

## Description

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. Cells successfully cultured in DMEM/F-12 include MDCK, glial cells, fibroblasts, human endothelial cells, and rat fibroblasts. Life Technologies offers a variety of DMEM/F-12 modifications for a range of cell culture applications.

This DMEM-F12 is modified as follows:

With	Without
• HEPES	
• GlutaMAX™	
• Phenol Red	



## Using DMEM/F-12

DMEM/F-12 is a 1:1 mixture of DMEM and Ham's F-12. This formulation combines DMEM's high concentrations of glucose, amino acids, and vitamins with F-12's wide variety of components. DMEM/F-12 with [GlutaMAX™](#) supplement minimizes toxic ammonia build-up and improves cell viability and growth in an easy-to-use format. DMEM/F-12 contains no proteins, lipids, or growth factors. Therefore, DMEM/F-12 may require supplementation, commonly with 10% [Fetal Bovine Serum](#) (FBS). DMEM/F-12 uses a sodium bicarbonate buffer system and therefore requires a 5–10% CO<sub>2</sub> environment to maintain physiological pH.

## Contents and Storage

Storage conditions: 2-8° C. Protect from light  
Shipping conditions: Ambient  
Shelf life: 12 months from date of manufacture

## Formulation

Components	Molecular Weight	Concentration (mg/L)	mM
<b>Amino Acids</b>			
Glycine	75.0	18.75	0.25
L-Alanine	89.0	4.45	0.049999997
L-Alanyl-L-Glutamine	217.0	542.0	2.497696
L-Arginine hydrochloride	211.0	147.5	0.69905216
L-Asparagine-H <sub>2</sub> O	150.0	7.5	0.05
L-Aspartic acid	133.0	6.65	0.05
L-Cysteine hydrochloride-H <sub>2</sub> O	176.0	17.56	0.09977272
L-Cystine 2HCl	313.0	31.29	0.09996805
L-Glutamic Acid	147.0	7.35	0.05
L-Histidine hydrochloride-H <sub>2</sub> O	210.0	31.48	0.14990476
L-Isoleucine	131.0	54.47	0.41580153
L-Leucine	131.0	59.05	0.45076334
L-Lysine hydrochloride	183.0	91.25	0.4986339
L-Methionine	149.0	17.24	0.11570469
L-Phenylalanine	165.0	35.48	0.2150303
L-Proline	115.0	17.25	0.15
L-Serine	105.0	26.25	0.25
L-Threonine	119.0	53.45	0.44915968
L-Tryptophan	204.0	9.02	0.04421569
L-Tyrosine disodium salt dihydrate	261.0	55.79	0.21375479
L-Valine	117.0	52.85	0.4517094
<b>Vitamins</b>			
Biotin	244.0	0.0035	1.4344263E-5
Choline chloride	140.0	8.98	0.06414285
D-Calcium pantothenate	477.0	2.24	0.0046960167
Folic Acid	441.0	2.65	0.0060090707
Niacinamide	122.0	2.02	0.016557377
Pyridoxine hydrochloride	206.0	2.031	0.009859223
Riboflavin	376.0	0.219	5.824468E-4
Thiamine hydrochloride	337.0	2.17	0.0064391694
Vitamin B12	1355.0	0.68	5.0184503E-4
i-Inositol	180.0	12.6	0.07
<b>Inorganic Salts</b>			
Calcium Chloride (CaCl <sub>2</sub> ) (anhyd.)	111.0	116.6	1.0504504
Cupric sulfate (CuSO <sub>4</sub> ·5H <sub>2</sub> O)	250.0	0.0013	5.2E-6
Ferric Nitrate (Fe(NO <sub>3</sub> ) <sub>3</sub> ·9H <sub>2</sub> O)	404.0	0.05	1.2376238E-4
Ferric sulfate (FeSO <sub>4</sub> ·7H <sub>2</sub> O)	278.0	0.417	0.0015
Magnesium Chloride (anhydrous)	95.0	28.64	0.30147368
Magnesium Sulfate (MgSO <sub>4</sub> ) (anhyd.)	120.0	48.84	0.407
Potassium Chloride (KCl)	75.0	311.8	4.1573334
Sodium Bicarbonate (NaHCO <sub>3</sub> )	84.0	2438.0	29.02381

<b>Sodium Chloride (NaCl)</b>	58.0	6999.5	120.68104
<b>Sodium Phosphate dibasic (Na<sub>2</sub>HPO<sub>4</sub>) anhydrous</b>	142.0	71.02	0.50014085
<b>Sodium Phosphate monobasic (NaH<sub>2</sub>PO<sub>4</sub>-H<sub>2</sub>O)</b>	138.0	62.5	0.45289856
<b>Zinc sulfate (ZnSO<sub>4</sub>-7H<sub>2</sub>O)</b>	288.0	0.432	0.0015
<b>Other Components</b>			
<b>D-Glucose (Dextrose)</b>	180.0	3151.0	17.505556
<b>Hypoxanthine Na</b>	159.0	2.39	0.015031448
<b>Linoleic Acid</b>	280.0	0.042	1.4999999E-4
<b>Lipoic Acid</b>	206.0	0.105	5.097087E-4
<b>Phenol Red</b>	376.4	8.1	0.021519661
<b>Putrescine 2HCl</b>	161.0	0.081	5.031056E-4
<b>Sodium Pyruvate</b>	110.0	55.0	0.5
<b>Thymidine</b>	242.0	0.365	0.0015082645

## Specifications

### General Specifications

<b>Glutamine:</b>	<b>GlutaMAX™-I</b>
<b>Phenol Red Indicator:</b>	Phenol Red
<b>Form:</b>	Liquid
<b>HEPES Buffer:</b>	No HEPES
<b>Sodium Pyruvate Additive:</b>	Sodium Pyruvate
<b>Serum Supplementation:</b>	Standard Serum Supplementation
<b>Volume:</b>	500 ml
<b>pH Range:</b>	6.8 - 7.2
<b>Osmolality:</b>	290 - 330 mOsm/kg
<b>Concentrated:</b>	1 X
<b>Product Size:</b>	500 mL
<b>Classification:</b>	Animal Origin-Free
<b>Culture Environment:</b>	CO <sub>2</sub>
<b>Supplementation Required:</b>	Serum
<b>Sodium Bicarbonate Buffer:</b>	Sodium Bicarbonate
<b>Shipping Condition:</b>	Room Temperature