FORMEDIUM™
CREATING THE CULTURE FOR DISCOVERY

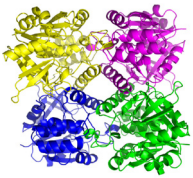
CULTURING E.COLI

PRODUCT CATALOGUE 2025/26

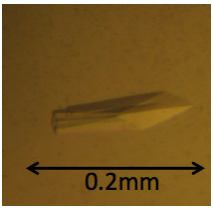
ESCHERICHIA COLI MEDIA

Formedium™ manufactures a large range of powdered Escherichia Coli media

- Auto Induction Medium - LB Broth base, 2YT Broth base, Terrific Broth base, Super Broth base
- Media for optimal cell growth and yield of E. coli cultures - LB media, Tryptone media, Terrific media, SuperBroth media, M9 Minimal Salts
- Bacteriophage Lambda medium formulations - NZ, NZM, NZY, NZYM, NZCYM, NZYDT
- M13 phage and ssDNA bacteriophages medium formulations -YT media, 2xYT media.
- Competent Cells medium formulations - SOB ,SOC
- Bacterial Media components



Crystal and molecular structure of RmlA Dr. Magnus S. Alphey, University of St. Andrews



Crystals of MscS Dr. Magnus S. Alphey, University of St. Andrews

The main components of most Esherichia Coli media are:-

TRYPTONE, ENZYMATIC DIGEST OF CASEIN.

Tryptone is a pancreatic digest of casein. Casein is the main protein of milk and is a rich source of amino acid nitrogen. Amongst all the amino acids, Tryptophan is present in the highest concentrations.

Due to the rich nutritional properties, Tryptone is added to media as an accelerator to increase the yield of organisms and is recommended where a rapid and luxuriant growth of micro organisms is required.

YEAST EXTRACT

Yeast Extract is a spray dried extract manufactured by complete autolysis, i.e. a transformation of proteins into peptides and amino acids, implemented through the proteolytic enzymes present in yeast cells.

The cell membranes are discarded, enabling completely soluble yeast extracts to be obtained. In LB media, Yeast Extract is an essential nitrogen source for bacteria besides peptides and amino acids. Yeast extract also contains purine and pyrimidine bases, carbohydrates and water soluble vitamins of B group.

GLUCOSE

As the main carbon source

SODIUM CHLORIDE

To set the osmolarity of the medium at a suitable osmotic environment.

AGAR

When added, to solidify the medium.

ADDITIVES

Like Casamino acids, Magnesium sulfate, Maltose, Thymidine.

In fact most Escherichia Coli media do contain these components, but all in different compositions and ratios to obtain an optimal result for cell growth and yield, propagation of bacteriophages and preparation of competent cells.

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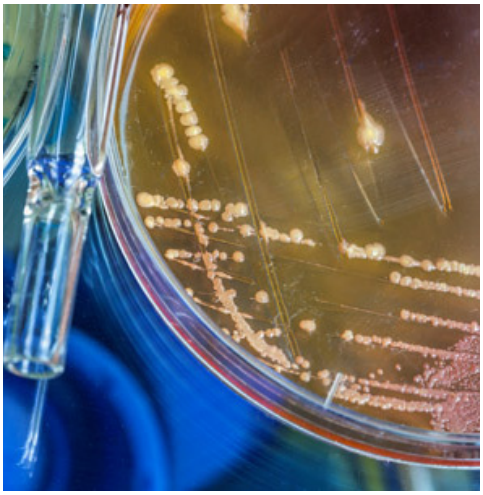
84 MEDIA COMPONENTS

AIM - AUTO INDUCTION MEDIUM



Auto Induction Media (AIM) have been formulated to grow IPTG-inducible expression strains, initially without induction, and then to induce production of target protein automatically, usually near saturation at high cell density. A limited concentration of glucose is metabolized preferentially during growth, which prevents uptake of lactose until the glucose is depleted, usually in mid to late log phase. As the glucose is depleted, lactose can be taken up and converted by β-galactosidase to the inducer allolactose. Allolactose causes release of lac repressor from its specific binding sites in the DNA and thereby induces expression of T7 RNA polymerase from the lacUV5 promoter and unblocks T7lac promoters, allowing expression of target proteins by T7 RNA polymerase.

With AIM media a high density cell growth is followed by a spontaneous induction of protein expression. There is no need to monitor the cell density and there is no conventional induction with IPTG. The principle of AIM media is based on carbon sources in the medium that are metabolized differentially to promote high density cell growth and automatically induce protein expression from lac promoters.

Parallel growth of many non-induced or auto-induced cultures is feasible because cultures are simply inoculated and grown to saturation. This is a great convenience and simplifies manual or automated induction and analysis of multiple clones compared to conventional IPTG induction, which requires monitoring growth of each culture and adding inducer at the proper stage of growth.

The components used in AIM media can be grouped in five functional clusters of components.

NITROGEN SOURCE

Tryptone and Yeast Extract are present as a general nitrogen source for growth and protein expression. Both are excellent sources for nitrogen and additionally Yeast Extract provides B-type vitamins, carbohydrates and growth factors. Due to different demands for nitrogen by various cellines for both growth and protein production Formedium™has developed four different types of AIM media based upon a different quantity and ratio in Tryptone and Yeast Extract.

Within our AIM range are AIM-LB Broth, AIM-2YT Broth, AIM-Terrific Broth and AIM-Super Broth. For more detailed information about concentrations and quantities look at the different product descriptions. For the researcher it is up to decide which type of AIM medium will supports growth and yield at maximum.

Additionally Ammonium Sulphate (NH4)2SO4 is added to the medium for increased protein synthesis.

CARBON SOURCE

In AIM media D-Glucose and α-Lactose are present in a blend optimized for tightly regulated uninduced growth to high cell density followed by high-level induction due to the depletion of glucose and subsequently the conversion of lactose in allolactose.

BUFFER

In AIM media a phosphate buffer is present to reduce a drop in pH because of glucose metabolism.

MAGNESIUM SULPHATE (MGSO4)

High density growth in complex media is often limited by lack of Magnesium Sulphate. Extra is added to the medium to achieve high saturation cell density.

TRACE ELEMENTS

Growth to high cell density and high yield protein expression might require the addition of an extra addition of trace elements. Although these elements are present in complex media based on Tryptone and Yeast Extract an extra addition of nine different trace elements plus iron provides amounts sufficient to saturate substantial production of target protein. CaCl2, MnSO4, ZnSO4, CoCl2, CuSO4, NiCl2, NaMoO4, Na2SeO3 and FeCl3 are supplementary to the AIM media including trace elements.

AIM media can be supplied with or without the extra addition of trace metals.

The AIM or Auto Induction Media as produced and supplied by Formedium™ are based on the work of F. William Studier, Protein Production by Auto-Induction in High-Density Shaking Cultures. Brookhaven National Laboratory, Upton, NY 11973.

AIM - 2YT BROTH BASE INCLUDING TRACE ELEMENTS

SKU	Size
AIM2YT0201	100g
AIM2YT0205	500g
AIM2YT0210	1000g
AIM2YT0260	6 x 1kg

Formula	g/l
Tryptone	16
Yeast extract	10
(NH4)2SO4	3.3
KH2PO4	6.8
Na2HPO4	7.1
Glucose	0.5
α-Lactose	2.0
MgSO4	0.15
Trace Elements	0.03

Suspend 45.85 gram powdered medium in 1 litre distilled water.

Store dry at room temperature.

AIM - 2YT BROTH BASE W/O TRACE ELEMENTS

SKU	Size
AIM2YT0101	100g
AIM2YT0105	500g
AIM2YT0110	1000g
AIM2YT0160	6 x 1kg

Formula	g/l
Tryptone	16
Yeast extract	10
(NH4)2SO4	3.3
KH2PO4	6.8
Na2HPO4	7.1
Glucose	0.5
α-Lactose	2.0
MgSO4	0.15

Suspend 45.85 gram powdered medium in 1 litre distilled water.

Store dry at room temperature.

AIM - LB BROTH BASE INCLUDING TRACE ELEMENTS

SKU	Size
AIMLB0201	100g
AIMLB0205	500g
AIMLB0210	1000g
AIMLB0260	6kg

Formula	g/l
Tryptone	10
Yeast extract	5
(NH4)2SO4	3.3
KH2PO4	6.8
Na2HPO4	7.1
Glucose	0.5
α-Lactose	2.0
MgSO4	0.15
Trace Elements	0.03

Suspend 34.85 gram powdered medium in 1 litre distilled water.

Store dry at room temperature.

AIM - LB BROTH BASE W/O TRACE ELEMENTS

SKU	Size
AIMLB0101	100g
AIMLB0105	500g
AIMLB0110	1000g
AIMLB0160	6 x 1kg

Formula	g/l
Tryptone	10
Yeast extract	5
(NH4)2SO4	3.3
KH2PO4	6.8
Na2HPO4	7.1
Glucose	0.5
α-Lactose	2.0
MgSO4	0.15

Suspend 34.85 gram powdered medium in 1 litre distilled water.

Store dry at room temperature.

AIM - SUPER BROTH BASE INCLUDING TRACE ELEMENTS

SKU	Size
AIMSB0201	100g
AIMSB0205	500g
AIMSB0210	1000g
AIMSB0260	6kg

Formula	g/l
Tryptone	35
Yeast extract	20
(NH4)2SO4	3.3
KH2PO4	6.8
Na2HPO4	7.1
Glucose	0.5
α-Lactose	2.0
MgSO4	0.15
Trace Elements	0.03

Suspend 74.85 gram powdered medium in 1 litre distilled water.

Store dry at room temperature.

AIM - SUPER BROTH BASE W/O TRACE ELEMENTS

SKU	Size
AIMSB0101	100g
AIMSB0105	500g
AIMSB0110	1000g
AIMSB0160	6kg

Formula	g/l
Tryptone	35
Yeast extract	20
(NH4)2SO4	3.3
KH2PO4	6.8
Na2HPO4	7.1
Glucose	0.5
α-Lactose	2.0
MgSO4	0.15

Suspend 74.85 gram powdered medium in 1 litre distilled water.

Store dry at room temperature.

AIM - TERRIFIC BROTH BASE INCLUDING TRACE ELEMENTS

SKU	Size
AIMTB0201	100g
AIMTB0205	500g
AIMTB0210	1000g
AIMTB0260	6kg

Formula	g/l
Tryptone	12
Yeast extract	24
(NH4)2SO4	3.3
KH2PO4	6.8
Na2HPO4	7.1
Glucose	0.5
α-Lactose	2.0
MgSO4	0.15
Trace Elements	0.03

Suspend 55.85 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

AIM - TERRIFIC BROTH BASE W/O TRACE ELEMENTS

SKU	Size
AIMTB0101	100g
AIMTB0105	500g
AIMTB0110	1000g
AIMTB0160	6kg

Formula	g/l
Tryptone	12
Yeast extract	24
(NH4)2SO4	3.3
KH2PO4	6.8
Na2HPO4	7.1
Glucose	0.5
α-Lactose	2.0
MgSO4	0.15

Suspend 55.85 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

MEDIA FOR OPTIMAL CELL GROWTH AND YIELD OF ESCHERICHIA COLI CULTURES

LB Media (Luria-Bertani) are common bacterial growth media for Escherichia Coli.

Although already described in the fifties in the early days of phage genetics these media are still widely used in molecular biology.

The two main components of LB media are Tryptone and Yeast Extract. Tryptone is used in a concentration of 10 gram / litre and Yeast Extract in a concentration of 5 gram / litre. Many variations of LB medium only differs in the concentration of NaCl. All LB-Media are listed in order of increasing concentration of NaCl.

LB Medium Miller is the High Salt LB medium type with 10 gram /litre whereas LB Medium Lennox is the Low Salt LB medium type with 5 gram / litre. L-Broth only contain 0.5 gram of NaCl per litre and is used mainly when working with phage P1 where CaCl2 is added for efficient adherence of the phage to the cell. In LBM media Mg2+ is added to enhance adsorption of phage lambda to the cells. Tryptone and Yeast Extract do not contain enough Mg2+ for optimal adsorption.

Many synonymous names are know for several different type of LB media. We have tried to rank them all.

In case a medium cannot be found please also look at the synonymous names.

Tryptone broth is a moderately rich medium for growth and cultivation of Escherichia Coli.

Terrific Broth is a rich medium compared to LB and Tryptone Media. The medium is developed for higher density growth of Escherichia Coli cells and higher yield of plasmid DNA compared to LB and Tryptone broth.

Super Broth is an even richer medium developed for obtaining high yields of lambda bacteriophage in liquid lysates, Botstein, D. et al.

POWDERED MEDIA STORAGE AND PREPARATION

Ready made powdered media are hygroscopic and must be protected from atmospheric moisture. Always reseal tightly after opening.

Store the medium dry at room temperature.

Preparing media in a concentrated form is not recommended. Some salt and protein complexes may precipitate in a concentrated solution.

Sterilise the medium in a validated autoclave at 1 kg/cm2 (15 psi) at 121°C. for 15 minutes. Higher temperatures or exceeding the period of time for autoclavation may cause a brown decolourisation of the medium due to caramelisation of the glucose present in the medium. Denaturising of proteins may occur as well. Both will result in poor cell growth.

References:
Botstein, D. et al, Mol. Biol., 91, 439, (1975)
Lennox, E.S., Virology, 1, 190, (1955).
Luria, S.E. and Burrous, J.W., J. Bacteriol. 74, 471, (1957).
Luria, S.E. et al., Virology, 12, 348, (1960).
Blattner, F., et al. Science, 196, 161, (1977).
Miller, J.H., Experiments in Molecular Genetics, C.S.H. Press, N.Y., (1972)

2X LB-AGAR

SKU	Size
LBD0201	250g
LBD0202	1000g
LBD0203	6 x 1kg

For maintenance and propagation of Escherichia coli.

Formula	g/l
Tryptone	20
Yeast extract	15
NaCl	20
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 70 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

2X LB-BROTH

SKU	Size
LBD0101	250g
LBD0102	1000g
LBD0103	6 x 1kg

For maintenance and propagation of Escherichia coli.

Formula	g/l
Tryptone	20
Yeast extract	15
NaCl	20
Final pH	7.0 ± 0.2 at 25°C

Suspend 55 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

BLOOD AGAR BASE

SKU	Size
BAB0105	500g
BAB0110	1000g
BAB0160	6 x 1kg

Formula	g/l
Peptone	10
Beef Extract	10
NaCl	5
Agar	12
Final pH	7.0 ± 0.2 at 25°C

Suspend 37gram powdered medium in 1 litre distilled water. Store dry at room temperature

L-BROTH

SKU	Size
LBL0101	250g
LBL0102	1000g
LBL0103	6 x 1kg

Luria Broth Base (Miller's Modification)

Luria Broth Base or L-Broth is based upon the Luria Broth formulation as originally developed by Miller for cultivation and maintenance of E. coli cells in molecular biology.

L-Broth is a nutritionally rich medium originally developed for growth and maintenance of recombinant E. coli strains. E. coli is grown to late log phase in LB Broth. These strains are generally derived from E. coli K12 which are deficient in B vitamin production. K12 has been ultimately modified by specific mutation into an auxothropic strain not capable of growth on nutritionally deficient medium. All nutritional requirements of E. coli strains are provided by LB Broth. Peptides and amino acids are abundantly present in Tryptone. Yeast extract is a rich source of amino acids, vitamins, nucleotides and carbohydrates. These nutritional elements in LB media, which otherwise the cell would have to synthesize, support a luxurious growth of E. coli cells.

Sodium ions for transport and osmotic balance are provided by Sodium chloride.

The concentration of NaCl in L-Broth is low compared to both LB Miller and LB Lennox formulations, respectively 10% and 5% of the NaCl concentration is present in both formulations.

These variations in Sodium chloride content make it possible to select the optimal salt concentration for a specific strain.

Miller, J.H., Experiments in molecular genetics, Cold Spring harbour Laboratory, Cold Spring harbour, New York, (1972).

Lennox, E.S., Transuction of linked genetic characters of the host by bacteripphage P1, 1, 190-206, (1955).

Sambrook, J,., E. F. Fritsch, and T. Maniatis, 1989, Molecular cloning: a laboratory manual, 2nd edition ed., Cold Spring Harbour laboratory, Cold Spring Harbour, N.Y.

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	0.5
Final pH	7.0 ± 0.2 at 25°C

Suspend 15.5 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

L-BROTH AGAR

SKU	Size
LBL0201	250g
LBL0202	1000g
LBL0203	6 x 1kg

Luria Agar Base (Miller's Modification)

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	0.5
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 30.5 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

L-BROTH TOP AGAR

SKU	Size
LBL0301	250g
LBL0302	1000g

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	0.5
Agar	7
Final pH	7.0 ± 0.2 at 25°C

Suspend 22.5 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LB AGAR W/O NACL

SKU	Size
LBO0201	250g
LBO0202	1000g
LBO0203	6 x 1kg

Formula	g/l
Tryptone	10
Yeast extract	5
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 30 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LB-AGAR LENNOX

SKU	Size
LBXA1L	1 Litre pack
LBXA2L	2 Litre pack
LBXA5L	5 Litre pack
LBXA10L	10 Litre pack
LBXA20L	20 Litre pack
LBX0201	250g
LBX0202	1000g
LBX0203	6 x 1kg

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 35 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LB-AGAR MILLER

SKU	Size
LMM02-1L	1 Litre pack
LMM02-2L	2 Litre pack
LMM02-5L	5 Litre pack
LMM02-10L	10L pack
LMM02-20L	20 Litre pack
LMM02012	50g
LMM0204	500g
LMM0202	1000g
LMM0203	6 x 1kg

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	10
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 40 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LB-BROTH LENNOX

SKU	Size
LBX1L	1 Litre pack
LBX2L	2 Litre pack
LBX5L	5 Litre pack
LBX10L	10Litre pack
LBX20L	20Litre pack
LBX0101	250g
LBX0104	500g
LBX0102	1kg
LBX0103	6 x 1kg

LB-Broth Low Salt, Lennox L Broth

LB Broth Lennox is a nutritionally rich medium originally developed for growth and maintenance of recombinant E. coli strains. E. coli is grown to late log phase in LB Broth. These strains are generally derived from E. coli K12 which are deficient in B vitamin production. K12 has been ultimately modified by specific mutation into an auxothropic strain not capable of growth on nutritionally deficient medium. All nutritional requirements of E. coli strains are provided by LB Broth. Peptides and amino acids are abundantly present in Tryptone. Yeast extract is a rich source of amino acids, vitamins, nucleotides and carbohydrates. These nutritional elements in LB media, which otherwise the cell would have to synthesize, support a luxurious growth of E. coli cells.

Sodium ions for transport and osmotic balance are provided by Sodium chloride. The concentration of NaCl in LB Lennox is half the concentration of the LB Miller Broth formulation and ten times the concentration of LB Luria Broth formulation. These variations in Sodium chloride content make it possible to select the optimal salt concentration for a specific strain.

Lennox, E.S., Transuction of linked genetic characters of the host by bacteripphage P1, 1, 190-206, (1955).

Assubel, F.M., R. Brent, R.E. Kingston, D.D. Moore, J.G. Seidman, J.A. Smith and K. Struhl, Current protocols in molecular biology, vol. 1, Current Protocols, New York, (1994).

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
Final pH	7.0 ± 0.2 at 25°C

Suspend 20 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LB-BROTH MILLER

SKU	Size
LMM1L	1 Litre pack - 25g
LMM2	L2 Litre pack - 50g
LMM5	L5 Litre pack - 125g
LMM10L	10 Litre pack - 250g
LMM20L	20 Litre pack - 500g
LMM0101	250g
LMM0104	500g
LMM0102	1000g
LMM01051	500g
LMM0103	6 x 1kg

LB-Broth High Salt, Miller's LB Broth, Luria Broth

LB Broth Miller is a nutritionally rich medium originally developed for growth and maintenance of recombinant E. coli strains. E. coli is grown to late log phase in LB Broth. These strains are generally derived from E. coli K12 which are deficient in B vitamin production. K12 has been ultimately modified by specific mutation into an auxothropic strain not capable of growth on nutritionally deficient medium. All nutritional requirements of E. coli strains are provided by LB Broth. Peptides and amino acids are abundantly present in Tryptone. Yeast extract is a rich source of amino acids, vitamins, nucleotides and carbohydrates. These nutritional elements in LB media, which otherwise the cell would have to synthesize, support a luxurious growth of E. coli cells.

Sodium ions for transport and osmotic balance are provided by Sodium chloride. The concentration of NaCl in LB Miller is twice the concentration of the LB Lennox Broth formulation and twenty times the concentration of LB Luria Broth formulation.

These variations in Sodium chloride content make it possible to select the optimal salt concentration for a specific strain.

Luria, S.E. and J.W. Burrous, Hybridization between Escherich coli and Shigella, J. Bacteriol., 74, 461-476. 1955.

Luria, S.E., J.N. Adams and R.C. Ting, Transduction of lactose-utilizing ability amongst strains of E. coli and S. dysenteria and the properties of transducing phage particles, Virology, 12, 348-390, 1960.

Lennox, E.S., Transuction of linked genetic characters of the host by bacteripphage P1, 1, 190-206, (1955).

Sambrook, J,., E. F. Fritsch, and T. Maniatis, 1989, Molecular cloning: a laboratory manual, 2nd edition ed., Cold Spring Harbour laboratory, Cold Spring Harbour, N.Y.

Assubel, F.M., R. Brent, R.E. Kingston, D.D. Moore, J.G. Seidman, J.A. Smith and K. Struhl, Current protocols in molecular biology, vol. 1, Current Protocols, New York, (1994).

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	10
Final pH	7.0 ± 0.2 at 25°C

Suspend 25 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LB-BROTH W/O NACL

SKU	Size
LBO0101	250g
LBO0102	1000g
LBO0103	6 x 1kg

Formula	g/l
Tryptone	10
Yeast extract	5
Final pH	7.0 ± 0.2 at 25°C

Suspend 15 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LB-TOP AGAR LENNOX

SKU	Size
LBL0201	250g
LBL0202	1000g
LBL0203	6 x 1kg

LB-Top Agar Low Salt, Lennox L

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
Agar	7
Final pH	7.0 ± 0.2 at 25°C

Suspend 27 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LB-TOP AGAR MILLER

SKU	Size
LMM0301	250g
LMM0302	1000g

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	10
Agar	7
Final pH	7.0 ± 0.2 at 25°C

Suspend 32 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LBM-AGAR LENNOX

SKU	Size
LXM0201	250g
LXM0202	1000g
LXM0203	6 x 1kg

LBM-Agar Low Salt

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.98
Agar	15
Final pH	7.0 ± 0.2 at 25°C

For propagation of of lambda phages in Escherichia coli.

In LBM media Mg2+ is added to enhance adsorbtion of phage lambda to the cells. Tryptone and Yeast extract do not contain enough Mg2+ for optimal adsorption

Suspend 36 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LBM-AGAR MILLER

SKU	Size
LMG0201	250g
LMG0202	1000g
LMG0203	6 x 1kg

LBM-Agar Low Salt

In LBM media Mg2+ is added to enhance adsorbtion of phage lambda to the cells. Tryptone and Yeast extract do not contain enough Mg2+ for optimal adsorption.

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	10
MgSO4. anhydrous	0.98
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 41 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LBM-BROTH LENNOX

SKU	Size
LXM0101	250g
LXM0102	1000g
LXM0103	6 x 1kg

LBM-Broth Low Salt

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.98
Final pH	7.0 ± 0.2 at 25°C

For propagation of of lambda phages in Escherichia coli.

In LBM media Mg2+ is added to enhance adsorbtion of phage lambda to the cells. Tryptone and Yeast extract do not contain enough Mg2+ for optimal adsorption.

Suspend 21 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

LBM-BROTH MILLER

SKU	Size
LMG0101	250g
LMG0102	1000g
LMG0103	6 x 1kg

LBM-Broth High Salt

In LBM media Mg2+ is added to enhance adsorption of phage lambda to the cells. Tryptone and Yeast extract do not contain enough Mg2+ for optimal adsorption.

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	10
MgSO4. anhydrous	0.98
Final pH	7.0 ± 0.2 at 25°C

Suspend 32 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

M17 BROTH

SKU	Size
M170110	1kg
M170160	6 x 1kg

M17 Medium is a well buffered enriched medium for bacterial growth. The medium is optimized for isolating lactic Streptococci. Casein hydrolysate, Beef extract and Soya peptone supply carbon sources, nitrogen, vitamins and minerals essential for vigorous growth. Yeast extract supplies B-complex vitamins which stimulate bacteria growth. The medium is buffered by Disodium-β-glycerophosphate which prevents a drop in pH by the production of organic acids, such as lactic acid, during fermentation.

Ascorbic acid and Magnesium sulphate are added to stimulate growth.

Formula	g/l
Pancreatic Digest of Casein	5.0
Soy Peptone	5.0
Beef Extract	5.0
Yeast Extract	2.5
Ascorbic Acid	0.5
Magnesium Sulfate	0.25
Disodium-β-glycerophosphate	19.0

Suspend 36.15 grams of powdered medium in 1 litre distilled water. Store dry at room temperature.

M9 MINIMAL SALTS BASE, 5X

SKU	Size
MMS0101	250g
MMS0102	1000g
MMS0103	6 x 1kg

M9 Minimal Salts Base, 5x is used in preparing M9 Minimal medium used for the cultivation and maintenance of E. coli in molecular biology.

M9 is a chemical defined minimal medium supporting the growth of 'wild-type' strains of E.coli. The medium can be supplemented with specific amino acids or other required nutrients allowing for selection of specific auxotrophs.

Glucose may be added as a source of carbohydrate. Nitrogen is provided by ammonium chloride final osmolarity of the medium is maintained by NaCl. Addition of magnesium and calcium increases the growth of the recombinant cells.

M9 Minimal Salts Base, 5x is a 5x concentrate and has to be diluted to a 1x concentration and subsequently supplemented with an appropriate carbon source, such as glucose. Addition of required nutritionally elements may be added.

Difco Manual, 11th edition, Sparks, MD, 272, 1998.

Davis, L.G., M.D. Dibner and J.F. Battey, Basic methods in molecular biology, Elsevier, new York, (1986).

Sambrook, J,., E. F. Fritsch, and T. Maniatis, 1989, Molecular cloning: a laboratory manual, 2nd edition ed., Cold Spring Harbour laboratory, Cold Spring Harbour, N.Y.

Formula	g/l
Na2HPO4	33.9

GHS07 Skin & Eye Irritation

Formula	g/l
KH2PO4	15
NaCl	2.5
NH4Cl	5
Final pH	6.8 ± 0.2 at 25°C

Suspend 56.4 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

MACCONKEY AGAR BASE

SKU	Size
MAB10	1000g
MAB60	6 x 1kg

Formula	g/l
Peptone	20
Bile salts	1.5
NaCl	5
Neutral red	0.03
Crystal violet	0.001
Agar	13.5
Final pH	7.0 ± 0.2 at 25°C

Suspend 40 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

MALT EXTRACT AGAR

SKU	Size
MEA0102	250g
MEA0110	1000g
MEA0160	6 x 1kg

Formula	g/l
Malt Extract	30
Peptone	5
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 50 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

MUELLER HINTON BROTH

SKU	Size
MHB0100	250g
MHB0101	1000g
MHB0102	6 x 1kg

Formula	g/l
Casamino acids	17.5
Peptone	2
Soluble starch	1.5
Soluble starch	7.0 ± 0.2 at 25°C

Suspend 21 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NUTRIENT AGAR

SKU	Size
NAO01	500g
NAO02	1000g
NAO03	6 x 1kg

Formula	g/l
Peptone	5
Beef Extract	1
Yeast Extract	2
NaCl	5
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 28 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NUTRIENT BROTH

SKU	Size
NBO01	500g
NBO02	1000g
NBO03	6 x 1kg

Formula	g/l
Peptone	5
Beef Extract	1
Yeast Extract	2
NaCl	5
Final pH	7.0 ± 0.2 at 25°C

Suspend 13 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SABOURAUD AGAR

SKU	Size
SAB0102	250g
SAB0105	500g
SAB0110	1kg

Formula	g/l
Peptone	10
Glucose	40
Agar	20

Final pH 7.0 ± 0.2 at 25°C

Suspend 70 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SABOURAUD BROTH

SKU	Size
SAB0202	250g
SAB0205	500g
SAB0210	1kg

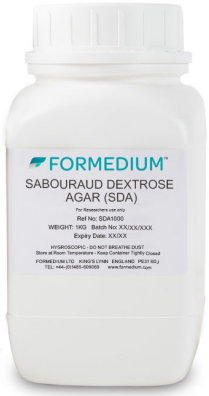
Formula	g/l
Peptone	10
Glucose	40

Final pH 7.0 ± 0.2 at 25°C

Suspend 50 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SABOURAUD DEXTROSE AGAR

SKU	Size
SDA0250	250g
SDA0500	500g
SDA1000	1kg



Formula	g/l
Tryptone	5
Soya Peptone	5
Glucose	40
Agar	15

Final pH 7.0 ± 0.2 at 25°C

Suspend 50 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SUPER BROTH

SKU	Size
SPB0101	250g
SPB0102	1000g
SPB0103	6 x 1kg

Super broth is an extremely rich medium with highly elevated levels of Tryptone and Yeast extract. Due to the high levels of peptides, amino acids, vitamins and cofactors high yields of E. coli cells and lambda bacteriophages are obtained.

Formula	g/l
Tryptone	35
Yeast Extract	20
NaCl	5
Final pH	7.0 ± 0.2 at 25°C

Suspend 60 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SUPER BROTH AGAR

SKU	Size
SPA0101	250g
SPA0102	1000g
SPA0103	6 x 1kg

Formula	g/l
Tryptone	35
Yeast Extract	20
NaCl	5
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 75 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SUPER BROTH TOP AGAR

SKU	Size
SPT0101	250g
SPT0102	1000g

Formula	g/l
Tryptone	35
Yeast Extract	20
NaCl	5
Agar	7
Final pH	7.0 ± 0.2 at 25°C

Suspend 67 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

TERRIFIC AGAR

SKU	Size
TRA0101	250g
TRA0102	1000g
TRA0103	6 x 1kg

Formula	g/l
Tryptone	12
Yeast Extract	24
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 51 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

TERRIFIC AGAR PHOSPHATE BUFFERED

SKU	Size
TAP0101	250g
TAP0102	1000g
TAP0103	6 x 1kg

Phosphate Buffered

Formula	g/l
Tryptone	12
Yeast Extract	24
KH2PO4	9.4
K2PO4	2.2
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 62.6 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

TERRIFIC BROTH

SKU	Size
TRB0101	250g
TRB0104	500g
TRB0102	1000g
TRB0103	6 x 1kg

Terrific Broth is rich nutritional medium developed by Tartoff and Hobbs supporting luxurious high density growth of E.coli and a higher yield of plasmid DNA compared to LB type media. Recombinant E. coli cells have an extended growth phase in Terrific medium.

Terrific medium is used with glycerol as a carbon source. Unlike glucose, glycerol is not fermented to acetic acid.

Tryptone and Yeast are present in the medium in elevated concentrations and provide nitrogen, vitamins and cofactors for a luxurious growth.

Potassium phosphate is present in Terrific broth buffered to balance the pH and subsequently prevent cell death due to a drop in pH.

Tartoff, K. D., and C. A. Hobbs, Improved media for growing plasmids and cosmid clones, Bethesda Research Laboratories, 9, 12, (1987).

Sambrook, J,., E. F. Fritsch, and T. Maniatis, 1989, Molecular cloning: a laboratory manual, 2nd edition ed., Cold Spring Harbour laboratory, Cold Spring Harbour, N.Y.

Formula	g/l
Tryptone	12
Yeast Extract	24
Final pH	7.0 ± 0.2 at 25°C

Suspend 36 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

TERRIFIC BROTH PHOSPHATE BUFFERED

SKU	Size
TBP0101	250g
TBP0102	1kg
TBP0103	6 x 1kg

Phosphate Buffered

Formula	g/l
Tryptone	12
Yeast Extract	24
KH2PO4	9.4
K2HPO4	2.2
Final pH	7.0 ± 0.2 at 25°C

Suspend 47.6 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

TRYPTONE AGAR

SKU	Size
TPA0101	250g
TPA0102	1000g
TPA0103	6 x 1kg

Formula	g/l
Tryptone	10
NaCl	8
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 33 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

TRYPTONE BROTH

SKU	Size
TPB0101	250g
TPB0102	1000g
TPB0103	6 x 1kg

General purpose medium for maintenance and propagation of Escherichia coli.

Formula	g/l
Tryptone	10
NaCl	8
Final pH	7.0 ± 0.2 at 25°C

Suspend 18 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

TRYPTONE TOP AGAR

SKU	Size
TPT0101	250g
TPT0102	1000g

Formula	g/l
Tryptone	10
NaCl	8
Agar	7
Final pH	7.0 ± 0.2 at 25°C

Suspend 25 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

VLB-AGAR LENNOX

SKU	Size
VLBAL1L	1L Pack
VLBAL2L	2L Pack
VLBAL5L	5L Pack
VLBAL10L	10L Pack
VLBAL20L	20L Pack
VLBAL0250	250g
VLBAL0500	500g
VLBAL1000	1000g
VLBAL6000	6 x 1kg

Formula	g/l
Soya Peptone	12
Yeast Extract	24
NcCl	9.4
Agar	2.2

Suspend 35 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

VLB-AGAR MILLER

SKU	Size
VLBAM1L	1L Pack
VLBAM2L	2L Pack
VLBAM5L	5L Pack
VLBAM10L	10L Pack
VLBAM20L	20L Pack
VLBAM0250	250g
VLBAM0500	500g
VLBAM1000	1000g
VLBAM6000	6 x 1kg

Formula	g/l
Soya Peptone	10
Yeast Extract	5
NcCl	10
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 40 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

VLB-BROTH LENNOX

SKU	Size
VLBBL1L	1L Pack
VLBBL2L	2L Pack
VLBBL5L	5L Pack
VLBBL10L	10L Pack
VLBBL20L	20L Pack
VLBBL0250	250g
VLBBL0500	500g
VLBBL1000	1000g
VLBBL6000	6 x 1kg

Formula	g/l
Soya Peptone	10
Yeast Extract	5
NcCl	5
Final pH	7.0 ± 0.2 at 25°C

Suspend 20 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

VLB-BROTH MILLER

SKU	Size
VLBBM1L	1L Pack
VLBBM2L	2L Pack
VLBBM5L	5L Pack
VLBBM10L	10L Pack
VLBBM20L	20L Pack
VLBBM0250	250g
VLBBM0500	500g
VLBBM1000	1000g
VLBBM6000	6 x 1kg

Formula	g/l
Soya Peptone	10
Yeast Extract	5
NcCl	10
Final pH	7.0 ± 0.2 at 25°C

Suspend 25 gram powdered medium in 1 litre

distilled water. Store dry at room temperature.

BACTERIOPHAGE LAMBDA MEDIUM FORMULATIONS

Formedium™ manufactures a large range of media for maintenance and propagation of bacteriophage lambda in Escherichia Coli cells as described by Blattner, F. et al., Science, 196, 161, 1977.

NZCYM medium, as originally developed by Blattner, is available in several modification providing the researcher to select the optimum medium formulation for a specific strain.

Tryptone or Casein, Yeast Extract and Casamino acids are sources of nitrogen within this group of media. Peptides and amino acids are abundantly present in Tryptone. Yeast Extract is a abundantly source of amino acids, vitamins, nucleotides and carbohydrates. Due to its high degree of digestion Casamino acids is a rich source of free amino acids.

Sodium ions for transport and a suitable osmotic balance are provided by Sodium Chloride.

Magnesium Sulfate provides magnesium ions required in a variety of enzymatic reactions, including DNA replication.

To optimise binding of phage lambda to Escherichia Coli cells add 0.2% Maltose to the medium for inducing lambda receptors (LampB) on host cells.

Blattner, F.R., et al., Charon phages: Safer derivatives of bateriophage for DNA cloning, Science, 196, 161, (1977).
Difco manual 11th ed., Sparks, MD (1998), 22-23.
Sambrook, J,., E. F. Fritsch, and T. Maniatis, 1989, Molecular cloning: a laboratory manual, 2nd edition ed., Cold Spring Harbour laboratory, Cold Spring Harbour, N.Y.
Assubel, F.M., R. Brent, R.E. Kingston, D.D. Moore, J.G. Seidman, J.A. Smith and K. Struhl, Current protocols in molecular biology, vol. 1, Current Protocols, New York, (1994).

NZ AGAR

SKU	Size
NZA0101	250g
NZA0102	1000g

NZM Agar

Formula	g/l
Tryptone	10
NaCl	5
MgSO4 anhydrous	0.98
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 31 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZ BROTH

SKU	Size
NZB0101	250g
NZB0102	1000g

NZM Broth

Formula	g/l
Tryptone	10
NaCl	5
MgSO4 anhydrous	0.98
Final pH	7.0 ± 0.2 at 25°C

Suspend 16 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZ TOP AGAR

SKU	Size
NZT0301	250g
NZT0302	1000g

Formula	g/l
Tryptone	10
NaCl	5
MgSO4 anhydrous	0.98
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 31 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZCYM AGAR

SKU	Size
NZC0201	250g
NZC0202	1000g
NZC0203	6 x 1kg

Formula	g/l
Casamino acids	1
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.98
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 37 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZCYM BROTH

SKU	Size
NZC0101	250g
NZC0102	1000g
NZC0103	6 x 1kg

Formula	g/l
Casamino acids	1
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.98
Final pH	7.0 ± 0.2 at 25°C

Suspend 22 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZCYM TOP AGAR

SKU	Size
NZC0301	250g
NZC0302	1000g

Formula	g/l
Casamino acids	1
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.98
Agar	7
Final pH	7.0 ± 0.2 at 25°C

Suspend 29 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZY AGAR

SKU	Size
NZY0201	250g
NZY0202	1000g

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	8
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 38 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZY BROTH

SKU	Size
NZY0101	250g
NZY0102	1000g

Harvard Broth

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	8
Final pH	7.0 ± 0.2 at 25°C

Suspend 23 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZYDT AGAR

SKU	Size
NZD0201	500g

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.49
Thymidine	0.04
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 35.5 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZYDT BROTH

SKU	Size
NZD0101	500g

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.49
Thymidine	0.04
Final pH	7.0 ± 0.2 at 25°C

Suspend 20.5 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZYM AGAR

SKU	Size
NZM0201	250g
NZM0202	1000g
NZM0203	6 x 1kg

NZY Agar

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.98
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 36 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZYM BROTH

SKU	Size
NZM0101	250g
NZM0102	1000g
NZM0103	6 x 1kg

NZY Broth

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.98
Final pH	7.0 ± 0.2 at 25°C

Suspend 21 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NZYM TOP AGAR

SKU	Size
NZM0301	250g
NZM0302	1000g

NZY Top Agar

Formula	g/l
Tryptone	10
Yeast extract	5
NaCl	5
MgSO4 anhydrous	0.98
Agar	7
Final pH	7.0 ± 0.2 at 25°C

Suspend 28 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

M13 PHAGE AND SSDNA BACTERIOPHAGES MEDIUM FORMULATIONS

YT and 2X YT are designed for cultivation of recombinant strains of Escherichia Coli . These media are also used for maintenance and propagation of M13 bacteriophage and several types of ssDNA bacteriophage.

YT is a moderately rich medium, where 2x YT is a nutritional rich medium providing nitrogen and growth factors allowing bacteriophage to reproduce in large quantities without exhausting the host cells. The presence of amino acids, nucleotides, vitamins and other nutritional elements, that the cell would otherwise have to synthesize, stimulates a luxurious growth and high yields of the host cells. Sodium Chloride is present in the medium to provide a suitable osmolarity.

Difco manual 11th ed., Sparks, MD (1998), 22-23.
Sambrook, J,., E. F. Fritsch, and T. Maniatis, 1989, Molecular cloning: a laboratory manual, 2nd edition ed., Cold Spring Harbour laboratory, Cold Spring Harbour, N.Y.
Assubel, F.M., R. Brent, R.E. Kingston, D.D. Moore, J.G. Seidman, J.A. Smith and K. Struhl, Current protocols in molecular biology, vol. 1, Current Protocols, New York, (1994).
Davis, L.G., M.D. Dibner and J.F. Battey, Basic methods in molecular biology, Elsevier, new York, (1986).

2X YT AGAR

SKU	Size
YDA1L	1 Litre pack
YDA2L	2 Litre pack
YDA5L	5 Litre pack
YDA10L	10L pack
YDA20L	20 Litre pack
YDA0201	250g
YDA0202	1000g
YDA0203	6 x 1kg

Formula	g/l
Tryptone	16
Yeast extract	10
NaCl	5
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 46 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

2X YT BROTH

SKU	Size
YDB1L	1 Litre pack - 31g
YDB2L	2 Litre pack
YDB5L	5 Litre pack
YDB10L	10L pack - 310g
YDB20L	20 Litre pack
YDB0201	250g
YDB0202	1000g
YDB0203	6 x 1kg

Formula	g/l
Tryptone	16
Yeast extract	10
NaCl	5
Final pH	7.0 ± 0.2 at 25°C

Suspend 31 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

YT AGAR

SKU	Size
YTA0201	250g
YTA0202	1000g
YTA0203	6 x 1kg

Formula	g/l
Tryptone	8
Yeast extract	5
NaCl	5
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 33 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

YT BROTH

SKU	Size
YTB0101	250g
YTB0102	1000g
YTB0103	6 x 1kg

Formula	g/l
Tryptone	8
Yeast extract	5
NaCl	5
Final pH	7.0 ± 0.2 at 25°C

Suspend 18 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

YT TOP AGAR

SKU	Size
YTT0301	250g
YTT0302	1000g

Formula	g/l
Tryptone	8
Yeast extract	5
NaCl	5
Agar	7
Final pH	7.0 ± 0.2 at 25°C

Suspend 25 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

COMPETENT CELLS MEDIUM FORMULATIONS

SOB is originally developed by Hanahan as a medium to prepare competent cells prior to transformation for maximizing transformation efficiency. Transformation requires making perforations in the bacterium (i.e. making the cells 'Competent') to allow the introduction of foreign DNA into the cell. To survive the process of perforating the cell, competent Escherichia Coli cells need a nutritionally rich and well balanced isotonic medium.

Tryptone and Yeast Extract are sources of nitrogen, vitamins, growth factors and carbohydrates supporting the cell to recover from the stress of transformation and subsequently grow well.

To set a well balanced isotonic environment Sodium Chloride and Potassium Chloride are present in the medium.

Magnesium ions required in a variety of enzymatic reactions including DNA replication are provided by Magnesium Sulfate.

SOC medium as used in the final stage of transformation and is prepared by adding glucose in a final concentration of 20 mM to SOB medium. The glucose added is a readily available carbon and energy source for Escherichia Coli cells in mending the perforations and for replication.

Hanahan, D., Studies on transformation of Escherichia coli with plasmids, J. Mol., Biol., 166, 557, 1983.
Sambrook, J,., E. F. Fritsch, and T. Maniatis, 1989, Molecular cloning: a laboratory manual, 2nd edition ed., Cold Spring Harbour laboratory, Cold Spring Harbour, N.Y.
Difco manual 11th ed., Sparks, MD (1998), 22-23.

SOA

SKU	Size
SOA0101	250g
SOA0102	1000g

Formula	g/l
Tryptone	20
Yeast extract	5
NaCl	0.5
MgSO4	2.44
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 42.9 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SOA, HANAHAN'S AGAR

SKU	Size
SOA0201	250g
SOA0202	1000g

Formula	g/l
Tryptone	20
Yeast extract	5
NaCl	0.5
MgSO4	2.44
KCl	0.186
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 43.1 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SOB

SKU	Size
SOB0101	250g
SOB0102	1000g

Formula	g/l
Tryptone	20
Yeast extract	5
NaCl	0.5
MgSO4	2.44
Final pH	7.0 ± 0.2 at 25°C

Suspend 27.9 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SOB, HANAHAN'S BROTH

SKU	Size
SOB0201	250g
SOB0202	1000g

Formula	g/l
Tryptone	20
Yeast extract	5
NaCl	0.5
MgSO4	2.44
KCl	0.186
Final pH	7.0 ± 0.2 at 25°C

Suspend 28.1 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

SOC AGAR

SKU	Size
SOC0101	250g
SOC0102	1000g

Formula	g/l
Glucose	3.6 (20 mN)
Tryptone	20
Yeast extract	5
NaCl	0.5
MgSO4	2.44
Agar	15
Final pH	7.0 ± 0.2 at 25°C

Suspend 46.5 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

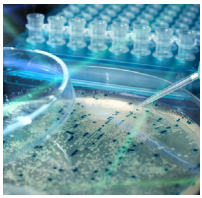
SOC BROTH

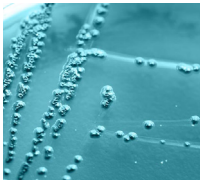
SKU	Size
SOC0201	250g
SOC0202	1kg

Formula	g/l
Glucose	3.6 (20 mN)
Tryptone	20
Yeast extract	5
NaCl	0.5
MgSO4	2.44
Final pH	7.0 ± 0.2 at 25°C

Suspend 31.5 gram powdered medium in 1 litre distilled water. Store dry at room temperature.

NEIDHARDT MOPS MINIMAL MEDIUM AND DROP-OUTS





Neidhardt FC, Bloch PL, Smith DF. J Bacteriol. 1974 Sep; 119(3) : 736-47.

Neidhardt MOPS minimal medium supports growth of Escherichia coli, Salmonella typhimurium and other enterobacteria at rates and yields comparable to traditional media such as complex LB media and defined M9 medium.

The medium supplied by ForMedium Ltd is a slight variant on that defined by Neidhardt et al. Modifications were made by Blattner et al.

Neidhardt MOPS minimal medium is a rich defined medium which should allow repeatable high growth rates.

Concentration of all constituents is defined and can be increased independently. Custom made productions of Neidhardt MOPS minimal medium with altered concentrations of certain constituents can be produced upon request.

COMPOSITION OF NEIDHARDT MOPS MINIMAL MEDIUM

- All levels of micronutrients (eg. copper, manganese etc.) are set to a level that is saturating for growth but also adequately low that there is no possibility of growth inhibition.
- Macro elements such as Phosphate, Sulfate, Nitrogen are present at a sufficiently low level to permit isotopic labeling.
- Both Magnesium and Calcium ions are present in a concentration suitably enough to support outer membrane stability as E. coli needs a lot of Mg2+ and Ca2+ to bridge the highly negatively charged LPS molecules in its outer membrane.
- Buffering capacity is provided by Morpholinopropane sulfonic acid MOPS, (pKa 7.2). MOPS is a member of the GOOD buffer range and provides excellent buffer capacity without any apparent inhibitory effect on growth.
- Glucose is the carbon source present in Neidhardt MOPS minimal medium. Neidhardt's Basal salt mixture is available with two different concentration of Glucose, 2 grams/l and 20 grams/l.
- Within the formulation of Neidhardt MOPS minimal medium 20 amino acids are present. This group of amino acids provides excellent opportunities for two hybrid screenings with E. coli strains. Besides these amino acids nucleotides and vitamins are present to support a vigorous growth.

NEIDHARDT MOPS MINIMAL MEDIUM IS SUPPLIED AS A KIT OF TWO MIXTURES;

- Neidhardt basal salt mixture; Containing all micro- and macro salt, buffers and glucose.
- Neidhardt supplement mixture; Containing all amino acids, vitamins, purines and pyrimidines.

Neidhardt basal salt mixture is used in a concentration of 32.9 grams/l and Neidhardt supplement mixture in a concentration of 3.1 grams/l.

Suspend 32.9 grams of Neidhardt basal salt mixture plus 3.1 grams of Neidhardt supplement mixture in one litre of distilled water.

STERILISATION BY MEANS OF FILTRATION.

After dissolving a slight precipitation might occur. It is not clear what this precipitate might be. Removing it from the medium solution by filtration has showed no negative effect on cell growth.

NEIDHARDT BASAL SALT MIXTURE, GLUCOSE 2 G/L

SKU	Size
NBS07	149g (10L)
NBS08	298g (20L)
NBS09	447g (30L)

A mixture of Neidhardt basal salt mixture in a concentration of 14.9 grams/l with Neidhardt supplement mixture in a concentration of 3.1 grams/l.

Suspend 14.9 grams of Neidhardt basal salt mixture plus 3.1 grams of Neidhardt supplement mixture in one litre of distilled water.

Sterilisation by means of filtration.

After dissolving a slight precipitation might occur. It is not clear what this precipitate might be. Removing it from the medium solution by filtration has showed no negative effect on cell growth.

NEIDHARDT BASAL SALT MIXTURE, GLUCOSE 20 G/L

SKU	Size
NBS01	329g (10L)
NBS02	658g (20L)
NBS03	987g (30L)

A mixture of Neidhardt basal salt mixture in a concentration of 32.9 grams/l with Neidhardt supplement mixture in a concentration of 3.1 grams/l.

Suspend 32.9 grams of Neidhardt basal salt mixture plus 3.1 grams of Neidhardt supplement mixture in one litre of distilled water.

Sterilisation by means of filtration.

After dissolving a slight precipitation might occur. It is not clear what this precipitate might be. Removing it from the medium solution by filtration has showed no negative effect on cell growth.

Composition	mg/l
MOPS	8,372.00
NaCl	2,920.00
Tricine	716.80
NH4Cl2	508.25
K2HPO4	229.94
MgSO4	78.33
K2SO4	48.11
FeSO4.7H2O	2.78
CaCl2	0.056
CuSO4.6H2O	0.025
H3BO3	0.025
ZnSO4.7H2O	0.029
MnSO4.H2O	0.014
CoCl2.6H2O	0.007
NaMoO2.2H2O	0.001
Glucose	20,000.00
Total	**32,876.37**

NEIDHARDT SUPPLEMENT MIXTURE, COMPLETE

SKU	Size
NSM01	31g (10L)
NSM02	62g (20L)
NSM03	93g (30L)

Composition	mg/l
L-Alanine	71.3
L-Arginine	905.8
L-Asparagine	52.8
L-Glutamic Acid	53.2
L-Glutamine	97.1
L-Glycine	60.1
L-Histidine HCl H2O	38.3
L-Isoleucine	52.5
L-Proline	46.0
L-Serine	1051.0
L-Threonine	47.6
L-Tryptophan	20.4
L-Valine	70.3
L-Leucine	105.0
L-Lysine HCl	73.1
L-Methionine	29.8
L-Phenylalanine	66.1
L-Cysteine HCl monohydrate	17.6
L-Tyrosine	36.2
Thiamine	3.4
Calcium Pantothenate	4.8
para-Amino Benzoic Acid	4.1
Adenine sulphate	36.8
Cytosine	22.2
Uracil	22.4
Guanine HCl	37.5
Total	**3113.3**

A mixture of Neidhardt basal salt mixture in a concentration of 32.9 grams/l with Neidhardt supplement mixture in a concentration of 3.1 grams/l.

Suspend 32.9 grams of Neidhardt basal salt mixture plus 3.1 grams of Neidhardt supplement mixture in one litre of distilled water.

Includes all amino acids, vitamins, purines and pyrimidines.

NEIDHARDT SUPPLEMENT MIXTURE SINGLE DROP-OUTS

Formulation	mg/l	10L	20L	30L
NSM minus Arginine:	2179.9	NDO01	NDO02	NDO03
NSM minus Cysteine	3068.2	NDO04	NDO05	NDO06
NSM minus Glycine	3025.7	NDO07	NDO08	NDO09
NSM minus Histidine	3047.5	NDO10	NDO11	NDO12
NSM minus Isoleucine	3033.3	NDO13	NDO14	NDO15
NSM minus Leucine	2980.8	NDO16	NDO17	NDO18
NSM minus Lysine	3012.7	NDO19	NDO20	NDO21
NSM minus Methionine	3055.9	NDO22	NDO23	NDO24
NSM minus Phenylalanine	3085.8	NDO25	NDO26	NDO27
NSM minus Proline	3039.7	NDO28	NDO29	NDO30
NSM minus Serine	2034.8	NDO31	NDO32	NDO33
NSM minus Threonine	3038.1	NDO34	NDO35	NDO36
NSM minus Tryptophan	3065.4	NDO37	NDO38	NDO39
NSM minus Tyrosine	3049.5	NDO40	NDO41	NDO42
NSM minus Uracil	3063.4	NDO43	NDO44	NDO45
NSM minus Valine	3015.5	NDO46	NDO47	NDO48

NEIDHARDT SUPPLEMENT MIXTURE DOUBLE DROP-OUTS

Formulation	mg/l	10L	20L	30L
NSM minus Cysteine and Methionine	3038.4	NDO49	NDO50	NDO51
NSM minus Leucine and Valine	2910.5	NDO52	NDO53	NDO54

NEIDHARDT SUPPLEMENT MIXTURE TRIPLE DROP-OUTS

Formulation	mg/l	10L	20L	30L
NSM minus Arginine, Glycine and Proline	2926.8	NDO55	NDO56	NDO57
NSM minus Isoleucine, Leucine and Valine	2858.0	NDO58	NDO59	NDO60
NSM minus Phenylalanine, Tryptophan and Tyrosine	2963.0	NDO61	NDO62	NDO63

NEIDHARDT SUPPLEMENT MIXTURE QUADRUPLE DROP-OUTS

Formulation	mg/l	10L	20L	30L
NSM minus Iso-Lys-Met-Thr	2926.8	NDO64	NDO65	NDO66

AMINO ACIDS AND VITAMINS

Formedium™ offers a large range of Amino Acids and Vitamins to formulate several Drop-Out supplement mixtures as described by different authors.

Amino Acids & VitaminsThis range of products enable users to compose Drop-Out supplements according lab specifications.

All Amino Acids and Vitamins are of pharmaceutical grade and are ranked amongst the best quality available.

The Amino Acids and Vitamins offered are used in Formedium™ Drop-Out supplement mixtures and powdered media productions.

Pack sizes vary from 5 gram to 100 gram, offering the possibility to compose a kit to select for an optimal Amino Acid and Vitamin composition. To buy in larger quantities, in case of large media preparations, please email us or call us.

ADENINE SULPHATE

SKU	Size
DOC0228	5g
DOC0229	25g
DOC0230	100g

Chemical formula	C10H12N10O4S.2H2O
Solubility	Soluble in water
Mol. Weight	404.3
Assay	≥99%

GHS07 Skin & Eye Irritation

D(+)-BIOTIN

SKU	Size
DOC0202	1g
DOC0203	5g

Chemical formula	C10H16N2O3S
Solubility (20° C)	0.2 g/l
Mol. Weight	244.31
pH (100 g/l)	4.5 (0.1 g/l)
Assay	≥99%

GLYCINE

SKU	Size
DOC0138	5g
DOC0139	10g
DOC0140	25g
DOC0141	100g

Chemical formula	C2H5NO2
Solubility (20° C)	225 g/l
Mol. Weight	75.07
pH (100 g/l)	5.9-6.4 (50 g/l)
Assay	≥99%

INOSITOL

SKU	Size
DOC0198	5g
DOC0199	10g
DOC0200	25g
DOC0201	100g

Chemical formula	C6H12O6
Solubility (20° C)	250 g/l
Mol. Weight	180.16
pH (100 g/l)	5.0-7.0 (100 g/l)
Assay	≥99%

L-ALANINE

SKU	Size
DOC0102	5g
DOC0103	10g
DOC0104	25g
DOC0105	100g

Chemical formula	C3H7NO2
Solubility (20° C)	166.5 g/l
Mol. Weight	89.09
pH (100 g/l)	5.5 - 6.5 (100 g/l)
Assay	≥99%

L-ARGININE

SKU	Size
DOC0106	5g
DOC0107	10g
DOC0108	25g
DOC0109	100g

Chemical formula	C6H14N4O2
Solubility (20° C)	148.7 g/l
Mol. Weight	174.20
pH (100 g/l)	11.4 (100 g/l)
Assay	≥99%

L-ASPARAGINE MONOHYDRATE

SKU	Size
DOC0114	5g
DOC0115	10g
DOC0116	25g
DOC0117	100g

Chemical formula	C4H8N2O3H2O
Solubility (20° C)	22 g/l
Mol. Weight	150.14
pH (100 g/l)	4.0-5.0 (20 g/l)
Assay	≥99%

L-ASPARTIC ACID

SKU	Size
DOC0118	5g
DOC0119	10g
DOC0120	25g
DOC0121	100g

Chemical formula	C4H7NO4
Solubility (20° C)	4 g/l
Mol. Weight	133.10
pH (100 g/l)	2.5-3.5 (4 g/l)
Assay	≥99%

L-CYSTEINE

SKU	Size
DOC0122	5g
DOC0123	10g
DOC0124	25g
DOC0125	100g

Chemical formula	C3H7NO2S
Solubility (20° C)	160 g/l
Mol. Weight	121.16
pH (100 g/l)	4.5-5.5 (100 g/l)
Assay	≥99%

L-GLUTAMIC ACID

SKU	Size
DOC0134	5g
DOC0135	10g
DOC0136	25g
DOC0137	100g

Chemical formula	C5H9NO4
Solubility (20° C)	11.1 g/l
Mol. Weight	147.13
pH (100 g/l)	3.0-3.5 (8.6 g/l)
Assay	≥99%

L-GLUTAMINE

SKU	Size
DOC0130	5g
DOC0131	10g
DOC0132	25g
DOC0133	100g

Chemical formula	C5H10N2O3
Solubility (20° C)	26 g/l
Mol. Weight	146.15
pH (100 g/l)	4.5-5.5 (50 g/l)
Assay	≥98%

L-HISTIDINE

SKU	Size
DOC0142	5g
DOC0143	10g
DOC0144	25g
DOC0145	100g

Chemical formula	C6H9N3O2
Solubility (20° C)	38.2 g/l
Mol. Weight	155.16
pH (100 g/l)	7.7 (10 g/l)
Assay	≥99%

L-ISOLEUCINE

SKU	Size
DOC0150	5g
DOC0151	10g
DOC0152	25g
DOC0153	100g

Chemical formula	C6H13NO2
Solubility (20° C)	40 g/l
Mol. Weight	131.17
pH (100 g/l)	5.5-6.5 (40 g/l)
Assay	≥99%

L-LEUCINE

SKU	Size
DOC0154	5g
DOC0155	10g
DOC0156	25g
DOC0157	100g

Chemical formula	C6H13NO2
Solubility (20° C)	24 g/l
Mol. Weight	131.18
pH (100 g/l)	5.5-6.5 (20 g/l)
Assay	≥99%

L-LYSINE

SKU	Size
DOC0158	5g
DOC0159	10g
DOC0160	25g
DOC0161	100g

Chemical formula	C6H14N2O2H2O
Solubility (20° C)	300 g/l
Mol. Weight	164.21
Assay	≥99%

L-METHIONINE

SKU	Size
DOC0166	5g
DOC0167	10g
DOC0168	25g
DOC0169	100g

Chemical formula	C5H11NO2S
Solubility (20° C)	48 g/l
Mol. Weight	149.21
pH (100 g/l)	5.0-7.0 (10 g/l)
Assay	≥99%

L-PHENYLALANINE

SKU	Size
DOC0170	5g
DOC0171	10g
DOC0172	25g
DOC0173	100g

Chemical formula	C9H11NO2
Solubility (20° C)	27 g/l
Mol. Weight	165.19
pH (100 g/l)	5.8 (10 g/l)
Assay	≥99%

L-PROLINE

SKU	Size
DOC0174	5g
DOC0175	10g
DOC0176	25g
DOC0177	100g

Chemical formula	C5H9NO2
Solubility (20° C)	1500 g/l
Mol. Weight	115.13
pH (100 g/l)	5.0-7.0 (10 g/l)
Assay	≥99%

L-SERINE

SKU	Size
DOC0178	5g
DOC0179	10g
DOC0180	25g
DOC0181	100g

Chemical formula	C3H7NO3
Solubility (20° C)	270 g/l
Mol. Weight	105.09
pH (100 g/l)	5.0-6.0 (50 g/l)
Assay	≥99%

L-THREONINE

SKU	Size
DOC0182	5g
DOC0183	10g
DOC0184	25g
DOC0185	100g

Chemical formula	C4H9NO3
Solubility (20° C)	90 g/l
Mol. Weight	119.12
pH (100 g/l)	5.0-6.0 (100 g/l)
Assay	≥99%

L-TRYPTOPHAN

SKU	Size
DOC0186	5g
DOC0187	10g
DOC0188	25g
DOC0189	100g

Chemical formula	C11H12N2O2
Solubility (20° C)	10 g/l
Mol. Weight	204.23
pH (100 g/l)	5.5-7.0 (10 g/l)
Assay	≥99%

L-TYROSINE

SKU	Size
DOC0190	5g
DOC0191	10g
DOC0192	25g
DOC0193	100g

Chemical formula	C9H11NO3
Solubility (20° C)	0.38 g/l
Mol. Weight	181.19
pH (100 g/l)	6.5 (0.1 g/l)
Assay	≥99%

L-VALINE

SKU	Size
DOC0194	5g
DOC0195	10g
DOC0196	25g
DOC0197	100g

Chemical formula	C5H11NO2
Solubility (20° C)	85 g/l
Mol. Weight	117.15
pH (100 g/l)	5.5-6.5 (100 g/l)
Assay	≥99%

PARA-AMINOBENZOIC ACID

SKU	Size
DOC0204	5g
DOC0205	10g
DOC0206	25g
DOC0207	100g

Chemical formula	C7H7NO2
Solubility (20° C)	4.7 g/l
Mol. Weight	137.14
pH (100 g/l)	3.5 (5 g/l)
Assay	≥99%

GHS07 Skin & Eye Irritation

URACIL

SKU	Size
DOC0212	5g
DOC0213	25g
DOC0214	100g

Chemical formula	C4H4N2O2
Solubility (20° C)	Soluble in water
Mol. Weight	112.09
Assay	≥99%

GHS07 Skin & Eye Irritation

ANTIBIOTICS

AMPICILLIN SODIUM SALT

SKU	Size
AMP05	5g
AMP10	10g
AMP25	25g
AMP50	50g
AMP100	100g

C16H18N3O4SNa=371.4

Specifications	
USP 25, Ph. Eur.	Value

Store dry at 2-8°C
Soluble in water
Hygroscopic, protect against moisture

CAS 69-52-3

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

GHS07 Skin & Eye Irritation

CARBENICILLIN DISODIUM

SKU	Size
CAR0005	5g
CAR0025	25g

C17H16N2Na2O6S=422.4

Store dry at 2-8°C
Soluble in water
Hygroscopic, protect against moisture

CAS 4800-94-6

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

CEFOTAXIME SODIUM

SKU	Size
CEFO001	1g
CEFO005	5g
CEFO025	25g

C16H16N5NaO7S2=477.4

Store dry at 2-8°C
Keep container tightly closed and protect from light
Soluble in water
CAS 64485-93-4

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

CHLORAMPHENICOL

SKU	Size
CLA01	25g
CLA02	100g

C11H12Cl2N2O5=323.1

Store dry at room temperature
Slightly soluble in water (2.5 g/L)
Soluble in ethanol
CAS 56-75-7

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

DOXYCYCLINE HYCLATE

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

GHS07 Skin & Eye Irritation

SKU	Size
DOX01	1g
DOX05	5g
DOX10	10g
DOX25	25g
DOX100	100g

C22H24N2O8·HCl·0.5H2O·0.5C2H6O = 512.94

Doxycycline is a bacteriostatical Tetracycline like antibiotic. The antibiotic is effective against both gram-positive and gram-negative bacteria. It binds reversible to the ribosomal 30 S unit, preventing binding of aminoacyl transfer RNA and hence inhibiting protein synthesis.

Doxycycline is an effective repressor of the TetO7 promoter system.

Media containing 10 micro-gram Doxycycline effectively repress the TetO7 promoter.

Specifications	
Doxycycline Hyclate Doxycycline hydrochloride hemi-ethanolate hemihydrate	
Assay	>98%

Store dry at 2-8°C. Soluble in water
Protect against light. CAS 24390-14-5

ERYTHROMYCIN

SKU	Size
ERYT005	5g
ERYT010	10g
ERYT025	25g
ERYT100	100g

Erythromycin is a macrolide antibioticum with a bacteriostatic action against primarily gram-positive bacteria. The antibiotic binds reversibly to the 50S subunit of the bacterial ribosome, resulting in inhibition of both transpeptidation and translocation reactions, inhibition of protein synthesis and hence inhibition of cell growth.

Specifications	
Physical description	White or pale yellow powder
Identification	According to BP
Specific optical rotation	-71 to -78°
Related substances	Any individual impurity: <= 3.0% Total Impurities: <= 7.0%
Thiocyanate	<= 0.3%
Water	<= 6.5%
Sulphated Ash	<= 0.2%
Assay	Erythromycin A+B+C: 93.0 – 102.0% Erythromycin B: <= 5.0% Erythromycin C: <-5.0%
Pharmacopoeia	
Specification(s)	BP

Store dry at 4-8°C.
CAS 114-07-8

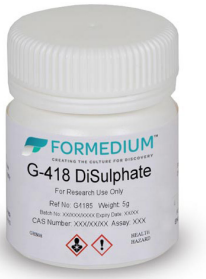
G-418 DISULPHATE

SKU	Size
G4181	1g
G4185	5g

C20H40N4O10.2H2SO4=692.7

G-418 is a member of the large family of Aminoglycoside antibiotics and has a molecular structure almost like Gentamycin. The antibiotic is an irreversible inhibitor of protein synthesis. Due to its structure is capable of binding to both prokaryotic and eukaryotic ribosomes and inhibiting protein synthesis and generating errors in the transcription of the genetic code.

G-418 can by inactivated by NPTII or 3APH. The hydroxyl group present at the 3 position of G-418 is phosphorylated by NPTII. The resulting steriometric change of the molecular structure of the antibiotic prevents it from binding at its ribosome binding site.



Hyrgoscopic - do not breathe dust
GHS08 - GHS09

GHS07 Skin & Eye Irritation

Specifications	
Character	Fine white powder
Solubility	Freely soluble in water
Specific Optical Rotation	+104 ~ +121
Water	<6%
Absorbance 570 nm	<0.10
Absorbance 280 nm	<0.015
NH4+	< 1.0%
pH	5.5 ± 0.5
Thin Layer Chromatogram	One Spot
Potency	>720 µ/mg

Store at 2 - 8°C. Protect from light
CAS 108321-42-2

G-418 SOLUTION

SKU	Size
G418S	20ml
G4185S	5 x 20ml

C20H40N4O10.2H2SO4=692.7

G-418 is a member of the large family of Aminoglycoside antibiotics and has a molecular structure almost like Gentamycin. The antibiotic is an irreversible inhibitor of protein synthesis. Due to its structure is capable of binding to both prokaryotic and eukaryotic ribosomes and inhibiting protein synthesis and generating errors in the transcription of the genetic code.

1 Bottle contains 20 ml G-418 Solution 50 mg/ml.

Store at 4°C. CAS 108321-42-2

Specifications	
Solubility	Freely soluble in water
Specific Optical Rotation	+104 ~ +121
Water	<6%
Absorbance 570 nm	<0.10
Absorbance 280 nm	<0.015
NH4+	< 1.0%
pH	5.5 ± 0.5
Thin Layer Chromatogram	One Spot

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

GHS07 Skin & Eye Irritation

Specifications	
Potency	>720 µ/mg
Water Purity Used	
Resistivity at 25°C.	18.2 M
Bacterial endotoxin	<0.001 EU/ml
TOC	1-3 ppb
Bacteria	< 0.1 CFU/ml
Bacterial endotoxin	< 0.001/ml
RNase and DNase	Removed

GENTAMICIN SULPHATE

SKU	Size
GEN05	5g
GEN25	25g

Specifications	
Potency	Approximately 640 µ/mg

Store dry at room temperature. Soluble in water.

CAS 1405-41-0

GHS07 Skin & Eye Irritation

HYGROMYCIN B (POWDER)

SKU	Size
HYG0500	500mg
HYG1000	1g
HYG5000	5g

C20H37N3O13=527.5

Specifications	
Appearance	White Crystalline Powder
Identification (FTIR)	Positive
Solubility (100 mg/L)	Clear and colourless solution
Purity (HPLC)	>92%
Potency	>1000 µg/mg
Heavy metals	<20 ppm
Specific rotation	+22.1
Endotoxin	<10 EU/mg

Store at 2 - 8°C

CAS 31282-04-9

GHS05 Corrosive

GHS06 Acute toxicity

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

KANAMYCIN MONOSULPHATE

SKU	Size
KAN0005	5g
KAN0025	25g

C18H36N4O11·H2SO4=582.6

Store dry at room temperature
Soluble in water

CAS 25389-94-0

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

TETRACYCLINE HCL

SKU	Size
TBSL0500-7.4	500ml
TBSL1000-7.4	1 Litre
TBSL5000-7.4	5 Litre

10 X sterile stock solution

Dilute 100ml TBS Buffered Saline 10X into 900ml deionised water to make 1 litre of TBS Saline Buffer 1 X.

Final concentration is 0.1 M Tris Buffer and 0.14 M Sodium chloride, pH 7.4.

Specifications		
TRIS Buffer	1.0 M	121.4 g/L
Sodium Chloride	1.4 M	81.9 g/L

Store at room temperature. Keep away from light.

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

H413 Toxic to aquatic life with long lasting effects

BIOCHEMICALS & LIQUID BUFFERS

3-AMINO-1,2,4-TRIAZOLE, 3-AT

SKU	Size
3AT010	10g
3AT025	25g
3AT100	100g

C2H4N4=84.08

3-AT is a competitive inhibitor of the product of the HIS3 gene, imidazoleglycerol-phosphate dehydratase. Imidazoleglycerol-phosphate dehydratase is an enzyme catalyzing the sixth step of histidine production.

Specifications	
Assay (TLC)	≥95%
Melting range	152 - 153°C
Loss on drying	<0.2%

Store at 2 - 8°C. CAS 61-82-5

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

5-AMINOLEVULINIC ACID HYDROCHLORIDE

SKU	Size
5ALA01	1g
5ALA05	5g
5-ALA10	10g

NH2CH2COCH2CH2COOH.HCl = 167.59

Specifications	
Assay (HPLC)	≥99%
Melting range	148.2 - 149.6°C
Loss on drying	<0.2%
Residue on ignition	0.06%

CAS 5451-09-2

5-FLUORO OROTIC ACID MONOHYDRATE

SKU	Size
5FOA01	1g
5FOA05	5g
5FOA10	10g

C5H3FN2O4.H2O = 192.1

Specifications	
Character	Slight yellow crystalline powder
Solubility	Soluble in DMSO, slightly soluble in alcohol and methanol
Assay (HPLC)	≥98%
Loss on drying	<0.2%

CAS 207291-81-4

GHS07 Skin & Eye Irritation

AGAROSE ULTRAPURE

SKU	Size
AGS0025	25g
AGS0100	100g
AGS0250	250g
AGS0500	500g
AGS1000	1kg

Properties	
Appearance	Powder
Colour	White or off-white
Endonuclease/ligase inhibitory factor	Negative
Gel Strength (1.0% Gel)	=>1200 g/cm2
EEO (Electroendosmosis(-Mr)	<= 0.13
Water	<= 10.0%
Sulfate	<= 0.15%
Ash	<= 0.5%
DNase	Negative
RNase	Negative
Protease	Negative
Melting Point °C	88 ± 1.5°C
Gelling Point °C	36 ± 1.5°C
Solubility (1% water)	Clear colourless solution

Agarose is a highly purified linear galactan hydrocolloid isolated from seaweed Gelidium species which forms a firm gel matrix with a high strength at low concentrations making it ideal for diffusion and electrokinetic movement of biopolymers such as DNA and RNA. Our Agarose Ultrapure is recommended for electrophoresis of nucleic acids > 1000 bp. It is manufactured and quality controlled specifically to meet the stringent requirements associated with nucleic acid applications.

CAS 9012-36-6

DTT 1, 4-DITHIOTHREITOL

SKU	Size
DTT005	5g
DTT010	10g
DTT025	25g
DTT100	100g

Dithiothreitol C4H10O2S2=154.2

Store dry at 2-8°C
Soluble in water
Hygroscopic, protect against moisture
CAS 3483-12-3

Hyrgoscopic - do not breathe dust.
GHS08 - GHS09

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EDTA DISODIUM

SKU	Size
EDTA250	250g
EDTA500	500g
EDTA1000	1000g
EDTA6000	6 x 1kg

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C10H14N2O8Na2.2H2O = 372.2

EDTA Na2.2H2O
Ethylenediaminetetra-acetate Disodium Dihydrate

Specifications	
Purity	>99%

Store dry at room temperature
Soluble in water (20°C. 100g/L)
Hygroscopic, protect against moisture
CAS 6381-92-6

HEPES

SKU	Size
HEPES01	100g
HEPES03	250g
HEPES05	500g
HEPES10	1000g
HEPES60	6kg

C8H18N2O4S=238.3

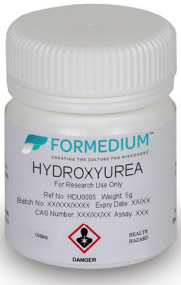
Specifications	
HEPES	>99.5%
Loss on Drying (105 C° 4hr)	<0.5%
Water Content (By KF)	<0.5%
Infrared	Complies
pH 1% in water	4.8-5.6 (25°C)
Solubility 1M in water	Clear and colourless solution
Residue on ignition	<0.1%
A260, 1M in water	<0.045
A280, 1M in water	<0.035
A420, 1M in water	<0.20
Heavy Metals	<5 ppm
pKa at 20°C	7.35-7.69

Store dry at room temperature
Soluble in water

CAS 7365-45-9

HYDROXYUREA

SKU	Size
HDU0005	5g
HDU0025	25g
HDU0100	100g
HDU0250	250g



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DNA replication inhibitor causing deoxyribonucleotide depletion
CH4N2O2=76.05

Hydroxyurea is an anti-neoplastic which Inactivates ribonucleoside reductase by forming a free radical nitroxide that binds a tyrosyl free radical in the active site of the enzyme. This blocks the synthesis of deoxynucleotides, which inhibits DNA synthesis and induces synchronization or cell death in S-phase.

Specifications	
Appearance	White Crystalline Powder
Content by HPLC	>97.5
Water	>0.5%
Related substances	>0.2%
Residue on ignition	>0.1%
Heavy metals	>10ppm
Residue on ignition	>0.1%

Store at 2 -8°C in dark, dry place

CAS 127-07-1

IPTG DIOXANE FREE

SKU	Size
IPTG005	5g
IPTG010	10g
IPTG025	25g
IPTG100	100g
IPTG250	250g

Isopropyl-β-D-1-Thiogalactopyranside
C9H18O5S=238.3

Specifications	
Purity (HPLC)	99.9%
Purity (TLC)	One Spot
IR	Conform standard
Solubility (5%, H2O)	Clear and colourless solution
pH (5%, H2O)	6.0
Optical rotation (C=1, H2O)	-32.4
Melting point	111.5 - 112.4°C
Water KF	0.1%
Dioxane (GLC)*	<1 ppm
* Not used in manufacturing process	

Store dry at 2-8°C. Soluble in ethanol and water

CAS 367-93-1

MES - SDS RUNNING BUFFER 20X

SKU	Size
MES-SDS0500	500ml
MES-SDS1000	1 Litre
MES-SDS5000	5 Litre

20 X sterile RNAse free stock solution

Dilute 50 ml MES-SDS 20X into 950 ml of deionised water to make 1 litre of MES-SDS Running Buffer.Final concentration of 50mM MES, 50mM TRIS base, 3.47mM SDS and 1mM EDTA.

Specifications				
MES	1	M	195.2	g/L
TRIS	1	M	121.1	g/L
SDS	69.3	mM	20	g/L
EDTA Na2	20.5	mM	7.6	g/L

Store at room temperature.
Keep away from light .

MES MONOHYDRATE

SKU	Size
MES01	100g
MES02	250g
MES03	500g
MES04	1000g
MES05	6 x 1kg

2-(N-Morpholino) Ethanesulfonic acid C6H13NO4S·H2O=213.2

Specifications	
Appearance	White Crystalline Powder
Assay (Titration)	≥99%
Water Content	8.0-8.9%
pH 1% Di HB2BO	3.5-4.5
Solubility 0.1M water Clear	Colourless Solution
Residue On Ignition	≤0.1%
AB280B, 0.5M water	≤0.020
AB260B, 0.5M water	≤0.025
pKa 25	5.9-6.3
Heavy metals (Pb)	≤5ppm

Store dry at room temperature
Soluble in water

CAS 145224-94-8

MOPS

SKU	Size
MOPS01	100g
MOPS02	250g
MOPS03	500g
MOPS04	1000g
MOPS05	6 x 1kg

4-Morpholino propanesulfonic acid C7H15NO4S=209.3

Specifications	
Appearance	White Crystalline Powder
Assay (Titration, Dry Base)	≥99.0%
Water Content by KF	≤1%
Infrared	Complies
Solubility 1M water	Clear colourless solution
pH 1% Di H2O	3.6 - 4.4 (25°C)
A280, 1M water	≤0.10
A260, 1M water	≤0.15

Store dry at room temperature
Soluble in water

CAS 1132-61-2

MOPS - SDS RUNNING BUFFER 20X

SKU	Size
MES-SDS0500	500ml
MES-SDS1000	1 Litre
MES-SDS5000	5 Litre

20 X sterile RNAse free stock solution

Dilute 50 ml MOPS-SDS 20X into 950 ml of deionised water to make 1 litre of MOPS-SDS Running Buffer. Final concentration is 50mM MOPS, 50mM TRIS base, 3.47mM SDS and 1mM EDTA.

Specifications				
MES	1	M	209.3	g/L
TRIS	1	M	121.1	g/L
SDS	69.3	mM	20	g/L
EDTA Na2	20.5	mM	7.6	g/L

Store at room temperature
Keep away from light

PHOSPHATE BUFFERED SALINE

SKU	Size
PBS10L	10L Pack - 99.3g
PBS20L	20L Pack - 198.6g
PBS100L	100L Pack - 993g

pH 7.4 premix

Reliable, quick and no pH adjustment necessary. A 10L pack (99.3g) in one litre is 10X; at this strength the ph is around 6.8/6.9, do not adjust this pH as on dilution to 1X the pH automatically adjusts to 7.4 which we determine during production.

Store at room temperature

RNASEZERO

SKU	Size
RZ500	500ml

RNaseZero is a ready to use solution.

Completely removes RNase contamination from glass, plastic and stainless steel surfaces

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SDS MICRO-PELLETS

SKU	Size
MES-SDS0500	500ml
MES-SDS1000	1 Litre
MES-SDS5000	5 Litre

20 X sterile RNAse free stock solution

Dilute 50 ml MOPS-SDS 20X into 950 ml of deionised water to make 1 litre of MOPS-SDS Running Buffer. Final concentration is 50mM MOPS, 50mM TRIS base, 3.47mM SDS and 1mM EDTA.

Specifications				
MES	1	M	209.3	g/L
TRIS	1	M	121.1	g/L
SDS	69.3	mM	20	g/L
EDTA Na2	20.5	mM	7.6	g/L

Store at room temperature. Keep away from light.

GHS05 Corrosive

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TAE BUFFER 50X

SKU	Size
PBS10L	10L Pack - 99.3g
PBS20L	20L Pack - 198.6g
PBS100L	100L Pack - 993g

pH 7.4 premix

Reliable, quick and no pH adjustment necessary. A 10L pack (99.3g) in one litre is 10X; at this strength the ph is around 6.8/6.9, do not adjust this pH as on dilution to 1X the pH automatically adjusts to 7.4 which we determine during production.

Store at room temperature.

TBE BUFFER 10X

SKU	Size
RZ500	500ml

RNaseZero is a ready to use solution.

Completely removes RNase contamination from glass, plastic and stainless steel surfaces.

Hyrgoscopic - do not breathe dust
GHS08 - GHS09

TBS BUFFERED SALINE 10X, PH 7.4

SKU	Size
TBSL0500-7.4	500ml
TBSL1000-7.4	1 Litre
TBSL5000-7.4	5 Litre

10 X sterile stock solution

Dilute 100ml TBS Buffered Saline 10X into 900ml deionised water to make 1 litre of TBS Saline Buffer 1 X.

Final concentration is 0.1 M Tris Buffer and 0.14 M Sodium chloride, pH 7.4.

Specifications		
TRIS Buffer	1.0 M	121.4 g/L
Sodium Chloride	1.4 M	81.9 g/L

Store at room temperature. Keep away from light.

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TBS BUFFERED SALINE 10X, PH 7.6

SKU	Size
TBSL0500-7.6	500ml
TBSL1000-7.6	1 Litre
TBSL5000-7.6	5 Litre

10 X sterile stock solution

Dilute 100ml TBS Buffered Saline 10X into 900ml deionised water to make 1 litre of TBS Saline Buffer 1 X.

Final concentration is 0.1 M Tris Buffer and 0.14 M Sodium chloride, pH 7.6.

Specifications		
TRIS Buffer	1.0 M	121.4 g/L
Sodium Chloride	1.4 M	81.9 g/L

Store at room temperature. Keep away from light.

GHS07 Skin & Eye Irritation

TBS BUFFERED SALINE 10X, PH 7.8

SKU	Size
TBSL0500-7.8	500ml
TBSL1000-7.8	1 Litre
TBSL5000-7.8	5 Litre

10 X sterile stock solution

Dilute 100ml TBS Buffered Saline 10X into 900ml deionised water to make 1 litre of TBS Saline Buffer 1 X.

Final concentration is 0.1 M Tris Buffer and 0.14 M Sodium chloride, pH 7.8.

Specifications		
TRIS Buffer	1.0 M	121.4 g/L
Sodium Chloride	1.4 M	81.9 g/L

Store at room temperature. Keep away from light.

GHS07 Skin & Eye Irritation

TBS BUFFERED SALINE 10X, PH 8

SKU	Size
TBSL0500-7.8	500ml
TBSL1000-7.8	1 Litre
TBSL5000-7.8	5 Litre

10 X sterile stock solution

Dilute 100ml TBS Buffered Saline 10X into 900ml deionised water to make 1 litre of TBS Saline Buffer 1 X.

Final concentration is 0.1 M Tris Buffer and 0.14 M Sodium chloride, pH 8.

Specifications		
TRIS Buffer	1.0 M	121.4 g/L
Sodium Chloride	1.4 M	81.9 g/L

Store at room temperature. Keep away from light .

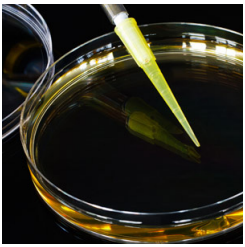
GHS07 Skin & Eye Irritation

MEDIA COMPONENTS

Formedium™ manufactures a large range of media for yeast, fungi and bacterial cell cultures. Part of these media are nutritional elements like Agar, Casamino acids, Glucose, Peptone, Tryptone and Yeast extract.

These nutrients are also offered by Formedium™ as separate media components to allow the researcher to select the optimal concentration of each component for a specific strain.

All products offered by Formedium™ are of high quality and purity and used to produce an extended range of cell culture media.



AGAR

SKU	Size
AGA01	250g
AGA02	500g
AGA03	1000g
AGA04	6 x 1kg

Agar is natural product derived from seaweed. During the production process all impurities are carefully removed to obtain an agar with a high gel strength, excellent clarity and low mineral content. The result is an agar well suited for cell cultures.

Store dry at room temperature.

AGAR GRANULATED, BACTERIOLOGICAL GRADE

SKU	Size
AGR02	250g
AGR05	500g
AGR10	1000g
AGR60	6 x 1kg

Agar Granulated, Bacteriological grade is a fine granulated agar with excellent characteristics for bacteriological growth.

Due to the fine granule structure of this agar dusting while handling is very low.

Store dry at room temperature.

CASAMINO ACIDS

SKU	Size
CAS01	250g
CAS02	500g
CAS03	1000g
CAS04	6 x 1kg

Casamino Acids are manufactured by a controlled acid hydrolysis of casein . Hydrolysis is not completed until all the nitrogen in the casein is converted to amino acids or other compounds of relative chemical simplicity. As a result of the acid hydrolysis process all vitamins and growth factors present in casein are destroyed.

Due to the low sodium chloride concentration ForMedium™Casamino Acids are well suited for cultivation of yeast cells.

Store dry at room temperature.

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D(+) - GALACTOSE

SKU	Size
ARA001	100g
ARA005	500g
ARA010	1kg

C6H12O6 = 180.16

Purity HPLC >99%
Water < 0.3%
White Crystalline powder

Store dry at room temperature.

D(+) - GLUCOSE ANHYDROUS

SKU	Size
GLU01	250g
GLU02	500g
GLU03	1000g
GLU04	6 x 1kg

C6H12O6 = 180

A fine white crystalline quality with excellent properties for cell culture.

Store dry at room temperature.

D(+) - RAFFINOSE PENTAHYDRATE

SKU	Size
RAF01	100g
RAF02	250g
RAF03	500g
RAF04	1kg

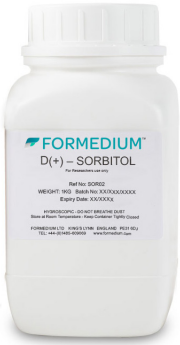
C18H32O16.5H2O = 594.5

Purity HPLC >99%
White powder

Store dry at room temperature.

D(+) - SORBITOL

SKU	Size
SOR02	1kg
SOR03	5kg



C6H14O6 = 182.17

Complies to Ph. Eur.

White crystalline powder.

Store dry at room temperature.

D(+) - SUCROSE

SKU	Size
SUC01	1kg
SUC06	6 x 1kg

C6H14O6 = 182.17

Complies to Ph. Eur.

White crystalline powder.

Store dry at room temperature.

L- ARABINOSE

SKU	Size
ARA001	100g
ARA005	500g
ARA010	1kg

C5H10O5 = 150.13

Purity HPLC 99%
Purity TLC Single spot
Water < 0.3%
White Crystalline powder

Store dry at room temperature.

MALT EXTRACT

SKU	Size
MAL03	1kg

Malt extract is prepared from Malt by extracting the soluble products from sprouted grain.

The product contains a mix of carbohydrates (mainly maltose) and growth factors.

Solubility in water at 3 % Complete
pH (3 % solution) 4.8 - 5.8
Loss on drying ≤ 6.0 %
Reducing sugars (as maltose) ≥ 60.0 %
Residue on ignition ≤ 4.5 %
Chloride (as NaCl) ≤ 1.0 %

Store dry at room temperature.

PEPTONE

SKU	Size
PEP01	250g
PEP02	500g
PEP03	1000g
PEP04	6 x 1kg

Peptone is a spray dried powder, manufactured by a controlled enzymatic hydrolysis of animal tissue. The most commonly used enzymes are pepsin, papain and pancreatin. The latter containing trypsin.

Pepsin will cut the peptide chain anywhere there is a phenylalanine or leucine bond.

Papain cuts in the peptide chain adjacent to arginine, lysine, phenylalanine and glycine. Pancreatin has its action at arginine, lysine, tyrosine, tryptophan, phenylalanine and leucine bonds.

The tissues are hydrolysed to produce straw coloured peptones which are highly nutritious and clearly soluble in water. Peptones contain a mix of peptides, free amino acids and growth factors.

Due to the low sodium chloride concentration ForMedium™Pepton is well suited for cultivation of yeast cells.

Store dry at room temperature.

POTATO EXTRACT

SKU	Size
PTE01	250g
PTE02	500g
PTE03	1000g
PTE04	6 x 1kg

Potato extract is a mixture of potato proteins, manufactured by controlled enzymatic hydrolysis. The extract is an excellent nitrogen source for bacteria, yeasts and fungi. Potato extract is rich in vitamins and minerals and supports a vigorous growth of micro-organisms.

Store dry at room temperature.

SODIUM CHLORIDE

SKU	Size
NAC02	1000g
NAC03	6 x 1kg

NaCl = 58.4

Complies to Ph. Eur and USP
Heavy metals < 5 ppm
Ferrocyanides

A fine white crystalline quality with excellent properties for cell culture.

Store dry at room temperature.

SOYA PEPTONE

SKU	Size
VPEP01	250g
VPEP02	500g
VPEP03	1000g
VPEP04	6 x 1kg

Soya Peptone is a papaic digest of defatted soybean flour and is a well-balanced source of essential amino acids, carbohydrates and vitamins in cell cultures.

Soya Peptone is used for growth of a wide variety of bacteria and yeasts in cell cultures and is often combined with Tryptone or Peptone for a rapid and abundant growth of cells.

This plant peptone is classified animal-free by Formedium Ltd. Based on the manufacturing protocol, we attest that no animal raw materials are prescribed for use in the production of this product, nor are any of the raw materials derived from animal products.

Soya Peptone is classified animal free, GMO free (according to the European Directive 2001/18/CE).

Store dry at room temperature

TRYPTONE

SKU	Size
TRP01	250g
TRP02	500g
TRP03	1000g
TRP04	6 x 1kg

Enzymatic digest of casein

Tryptone is a pancreatic digest of casein. Casein is the main protein of milk and is a rich source of amino acid nitrogen. Amongst all amino acids especially Tryptophan is present in high concentrations.

Due to the rich nutritional properties, Tryptone is added to media as an accelerator to increase the yield of organisms and is recommended where a rapid and luxuriant growth of micro organisms is required.

Store dry at room temperature.

YEAST EXTRACT, POWDER

SKU	Size
YEA01	250g
YEA02	500g
YEA03	1000g
YEA04	6 x 1kg

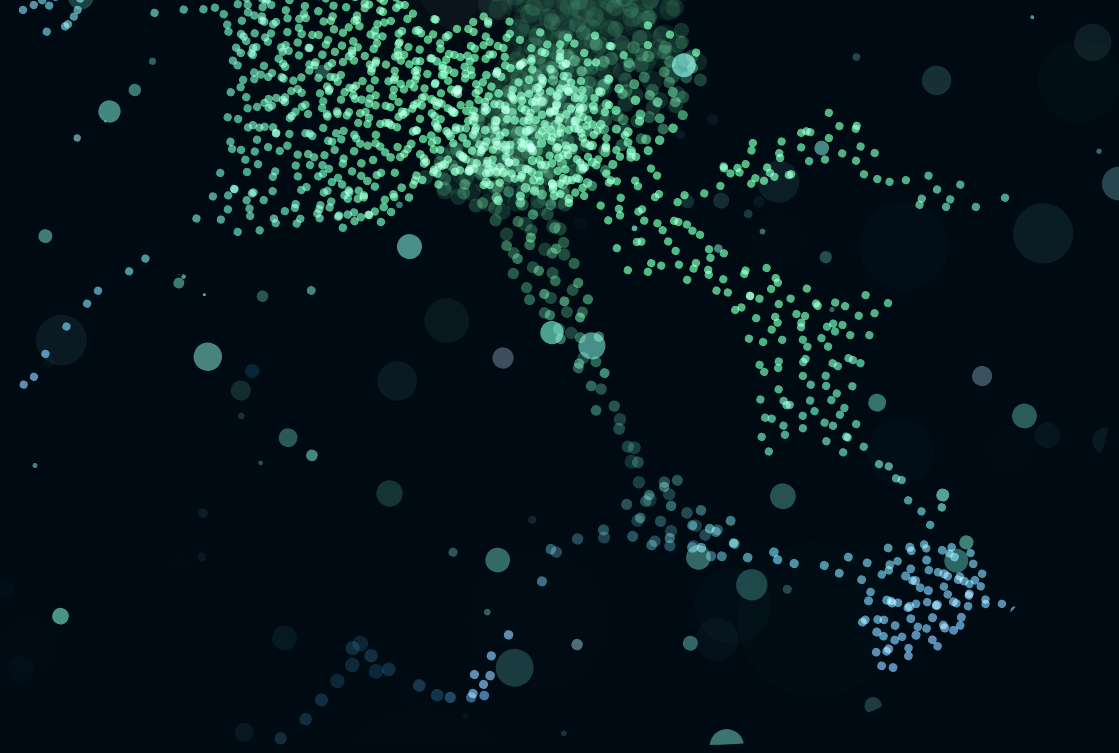
Yeast Extract is a spray dried extract manufactured by complete autolysis, i.e. a transformation of proteins into peptides, and amino acids, implemented through the proteolytic enzymes present in yeast cells.

The cell membranes are discarded, enabling completely soluble yeast extracts to be obtained. Besides peptides and amino acids yeast extract also contains purine and pyrimidine bases, carbohydrates and water soluble vitamins of B group.

Sodium Chloride concentration of Formedium™Yeast Extract is low and also therefore well suited for cultivation of yeast cells.

Due to its carbohydrate content, typically 10%, yeast extract is not suitable for media intended for the study of sugar fermentation.

Store dry at room temperature.



FORMEDIUM™

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