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TECHNICAL INFORMATION

Catalog Number: 1440049, 1440054

Ham's F10 (10X Solution) without L-Glutamine, without Sodium Bicarbonate, with 12.4 mg/L Phenol Red

Description: Originally, Ham's Nutrient Mixtures were developed for the clonal growth of several Chinese hamster ovary (CHO) clone cells, Hela cells and mouse L-cells. Both F-10 and F-12 are formulated for use with or without serum, depending on the type of cells being cultured. F-10 has demonstrated satisfactory growth of human diploid cells, white blood cells for chromosomal analysis and primary rat, rabbit and chicken tissue explants. Ham's F-12 is well suited for the growth of primary rat hepatocytes and prostate epithelial cells. It is also the medium of choice for toxicity assays using CHO cells. MP also offers Ham's F-12 supplemented with 25 mM HEPES for improved buffering in the optimum pH range of 7.2-7.4.

F12K is a modification of Ham's F-12 and Coon's F-12 with increased amino acid and pyruvate concentrations. Additionally, the salts have been modified (Konigsbergs). F12K has been developed for culturing differentiated rat and chicken cells, as well as, primary human liver cells.

References:

- Ham, R.G., *Exptl. Cell Res.*, **v. 39**, 515 (1963).
- Morton, H.J., *In Vitro*, **v. 6**, 89 (1970).
- Rutaky, L.P. and Pumper, R.W., *In Vitro*, **v. 9**, 648 (1974).
- Soloman, J.J., *TCA manual*, **v. 1**, 7 (1975).

MgCl₂ has been substituted by MgSO₄ containing an equivalent amount of Mg ion.

Formulation (as 10X):

Component	mg/lit	Mol. Wt.	Mol. (mM)
Amino Acids			
L-Alanine	89.10000	89.1	1.00
L-Arginine HCl	2107.00000	174.2	12.10
L-Asparagine H ₂ O	150.10000	150.1	1.00
L-Aspartic Acid	133.10000	133.1	1.00
L-Cysteine HCl H ₂ O	351.30000	175.6	2.00
L-Glutamic Acid	147.10000	147.1	1.00
Glycine	75.10000	75.07	1.00
L-Histidine HCl H ₂ O	209.60000	209.6	1.00
L-Isoleucine	26.20000	131.2	0.20
L-Leucine	131.20000	131.2	1.00
L-Lysine HCl	293.00000	182.6	1.60
L-Methionine	44.80000	149.2	0.30
L-Phenylalanine	49.60000	165.2	0.30
L-Proline	115.10000	115.1	1.00

L-Serine	105.10000	105.1	1.00
L-Threonine	35.70000	119.1	0.30
L-Tryptophan	6.10000	204.2	0.03
L-Tyrosine	18.10000	181.2	0.10
L-Valine	35.10000	117.1	0.30
Vitamins			
Biotin	0.24000	244.3	0.0010
Choline Chloride	6.98000	139.6	0.05
D-Calcium Pantothenate	7.15000	238.3	0.03
Folic Acid	13.20000	441.4	0.03
myo-Inositol	5.41000	180.2	0.03
Nicotinamide	6.11000	122.13	0.05
Pyridoxine HCl	2.06000	205.6	0.01
Riboflavin	3.76000	376.4	0.01
Thiamine HCl	10.12000	337.3	0.03
Vitamin B12	13.60000	1355.4	0.01
Inorganic Salts			
Calcium Chloride [CaCl ₂ 2H ₂ O] Dihydrate	441.00000	147	3.00
Cupric Sulfate [CuSO ₄]	0.01600	159.68	0.0001
Ferrous Sulfate [FeSO ₄ 7H ₂ O] Heptahydrate	8.34	278	0.03
Magnesium Sulfate [MgSO ₄]	746.00000	120.4	6.20
Potassium Chloride [KCl]	2850.00000	74.55	38.23
Potassium Phosphate Monobasic [KH ₂ PO ₄]	830.00000	136.09	6.10
Sodium Chloride [NaCl]	74000.00000	58.44	1266.26
Sodium Phosphate Dibasic [Na ₂ HPO ₄]	1562.00000	141.96	11.00
Zinc Sulfate [ZnSO ₄ 7H ₂ O] Heptahydrate	0.28800	287.5	0.0010
Other			
Dextrose	11000.00000	180.2	61.04
Hypoxanthine	40.80000	136.1	0.30
Lipoic Acid	2.06000	206.3	0.01
Phenol Red Sodium Salt	12.40000	376.4	0.03
Sodium Pyruvate	1100.00000	110	10.00
Thymidine	7.27000	242.2	0.03
Add			

NaHCO ₃ Powder (g/L) (for 1X Solution)	1.2000
NaHCO ₃ 7.5% Solution (mL/L) (for 1X Solution)	16.0300
L-glutamine Powder (mg/L) (for 1X Solution)	146.2000
L-glutamine 200 mM Solution (mL/L) (for 1X Solution)	5.0000

Availability:

1X Liquid:

Ham's F-10 Medium:

Catalog Number	Description	Size
1240249	1X Ham's F-10 without L-glutamine	100 ml
1240254		500 ml
1240349	1X Ham's F-10 with L-glutamine	100 ml
1240354		500 ml
1240449	1X Ham's F-10 with 20 mM HEPES, without L-glutamine, sodium bicarbonate	100 ml
1240454		500 ml

Ham's F-12 Medium:

Catalog Number	Description	Size
1242354	1X Ham's F-12 with L-glutamine	500 ml
1242254	1X Ham's F-12 without L-glutamine	500 ml
1242454	1X Ham's F-12 Kaighn's Modification	500 ml

Dulbecco's Modification of Eagle's Medium/Ham's F-12 Medium:

Catalog Number	Description	Size
1246754	1X DMEM/Ham's F-12 (1:1) without L-glutamine	500 ml

10X Liquid:

Ham's F-10 Medium:

Catalog Number	Description	Size
1440049	10X Ham's F-10 without L-glutamine, sodium bicarbonate	100 ml

Powders:

Ham's F-10 Medium:

Catalog Number	Description	Size
1040120	Ham's F-10 with L-glutamine without sodium bicarbonate	10 x 1 liter
1040122		1 x 10 liter
1040124		1 x 50 liter
1040220	Ham's F-10 with L-glutamine without sodium bicarbonate, hypoxanthine	10 x 1 liter
1040222		1 x 10 liter
1040222		1 x 50 liter

Ham's F-12 Medium:

Catalog Number	Description	Size
1042120	Ham's F-12 with L-glutamine without sodium bicarbonate	10 x 1 liter
1042122		1 x 10 liter