Biological Industries Israel
Beit Haemek Ltd.

Version: 1.2
Date: 10/2009

Product Profile

Product Name:	*Hanks' Balanced Salt Solution(HBSS) without Calcium and Magnesium, Without Phenol Red*
Product Catalog Number	*02-018-1*
Concentration:	1X
Unit Size Availability:	500ml/100ml
Formulation:	Clear, Colorless Solution
Optimal Storage Conditions:	Room Temperature (15-30°C)
Stability: (Under Ideal 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:
Balanced salt solutions are, for all intents and purposes, inorganic salt solutions that have since been modified and enriched with a diverse complex of salt compounds, along with D-Glucose with or without Phenol Red that eventually segue into a final medium based upon application and technique to meet the final cell culture medium's unique niche requirements.

HBSS is one of several balanced salt solutions that form the basis of many complex media formulations. The inclusion of salts in *Hank's Balanced Salt Solution without Calcium and Magnesium, Without Phenol Red* contributes in fulfilling not only one of the primary roles acting as an inorganic base for medium preparation but also serving as a diluent. In this particular case, inorganic salts are utilized to maintain cells for the short term in a viable condition rather than to promote their growth. In addition, these salt solutions may also be used for short incubations or for washing cells by centrifugation. During these intervals, the cells maintenance requirements are such that osmotic balance and physiological pH at the forefront. *Hank's Balanced Salt Solution without* Calcium *and Magnesium, Without Phenol Red* is buffered with phosphate and in this manner; it is able to maintain its physiological pH at atmospheric conditions. For this reason, it is utilized in enzymatic cell and tissue treatments and for a final cellular rinse prior to the suspension of the cells in a complete growth medium.

These variegated inorganic salt solutions 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 $CaCl_2$, KCl, $MgSO_4$, NaCl, $NaHCO_3$, NaH_2PO_4 and other salts, among others. 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. D-Glucose serves as a major carbon and energy source. Sodium Bicarbonate has an intimate relationship with and plays a major role with CO_2 by helping to maintain optimal physiological pH.

Biological Industries' extensive array of salt solutions is widely used as an inorganic base in the preparation of media for cell culture and available according to application and technique. In order to optimize success, the eventual *in vitro* cell culture conditions must ultimately mimic the *in vivo* conditions for adequate cell attachment, membrane potential, coenzyme factors, osmotic pressure, and physiological pH. The final cell culture medium determined by the researcher must provide the proper milieu whose primary responsibility lies with these salt solutions which vary in terms of concentration and complexity.

The current role of a balanced salt solution in cell culture is multi-faceted and may be divided into four principal functions.

- Functions as a diluent, as an irrigating medium or transporting fluid while maintaining osmoregulation, the optimal and constant balance of osmotic pressure gradients between the intracellular and extracellular compartments.
- Provides cells with fluids and certain bulk inorganic ions essential for normal cell metabolism.
- When combined with a carbohydrate, such as $C_6H_{12}O_6$ (glucose), it provides a primary energy source for cell metabolism.
- When provided with a buffering system, it facilitates the maintenance of physiological pH within the acceptable range of 7.2-7.6.

Some of the Predominant Characteristics of HBSS 1X include:

- Liquid Formulation
- *With* Sodium Bicarbonate($NaHCO_3$)
- *Without* Calcium and Magnesium
- *Without* Phenol Red($C_{19}H_{13}NaO_5S$) as a pH indicator
- Sterile-Filtered(0.1µ)
- Endotoxin-Tested

Storage & Stability
The product should be stored at room temperature (15-30°). 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.

Instructions/Procedure:
1) Take a bottle from the proper storage conditions at Room Temperature (15-30°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.

Quality Control:

Test	Specification
Appearance:	Clear Solution
Endotoxins:	Check and Record
Osmolality:	270-292 mOsm/Kg
pH:	7.15-7.50
Sterility:	Sterile

Auxiliary Products

Product Name	Catalog Number	Storage Temperature
Hank's Balance Salt Solution(HBSS)	02-015-1	Room Temperature (15-30°)
Hank's Balance Salt Solution 10X Conc., without Sodium Bicarbonate	02-015-5	Room Temperature (15-30°)
Hank's Balance Salt Solution 1X without Phenol Red	02-016-1	Room Temperature (15-30°)
Hank's Balance Salt Solution 1X without Calcium and Magnesium	02-017-1	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
Sterile Culture-Grade Water	03-055-1	Room Temperature (15-30°)
Serum-Free Cell Freezing Medium	05-065-1	2-8°C
Note: For a list of Antibiotics, Serum other 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