the culture of normal and abnormal human leukocytes (e.g. neoplastic WBC's) and is now used as a general medium (with serum) for hybridoma cultures. Roswell Park Memorial Institute (RPMI) 1640, when properly supplemented, has demonstrated wide applicability for supporting the growth of many types of cells in culture, including human lymphocytes.

Function of Hepes

When considering biological pH, the Hepes molecule is zwitterionic, a buffer with the capability of carrying a positive charge at one end of the molecule and a negative charge at the other. It has been described as one of the best all-round, multi-purpose buffers available for biological research. It is a commonly used buffer ideal for most cell culture work as it helps to maintain pH levels, especially in basal culture media. This is mainly due to its ability to maintain physiological pH despite the changes in CO_2 concentration which occurs normally in cell culture due to cellular respiration. When compared to bicarbonate buffers also commonly used in cell culture, It is claimed that Hepes may not only be a more effective buffering agent for maintaining enzyme structure and function at lower temperatures but also is reportedly superior to $NaHCO_3$ in controlling pH in tissue or organ cultures. pH buffering is deemed necessary not only due to the fact that the growth of many cells is restricted to within narrow pH limits, but also because cellular metabolism frequently alters pH. However, the choice of buffers is dependent upon many factors including optimal milieu conditions, nutrient niche requirements, specific cell line, general circumstances and most of all, the researcher's experience. Buffer strength for cell culture applications is usually within the range of from 10-25 mM. Diligence and care must be to the utmost in maintaining appropriate osmolality and toxicity in media with respect to the specific cell line. Hepes provides a buffer within the pH range of 6.15-8.35 showing its wide applicability and its most efficacious nature (i.e., pK $\pm$ 1, as a general rule).

Most common types of media consists of an isotonic, buffered basal nutrient enriched environment which provides an energy source, inorganic salts, vitamins, amino acids as well as additional constituents(e.g. supplements) according to the demands of a particular cell line. This relatively more complex medium formulation provides the optimal cell-culture environment in which ***in vitro*** culture conditions mimic those of the ***in vivo*** environment including basic nutritional requirements, osmotic pressure, physiological pH, temperature among other considerations. At a minimum, it consists of the foundation medium components that are all part and parcel of a pre-tested complete media to assist the cells in meeting their metabolic demands.

RPMI Medium 1640 with25mM Hepes, with L-Glutamine contains no growth-promoting factors or antimicrobials. The type of medium recommended usually is dependent upon the type and character of the cells in culture. Supplementation is the process in which specific additions or supplements (e.g. growth factors, serum, fatty-acids, buffers, hormones) compliment a typical basal or balanced salt solution medium or more complex media such as RPMI 1640.

These more complex media not only meet the minimum requirements for cell growth and proliferation but also are part and parcel of a much wider array of factors culminating in a final medium that segues with the essential cell-niche requirements demanded for optimal results.

Function of L-Glutamine

The addition of L-Glutamine, a precursor of glutamate, is one of the most readily available sources of energy for many rapidly dividing cell-types for use ***in vitro*** and is a key component and essential amino acid that is required in many cell-culture media formulations and in virtually all mammalian cells in culture. Also adding Sodium pyruvate serves as an additional an easily accessible carbohydrate energy source for cells in culture. Along with D-glucose, these balanced energy sources serve as carbon skeletons for cell anabolic processes in addition to nucleic acid metabolism and protein production while limiting the potential cumulative build-up effects of toxic levels of ammonia.

Serum and Serum Products

Serum or serum-like replacements are necessary for the growth and proliferation of cells. Serum is largely undefined, but it supplies a mixture of all types of proteins, structural, carrier and functional proteins including essential growth factors, hormones, minerals, trace elements and even inhibitory substances. Serum supplementation is a crucial planning step which plays a vital role in the success of your final medium. *Biological Industries'* Pre-Screened and Pre-tested Serum undergoes the most stringent and rigorous Quality Control/Assurance standards and protocols testing all raw materials and finished products in order to meet the demands of international markets and ensure high quality and consistency. All our serum products meet approved compliance validation and specifications prior to use and or release of the final product to the end-user. Our Fetal Bovine Serum (FBS) undergoes a methodical and comprehensive battery of Physico-Chemical, Microbiological and Biological Performance Testing Procedures. Each batch is traceable, well-documented from source of origin through the thorough and systematic Quality Control process. All documentation and certification are available upon request.

RPMI Medium 1640 with25mM Hepes, with L-Glutamine contains numerous important basic constituents in a ready-to-use formulation, which includes a typical and wide variety of elements, among others:

- Amino Acids
- Vitamins
- Inorganic Salts
- Phenol Red
- Trace Elements

Some Predominant Characteristics of *RPMI Medium 1640 with25mM Hepes, with L-Glutamine* includes:

- Liquid Formulation
- With Hepes
- With Sodium Bicarbonate($NaHCO_3$)
- With D-Glucose
- With Phenol Red($C_{19}H_{13}NaO_5S$) as a pH indicator
- With L-Glutamine
- Promotes Cell Performance and Productivity
- More Uniform & Consistent Media Performance
- Sterile-Filtered(0.1μ),Cell-Culture-Tested

Storage, Handling, Stability Precautions and Disclaimer:
For *in vitro* diagnostic use only.

RPMI Medium 1640 with25mM Hepes, with L-Glutamine is stable when stored under defined conditions at 2-8°C. The product is light-sensitive and therefore should not be left in the light. When stored in the dark under ideal conditions, the product is stable until the expiry date.

As with any other liquid media formulations, *deterioration of liquid media* may be recognized by any of the following characteristics, among others including: (a). color change, (b). presence of clumping/flocculent 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.

Instructions/Procedure:

1) Take a bottle from the defined storage conditions at 2-8°C and read the label. Warm to Room Temperature(15-30° C) prior to use.
2) Ensure that the bottle cap is tight and swirl the bottle for homogeneity.
3) Wipe the outside of the bottle with a disinfectant solution such as 70% ethanol.
4) Using aseptic/sterile technique under a laminar-flow culture hood, work according to established protocols.
5) Antibiotics may be added if desired.

Quality Control:

Test	Specification
Appearance:	Clear Solution
Cell Culture:	Pass Test
Cell Line:	Vero
Endotoxins:	Test and Record
Osmolality:	280-320 mOsm/kg
pH :	7.2-7.5
Sterility:	Sterile

Auxiliary Products

Product Name	Catalog Number	Storage Temperature
RPMI 1640, with L-Glutamine	01-100-1	2-8°C
RPMI 1640, without D-Glucose, without L-Glutamine	01-101-1	2-8°C
RPMI 1640, without Phenol Red,without L-Glutamine	01-103-1	2-8°C
RPMI 1640, without L-Glutamine	01-104-1	2-8°C
RPMI 1640 10XConc., without L-Glutamine, without Sodium Bicarbonate	01-104-5	2-8°C
Dulbecco's Phosphate Buffered Saline(DPBS) without Calcium and Magnesium	02-023-1	15-30°C
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	03-031-1	-20°C
Sodium Pyruvate	03-042-1	-20°C
Water, Cell Culture Grade	03-055-1	15-30°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
Donor Horse Serum	04-004-1	-20°C
Fetal Bovine Serum(TET System Approved)	04-005-1	-20°C
Porcine Serum	04-006-1	-20°C
European Grade Fetal Bovine Serum	04-007-1	-20°C
Rabbit Serum	04-008-1	-20°C
Donor Goat Serum	04-009-1	-20°C
Fetal Bovine Serum(Dialyzed)	04-011-1	-20°C
Special Newborn Calf Serum(Less than 10 days of age)	04-102-1	-20°C
Fetal Bovine Serum(Heat-Inactivated)	04-121-1	-20°C
Special Newborn Calf Serum(Heat-Inactivated)	04-122-1	-20°C
Adult Bovine Serum(Heat Inactivated)	04-123-1	-20°C
Note: For a list of other Antibiotics or Serum, please refer to our Product Catalog/Product Profiles/Guides and Internet Site.		

References:

1) Biological Industries (BI) Specifications
2) Darling, D.C. and Morgan S.J. Animal Cells: Culture and Media, John Wiley & Sons, New York, 1994
3) Lackie, J. M. The Dictionary of Cell & Molecular Biology, Academic Press: London, 2007