Opti-MEM™ I Reduced Serum Medium

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WARNING! Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves. Safety Data Sheets (SDSs) are available from **thermofisher.com/support**.

Product description

Opti-MEM™ I Reduced Serum Medium is a chemically defined, low protein, Minimal Essential Medium (MEM) containing insulin, transferrin, hypoxanthine, thymidine, and trace elements that allows for a reduction of Fetal Bovine Serum supplementation by at least 50% with no change to growth rate or morphology. Opti-MEM™ I Reduced Serum Medium can be used with a variety of suspension and adherent mammalian cells, including Sp2, AE- 1, CHO, BHK-21, HEK, and primary fibroblasts. We offer a variety of Opti-MEM™ I Reduced Serum Medium modifications for a range of cell culture applications. Opti-MEM™ I Reduced Serum Medium is also recommended for use with cationic lipid transfection reagents, such as Lipofectamine™ reagent.

Product	Cat. No.	Amount	Storage	Shelf Life[1]
Opti-MEM™ I Reduced Serum Medium	31985062 31985070 31985088	100 mL 500 mL 10 x 500 mL	2°C to 8°C; Protect from light	18 months
Opti-MEM™ I + GlutaMAX™ Reduced Serum Medium	51985034 51985091	500 mL 10 x 500 mL		
Opti-MEM™ I Reduced Serum Medium, powder	22600134 22600050	10 L 10 x 1 L		30 months
Opti-MEM™ I Reduced Serum Medium, without Phenol Red	11058021	500 mL		12 months

[1] Shelf life duration is determined from Date of Manufacture.

Important information

- We recommend Opti-MEM™ I Reduced Serum Medium for use with Lipofectamine™ Transfection Reagents. For more information and protocols using Lipofectamine™ Transfection Reagents go to **www.thermofisher.com/lipofectamine**.
- Opti-MEM™ I Reduced Serum Medium uses a sodium bicarbonate buffer system (2.4 g/L) and therefore requires a 5–10% CO2 environment to maintain physiological pH.

Reconsitute the media

1. Add Opti-MEM™ I powder to 950 mL room temperature cell culture grade distilled water. Rinse the inside of package to remove all traces of powder.

   Note: Very high quality distilled water is required to achieve optimal cell growth in reduced serum systems.

2. Mix with gentle stirring until medium dissolves completely. **Do not heat.**

3. Add 2.4 g Sodium Bicarbonate ($NaHCO_3$, reagent grade) per liter of medium.

4. Adjust pH of medium with 1 N NaOH or 1 N HCl to 0.2–0.3 units below desired final pH. Add dropwise with stirring and constant pH monitoring. The recommended final pH of Opti-MEM™ I after filtration is 7.3 ± 0.1. The pH will generally rise 0.1–0.3 units upon filtration.

5. Add cell culture grade distilled water to final volume of 1 L, stir gently to ensure complete dissolution and homogeneity

6. Filter sterilize by 0.2 µm pore size membrane filtration.

   Note: Use low protein binding filter.

Store reconstituted Opti-MEM™ I at 2°C to 8°C protected from light.

Supplementation of the media

- Opti-MEM™ I Reduced Serum Medium may be aseptically supplemented with 2-mercaptoethanol (55 µM) prior to use if desired. It is recommended to evaluate the utility of 2-mercaptoethanol supplementation for each application.

  Note: Opti-MEM™ I Reduced Serum Medium supplemented with 2-mercaptoethanol is stable for 2 months, when stored at 2°C to 8°C in the dark, provided that this period does not

exceed the expiration date of either the Opti-MEM™ I Media or 2-mercaptoethanol.

- It is recommended to supplement Opti-MEM™ I Reduced Serum Medium with 100 mg/L $CaCl_2$ for culture of adherent cells in an agitated system, such as roller bottles, or when the medium is supplemented with <2% FBS.

Adapt the cells to the media

For most applications, no adaptation is necessary to attain 50% reduction in serum supplementation when converting to Opti-MEM™ I Reduced Serum Medium. Most cells routinely cultured in serum-supplemented medium may be directly transferred into Opti-MEM™ I Reduced Serum Medium with a minimum of 50% reduction in serum. Additional serum reduction may be realized with minimal adaptation.

1. Centrifuge cells at 200 × *g* for 5–10 minutes.
2. Decant and discard supernatant.
3. Resuspend the cell pellet in Opti-MEM™ I Medium with reduced serum supplementation.

Recommended serum levels

The optimal serum supplementation for each specific application should be determined based on the performance characteristics expected (growth promotion, secondary metabolite production, etc.). Extended use of Opti-MEM™ I Reduced Serum Medium in the maintenance of cell lines has shown no loss of viability or growth rate.

Table 1 Typical serum supplementation reduction

Cell Types	% FBS in Opti-MEM™ I Medium
Hybridoma Technology - Mouse and Human:	
Fusion	4
Cloning	2-4
Growth and Ab production Myelomas and Established Hybridomas	0.5-2
Others:	
Diploid Fibroblast Cell Lines	2-4
Primary Fibroblasts	2-4
Rat and Hamster Embryo Cell Lines	2
Lymphoblastoid Cell Lines	0.5-2
Monkey Kidney Cells	4
Human and Bovine Embryonic Kidney Cells	2-4

Our research has demonstrated that Opti-MEM™ I Reduced Serum Medium supplemented with 4% alternative sera performed comparable to, and in some cases superior to, basal media supplemented with 10% FBS in the following applications:

Application	Cell Line	Serum Alternative at 4%
Growth Promotion	Sp2/0-Ag14 (Sp2)	Calf, Horse
	AE-1 (Sp2 derived Hybridoma)	Calf, Horse
	CHO	Horse
	BHK-21	Calf, Horse
Cloning	Sp2	Calf, Newborn Calf, Horse
	P3x63-Ag8.653 (653)	Calf, Newborn Calf, Horse
Plating	653	Calf, Horse
	BHK-21	Calf, Horse
	CHO	Calf, Newborn Calf,
MAb Production	AE-1	Calf, Newborn Calf, Horse

Related products

Product	Cat. No.
2-Mercaptoethanol (1000X), liquid	21985
Water, Distilled	15230
Fetal Bovine Serum, Dialyzed (US)	26400
Lipofectamine™ 2000 Transfection Reagent	11668
Antibiotic-Antimycotic (100X), liquid	15240
Penicillin-Streptomycin, liquid	15140
Geneticin™ Selective Antibiotic (G418 Sulfate), Powder	11811

Limited product warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale at **www.thermofisher.com/us/en/home/global/terms-and-conditions.html**. If you have any questions, please contact Life Technologies at **www.thermofisher.com/support**.

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For descriptions of symbols on product labels or product documents, go to **thermofisher.com/symbols-definition**.

The information in this guide is subject to change without notice.