

## Product Information

# Glasgow's Minimum Essential Medium (GMEM)

With L-glutamine, without tryptose phosphate broth and sodium bicarbonate

### Product description

Glasgow's Minimum Essential Medium (GMEM) was created by Ian MacPherson and Michael Stoker from Basal Medium Eagle (BME) by doubling the concentration of amino acids and vitamins and supplementing with 10 % tryptose phosphate broth. To keep it flexible in application, the modified GMEM dry powder medium provided contains neither tryptose phosphate broth nor sodium bicarbonate.

### Application

GMEM was originally developed for the culturing of BHK-21 cells, to investigate the genetic factors affecting cell competence. Today it is widely used in combination with kidney cell lines. It does not contain proteins, lipids, or growth factors. Therefore, GMEM may require supplementation, commonly with 10 % tryptose phosphate broth. If buffered with a sodium bicarbonate buffer system (2.75 g/L), it requires a 5–10 % CO<sub>2</sub> environment to maintain its physiological pH.

### Formulation

No.	Component	CAS no.	g/L
1	L-Arginine hydrochloride	1119-34-2	0.04246
2	L-Cystine dihydrochloride	30925-07-6	0.03129
3	L-Glutamine	56-85-9	0.29200
4	L-Histidine hydrochloride monohydrate	5934-29-2	0.02100
5	L-Isoleucine	73-32-5	0.05240
6	L-Leucine	61-90-5	0.05240
7	L-Lysine hydrochloride	657-27-2	0.07310
8	L-Methionine	63-68-3	0.01500
9	L-Phenylalanine	63-91-2	0.03300
10	L-Tyrosine	60-18-4	0.03620
11	L-Threonine	72-19-5	0.04760
12	L-Tryptophan	73-22-3	0.00800
13	L-Valine	72-18-4	0.04680
14	Calcium-D(+) pantothenate	137-08-6	0.00200
15	Choline chloride	67-48-1	0.00200
16	Pyridoxal hydrochloride	65-22-5	0.00200
17	Folic acid	59-30-3	0.00200
18	Myo-Inositol	87-89-8	0.00360
19	Nicotinamide	98-92-0	0.00200
20	Riboflavin	83-88-5	0.00020
21	Thiamine hydrochloride	67-03-8	0.00200
22	Phenol red	143-74-8	0.01500
23	Glucose anhydrous	50-99-7	4.50000
24	Calcium chloride anhydrous	10043-52-4	0.20000
25	Iron(III) nitrate nonahydrate	7782-61-8	0.00010
26	Magnesium sulfate anhydrous	7487-88-9	0.09767
27	Potassium chloride	7447-40-7	0.40000
28	Sodium chloride	7647-14-5	6.40000
29	Sodium dihydrogen phosphate monohydrate	10049-21-5	0.10780
<b>Grams of powder per liter</b>			<b>12.48762</b>

This product is intended for research or further manufacturing but not for human or therapeutic use.

## Media preparation

1. Pour 90 % of the final volume of Milli-Q® or similar cell culture grade water, at an ambient temperature of 15–30 °C, into an appropriately sized mixing vessel. Add the dry powder medium slowly to the water and rinse out the original package with a small amount of cell culture grade water to remove all traces of powder. Add the rinse to the solution and mix until completely dissolved.
2. As a buffering substance, add 2.75 g of sodium bicarbonate per liter of the final volume of the medium.
3. While stirring the solution, use (1N) NaOH or 1N HCl to adjust the pH to 0.1–0.3 units below the desired pH. This is suggested as the pH may rise during filtration. The recommended working pH is 7.3–7.9.
4. Add Milli-Q® or similar cell culture grade water to achieve the final volume. Keep the vessel closed until final filtration.
5. Sterilize the medium by filtration using a 0.22 µm Millipore Express® or Durapore® filter.
6. Aliquot the sterile solution under aseptic conditions to avoid contamination, and store the medium at 2–8 °C, protected from light.
7. Serum or further supplements can be added to the medium using aseptic techniques.

## Storage

Dry powder should be stored at 2–8 °C, protected from light. Do not use after expiration date.

## Shelf life

12 months

As dry powder media are hygroscopic, they must be protected from humidity and air moisture. We advise using the entire contents of each package immediately after opening.

## Ordering information

Catalog number	Product name	Pkg. size	Equivalent
1.00575.0050	GMEM Cell Culture Medium	624.38 g	50 liters
1.00575.2000	GMEM Cell Culture Medium	24.975 kg	2,000 liters
1.00575.9100	GMEM Cell Culture Medium	100 kg	bulk
1.37013.2500	Sodium hydrogen carbonate suitable for biopharmaceutical production EMPROVE® bio Ph Eur, BP, USP, JP	2.5 kg	

## Additional information for aseptic filters

The following data sheets provide additional product and ordering information:

Title	Lit. no.
Mobius® Single-use Mixing Solution	DS1175EN00
Mobius® FlexReady Solution for Buffer and Media Preparation	DS1624EN00
Millipore Express® SHF Hydrophilic Filters	DS1426EN00
Millipore Express® SHR/SHR with Onboard Prefilter Filters	DS0105EN00

## For more information and documentation please contact:

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The typical technical data above serve to generally characterize the cell culture media in industry-relevant expression systems. The product information is available separately from the website [www.emdmillipore.com](http://www.emdmillipore.com)

We provide information and advice to our customers on application technologies and regulatory matters to the best of our knowledge and ability, but without obligation or liability. Existing laws and regulations are to be observed in all cases by our customers. This also applies in respect to any rights of third parties. Our information and advice do not relieve our customers of their own responsibility for checking the suitability of our products for the envisaged purpose.