

# DMEM/F-12 (1:1), L-Glutamine, Phenol Red, HEPES

## 1 Components

Component	HY-K3002-500 mL	HY-K3002-1 L	HY-K3002-3 L
DMEM/F-12 (1:1), L-Glutamine, Phenol Red, HEPES	500 mL	500 mL × 2	500 mL × 6

## 2 Introduction

DMEM/F-12 (Dulbecco's Modified Eagle Medium/Nutrient Mixture F-12) is a widely used basal medium for supporting the growth of many different mammalian cells. Cell successfully cultured in DMEM/F-12 include MDCK, glial cells, fibroblasts, human endothelial cells, etc. This product is a 1:1 mixture of DMEM and Ham's F-12, combining DMEM's high concentration of amino acids and vitamins with F-12's wide variety of components. This product is suitable for cell culture under low serum conditions.

MCE offers a range of different formulations of DMEM medium for different cell culture applications.

## 3 Characteristics

With (+)	Without (-)
D-Glucose (3.151g/L)	
L-Glutamine (365 mg/L)	
Phenol Red (8.1 mg/L)	
HEPES (3.6 g/L)	
Sodium Pyruvate (55 mg/L)	

## 4 General Protocol

DMEM/F-12 requires a 5–10% CO<sub>2</sub> environment to maintain physiological pH.

## 5 Storage

Store at 2–8°C for 1 year.

Protect from light.

## 6 Precautions

- DMEM contains no proteins, lipids, or growth factors. Therefore, DMEM requires supplementation, commonly with Insulin-Transferrin-Selenium (ITS) or 10% Fetal Bovine Serum (FBS).
- This product is for R&D use only, not for drug, household, or other uses.
- For your safety and health, please wear a lab coat and disposable gloves to operate.

## 7 Appendix: The formula table of medium

Components	Molecular	Concentration (mg/L)	mM
<b>Amino Acids</b>			
Glycine	75	18.75	0.25
L-Alanine	89	4.45	0.049999997
L-Arginine hydrochloride	211	147.5	0.69905216
L-Asparagine-H <sub>2</sub> O	150	7.5	0.05
L-Aspartic acid	133	6.65	0.05
L-Cysteine hydrochloride-H <sub>2</sub> O	176	17.56	0.09977272
L-Cystine 2HCl	313	31.29	0.09996805
L-Glutamic Acid	147	7.35	0.05
L-Glutamine	146	365	2.5
L-Histidine hydrochloride-H <sub>2</sub> O	210	31.48	0.14990476
L-Isoleucine	131	54.47	0.41580153
L-Leucine	131	59.05	0.45076334
L-Lysine hydrochloride	183	91.25	0.4986339
L-Methionine	149	17.24	0.11570469
L-Phenylalanine	165	35.48	0.2150303
L-Proline	115	17.25	0.15
L-Serine	105	26.25	0.25
L-Threonine	119	53.45	0.44915968
L-Tryptophan	204	9.02	0.04421569
L-Tyrosine disodium salt dihydrate	261	55.79	0.21375479
L-Valine	117	52.85	0.4517094
<b>Vitamins</b>			
Biotin	244	0.0035	1.43E-05
Choline chloride	140	8.98	0.06414285
D-Calcium pantothenate	477	2.24	0.004696017
Folic Acid	441	2.65	0.006009071
Niacinamide	122	2.02	0.016557377
Pyridoxine hydrochloride	206	2.013	0.009771844
Riboflavin	376	0.219	5.82E-04
Thiamine hydrochloride	337	2.17	0.006439169
Vitamin B12	1355	0.68	5.02E-04
i-Inositol	180	12.6	0.07
<b>Inorganic Salts</b>			
Calcium Chloride (CaCl <sub>2</sub> ) (anhyd.)	111	116.6	1.0504504
Cupric sulfate (CuSO <sub>4</sub> ·5H <sub>2</sub> O)	250	0.0013	5.20E-06
Ferric Nitrate (Fe(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O)	404	0.05	1.24E-04
Ferric sulfate (FeSO <sub>4</sub> ·7H <sub>2</sub> O)	278	0.417	0.0015
Magnesium Chloride (anhydrous)	95	28.64	0.30147368
Magnesium Sulfate (MgSO <sub>4</sub> ) (anhyd.)	120	48.84	0.407

Components	Molecular	Concentration (mg/L)	mM
<b>Inorganic Salts</b>			
Potassium Chloride (KCl)	75	311.8	4.1573334
Sodium Chloride (NaCl)	58	6995.5	120.61207
Sodium Phosphate monobasic (NaH <sub>2</sub> PO <sub>4</sub> -H <sub>2</sub> O)	138	62.5	0.45289856
Sodium Phosphate dibasic (Na <sub>2</sub> HPO <sub>4</sub> ) anhydrous	142	71.02	0.50014085
Zinc sulfate (ZnSO <sub>4</sub> -7H <sub>2</sub> O)	288	0.432	0.0015
Sodium Bicarbonate (NaHCO <sub>3</sub> )	84	1200	14.285714
<b>Other Components</b>			
D-Glucose (Dextrose)	180	3151	17.505556
Linoleic Acid	280	0.042	1.50E-04
Hypoxanthine Na	159	2.39	0.015031448
Lipoic Acid	206	0.105	5.10E-04
Putrescine 2HCl	161	0.081	5.03E-04
Sodium Pyruvate	110	55	0.5
Phenol Red	376.4	8.1	0.021519661
Thymidine	242	0.365	0.001508265
HEPES	238.3	3574.5	15.018908