

# Product Information

## Dulbecco's Modified Eagle's Medium/ Ham's Nutrient Mixture F12

with 3151 mg/L dextrose, with 2.5 mM L-glutamine, with 15 mM HEPES, with 55 mg/L sodium pyruvate

CATALOG NO. 51445C

### Description

Studies to determine the nutritional requirements of many cells have been in progress since Eagle's first reports. The major essential nutrients were identified and work became focused on the media requirements of individual cell types. Many media designed for these purposes are now available. Among the first of these media, developed initially to study hormonal requirements of cells in culture, was a mixture of Dulbecco's Modified Eagle's Medium and Ham's Nutrient Mixture F12, known as DMEM/F12. This product is at a 1:1 ration of the two media.

This product contains 15 mM HEPES to provide additional buffering capacity to the medium. A zwitterionic buffer, HEPES has a pKa of 7.3 at 37 C, which is more compatible with most culture systems than the pKa of sodium bicarbonate which is 6.2 under similar conditions. HEPES will reduce sudden, drastic pH shifts, but as with other buffers, it will not prevent pH shifts entirely.

### Formulation

Component (all components measured in mg/L)	
<b>INORGANIC SALTS</b>	
Calcium chloride anhydrous	116.610
Cupric sulfate pentahydrate	0.00125
Ferric nitrate nonahydrate	0.050
Ferrous sulfate heptahydrate	0.417
Magnesium chloride anhydrous	28.610
Magnesium sulfate anhydrous	48.840
Potassium chloride	311.800
Sodium bicarbonate	1200.000
Sodium chloride	6999.500
Sodium phosphate dibasic anhydrous	71.020
Sodium phosphate monobasic monohydrate	62.500
Zinc sulfate heptahydrate	0.4315
<b>VITAMINS</b>	
Biotin	0.00365
D-calcium pantothenate	2.240
Choline chloride	8.980
Cyanocobalamin	0.680
Folic acid	2.650
i-inositol	12.600
Niacinamide	2.0185
Pyridoxine HCl	2.031
Riboflavin	0.219
Thiamine HCl	2.170

Component, continued (all components measured in mg/L)	
<b>AMINO ACIDS</b>	
L-alanine	4.455
L-arginine HCl	147.500
L-asparagine monohydrate	7.500
L-aspartic acid	6.650
L-cysteine HCl monohydrate	17.560
L-cystine 2HCl	31.290
L-glutamic acid	7.350
L-glutamine	365.000
Glycine	18.750
L-histidine HCl monohydrate	31.480
L-isoleucine	54.470
L-leucine	59.050
L-lysine HCl	91.250
L-methionine	17.240
L-phenylalanine	35.480
L-proline	17.250
L-serine	26.250
L-threonine	53.450
L-tryptophan	9.020
L-tyrosine 2Na dihydrate	55.790
L-valine	52.850
<b>OTHER</b>	
Dextrose anhydrous	3151.000
HEPES	3575.000
Hypoxanthine sodium salt	2.390
Linoleic acid	0.042
DL- $\alpha$ -Lipoic acid	0.105
Phenol red sodium salt	8.6022
Putrescine 2HCl	0.081
Sodium pyruvate	55.000
Thymidine	0.365

### Precautions

Use aseptic technique when handling or supplementing this medium. This product is for further manufacturing use. THIS PRODUCT IS NOT INTENDED FOR HUMAN OR THERAPEUTIC USE.

### Storage

Store medium protected from light at 2 to 8 C. Do not freeze. Do not use after the expiration date.

#### United States

SAFC Biosciences, Inc.  
13804 W. 107th Street  
Lenexa, Kansas 66215  
USA  
Phone +1 913-469-5580  
Toll free-USA 1 800-255-6032  
Fax +1 913-469-5584  
E-mail info-na@sial.com

#### Europe

SAFC Biosciences Ltd.  
Smeaton Road, West Portway  
Andover, Hampshire SP10 3LF  
UNITED KINGDOM  
Phone +44 (0)1264-333311  
Fax +44 (0)1264-332412  
E-mail info-eu@sial.com

#### Asia Pacific

SAFC Biosciences Pty. Ltd.  
18-20 Export Drive  
Brooklyn, Victoria 3025  
AUSTRALIA  
Phone +61 (0)3-9362-4500  
Toll free-AUS 1 800-200-404  
Fax +61 (0)3-9315-1656  
E-mail info-ap@sial.com

## Indications of Deterioration

Medium should be clear of particulates and flocculent material. Do not use if liquid medium is cloudy or contains precipitate. Other evidence of deterioration may include color change, pH shift or degradation of physical or performance characteristics.

## Preparation Instructions

Supplements, such as antibiotics, can be added to the sterilized solution using aseptic technique. Storage conditions and shelf life of the supplemented product may be affected by the nature of the supplements. Sterile serum should not be refiltered before or after being added to sterile medium because growth promoting capacity may be reduced upon refiltration.

## Characteristics

### Appearance

Clear red solution

### Endotoxin

≤ 1.0 EU/mL

### Osmolality (as supplied)

280 - 320 mOsm/kg H<sub>2</sub>O

### pH (as supplied)

7.0 - 7.4

### Sterility

No microbial growth detected

## References

1. Barnes, D. and Sato, G. H., *Cell* (1980) 22:649.
2. Mather, J. P. and Sato, G. H., *Exp Cell Res* (1979) 124:215.
3. Dulbecco, R. and Freeman, G., *Virology* (1979) 8:396.
4. Morton, H. J., *In Vitro* (1970) 6:89.
5. Ham, R. G., *PNAS* (1965) 53:288.
6. Ham, R. G. and Murray, L. W., *J Cell Physiol* (1967) 70:275.

### Warranty, Limitation of Remedies 0906

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Issued December 2006 P51445  
1203 1005 0406 0606

### United States

SAFC Biosciences, Inc.  
13804 W. 107th Street  
Lenexa, Kansas 66215  
USA  
Phone +1 913-469-5580  
Toll free-USA 1 800-255-6032  
Fax +1 913-469-5584  
E-mail info-na@sial.com

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SAFC Biosciences Ltd.  
Smeaton Road, West Portway  
Andover, Hampshire SP10 3LF  
UNITED KINGDOM  
Phone +44 (0)1264-333311  
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AUSTRALIA  
Phone +61 (0)3-9362-4500  
Toll free-AUS 1 800-200-404  
Fax +61 (0)3-9315-1656  
E-mail info-ap@sial.com