



Well advised with Roth.

Technical Info

ROTI[®]Cell ready-to-use S

Media for Cell Culture - Composition

Media and solutions of highest purity, the perfect base line for all standard cell culture applications.

- Sterile
- ready-to-use
- CELLPURE[®] - with particularly low endotoxin content
- Storage at 2-8 °C
- Shipped at ambient temperature
- Media with stable glutamine can also be stored at room temperature. (Unless that no other temperature-sensitive additives are present.)



Our liquid media provide essential nutrients for all cell culture applications. We offer various classic liquid media for cell culture, such as Dulbecco's Modified Eagle Medium (**DMEM**), Iscove's Modified Dulbecco Medium (**IMDM**), Minimum Essential Medium (**MEM**), Roswell Park Memorial Institute (**RPMI 1640**) as well as the Special Media **Ham's F-12**, **Leibovitz's L15**, **McCoy's 5A** and **Medium 199**.

The basic composition of our classic media corresponds to the respective original published formulation. Some media have been additionally supplemented with various additives that support the cultivation of cells. These additives include L-glutamine as an additional energy source. It is added to the media either as normal **L-glutamine** or as stable L-alanyl-L-glutamine (Art. No. 9183.1). The stable form is not temperature sensitive, so that the spontaneous decomposition of L-glutamine to ammonia is prevented. The cells can cleave these dipeptides on demand and release L-glutamine. **Sodium pyruvate** (Art. No. 9182.1) is another additional energy source and essential for various metabolic processes. Furthermore, some media have additional **non-essential amino acids (NEAA)** (Art. No. 9185.1) to support the cells' own amino acid synthesis. The supplementation of **HEPES** buffer (Art. No. 9157.1) to the media, generates an additional buffer system besides the physiological $\text{HCO}_3^- \leftrightarrow \text{CO}_2$ one to stabilize the pH in the medium. All the additives mentioned can also be found as separate solutions for individual addition under the respective order number in our web store.

Additions and special features in the media formulations can be found in the following table. The detailed compositions are listed in the respective specifications.





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| Medium | Art. No. | Glucose (g/l) | Glutamine (mM) | HEPES (mM) | Sodium Pyruvate (mM) | NaHCO ₃ (mM) | Phenol Red | Salts | Notes |
|---|----------|---------------|----------------|------------|----------------------|-------------------------|------------|---------|--|
| Dulbecco's Modified Eagle Media | | | | | | | | | |
| ROTI®Cell DMEM High Glucose | 9005.1 | 4,5 | 4 | X | 1 | 44 | yes | X | |
| ROTI®Cell DMEM High Glucose | 9006.1 | 4,5 | 4 | X | X | 44 | yes | X | |
| ROTI®Cell DMEM High Glucose | 9007.1 | 4,5 | 4 stab. | X | 1 | 44 | yes | X | With temperature stabile glutamine. |
| ROTI®Cell DMEM High Glucose | 1TE9.1 | 4,5 | 4 stab. | 25 | X | 44 | yes | X | With temperature stabile glutamine. |
| ROTI®Cell DMEM High Glucose | 9010.1 | 4,5 | X | X | 1 | 44 | yes | X | |
| ROTI®Cell DMEM High Glucose | 9019.1 | 4,5 | X | X | X | 44 | yes | X | |
| ROTI®Cell DMEM High Glucose | 1TE8.1 | 4,5 | X | X | X | 44 | X | X | Without phenol red. |
| ROTI®Cell DMEM Low Glucose | 1TE7.1 | 1,0 | 4 stab. | X | 1 | 44 | yes | | With temperature stabile glutamine. |
| ROTI®Cell DMEM Low Glucose | 9027.1 | 1,0 | X | X | 1 | 44 | yes | X | |
| DMEM : F12 | | | | | | | | | |
| ROTI®Cell DMEM : F12 | 1TE5.1 | 3,151 | X | 15 | 0,5 | 14,3 | yes | X | |
| ROTI®Cell DMEM : F12 | 1YTP.1 | 3,151 | 2,5 | 15 | 0,5 | 14,3 | yes | x | |
| Iscove's Modifizierte Dulbecco Media | | | | | | | | | |
| ROTI®Cell Iscove's MDM | 9033.1 | 4,5 | 4 | 25 | 1 | 36 | yes | X | Additional amino acids and selene. |
| Minimum Essential Media | | | | | | | | | |
| ROTI®Cell Eagle's MEM / Earle's | 9044.1 | 1 | 2 | X | X | 26,2 | yes | Earle's | |
| ROTI®Cell Eagle's MEM / Earle's | 1TE6.1 | 1 | 2 stab. | X | X | 26,2 | yes | Earle's | With temperature stabile glutamine. |
| ROTI®Cell Eagle's MEM / Earle's | 9047.1 | 1 | X | X | X | 26,2 | yes | Earle's | |
| ROTI®Cell Eagle's MEM-Alpha | 9058.1 | 1 | X | X | 1 | 26,2 | yes | Earle's | Plus cobalamin, ascorbic acid, NEAA*, lipoic acid, biotin. |
| ROTI®Cell Eagle's MEM-Alpha | 1TEA.1 | 1 | X | X | 1 | 26,2 | yes | Earle's | Plus cobalamin, ascorbic acid, NEAA*, lipoic acid, biotin, ribonucleosides and deoxyribonucleosides. |
| RPMI Media | | | | | | | | | |
| ROTI®Cell RPMI 1640 | 9085.1 | 2 | 2 | X | X | 23,8 | yes | X | |
| ROTI®Cell RPMI 1640 | 9086.1 | 2 | 2 | 25 | X | 23,8 | yes | X | |
| ROTI®Cell RPMI 1640 | 9091.1 | 2 | 2 stab. | X | X | 23,8 | yes | X | With temperature stabile glutamine. |
| ROTI®Cell RPMI 1640 | 9099.1 | 2 | X | X | X | 23,8 | yes | X | |
| ROTI®Cell RPMI 1640 | 9104.1 | 2 | X | X | X | 23,8 | X | X | |
| Special Media | | | | | | | | | |
| ROTI®Cell Ham's F12 | 9108.1 | 1,8 | 1 | X | 1 | 14 | yes | X | |
| ROTI®Cell Leibovitz's L15 | 9109.1 | 0,9 galact. | X | X | 5 | X | yes | X | With galactose instead of glucose. No na-bicarbonate. |
| ROTI®Cell McCoy's 5A | 9111.1 | 3 | 1,5 | X | X | 26,2 | yes | X | |
| ROTI®Cell Medium 199 / Earle's | 9112.1 | 1 | 0,7 | X | X | 26,2 | yes | Earle's | |
| ROTI®Cell TC100 | 9114.2 | 1 | 4,1 | X | X | 4,2 | X | X | With Tryptose Broth. |



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*NEAA: Non-essential amino acids

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Media for Cell Culture – Application

The aim of *in vitro* cultivation of cells is to mimic their *in vivo* environment. Thus, one tries to create optimal physiological conditions for the cells. It should be taken into account that the cell culture conditions are different for each cell type. Therefore **cell culture media** are available in a wide variety of formulations, each with different essential components. The choice of the right culture media for cell cultivation is crucial for good cell growth. For this purpose, it is necessary to be aware of the optimal conditions of the cells or cell lines used.

To most basal media **serum** is added in a concentration of 2-20% before use. Serum provides the cells with additional nutrients, growth factors, hormones and important proteins, which are also present to the cells *in vivo* and essential for cell growth. The serum can be added directly to the ROTI®Cell bottle, which makes handling much easier. The amount of serum required depends on the cell type. However, there are also media that are suitable as a basic medium for serum-free cell cultivation due to their complex formulation. These must nevertheless be supplemented with growth factors, cytokines or hormones.

In addition to the various nutrients in the medium, the **pH value** also plays a very important role in cell culture. The physiological pH for almost all mammalian cells is 7.4. Deviating from this, it has been observed that certain transformed cell lines prefer a pH between 7.0 and 7.4 and certain fibroblasts prefer a pH between 7.4 and 7.7. In any case, pH fluctuations should be avoided and the pH should be maintained as well as possible. That is why a buffer system in media is necessary. The most important buffer system in the body is the carbonic acid-carbonate buffer system. Accordingly, almost all cell culture media contain bicarbonate (NaHCO_3). Bicarbonate alone leads to a strong pH increase of the medium, so that NaHCO_3 -buffered media must always be used with CO_2 incubators. Depending on the NaHCO_3 concentration in the medium, different **CO_2 environments** are necessary to ensure a pH of about 7.4 (see table). For this reason, you should not work outside of the CO_2 incubator for too long. If this is necessary, a **HEPES** buffer should be used in addition to the NaHCO_3 , which contributes as a second buffer system to stabilize the pH value.

The following table contains recommendations and tips for the application of the different nutrient media.





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| Media | Art. No. | CO ₂ (%) | Serum | Field of application | Successfully cultured cells |
|---|--|---------------------|-----------|---|---|
| Dulbecco's Modified Eagle Media | | | | | |
| ROTI®Cell DMEM | 9005.1 9006.1 9007.1 1TE9.1 9010.1 9019.1 1TE8.1 1TE7.1 9027.1 | 8,5 | recommend | Frequently used universal medium with up to 4-fold higher concentrations of amino acids and vitamins. | Primary fibroblasts, neurons, glial cells, smooth muscle cells, epithelial cells, tumor cells, hybridome cultures HUVEC, HeLa, HEK 293, PC-12NIH 3T3, 3T6, A-431, A9 L, BALB 3T3, BSC40, COS-1, COS-7, EB, L6, PK1 |
| DMEM : F12 | | | | | |
| ROTI®Cell DMEM : F12 | 1TE5.1 1YTP.1 | 5,5 | optional | Highly complex medium for versatile use. Basis of many serum-free media. | Primary fibroblasts, neurons, HU-VECs, smooth muscle cells HEK-293, HeLa, Cos-7, PC-12 |
| Iscove's Modified Dulbecco Media | | | | | |
| ROTI®Cell Iscove's MDM | 9033.1 | 7,0 | optional | For fast proliferating cells, high cell densities and mass cell cultures. | Bone marrow cells, lymphocytes, macrophages, Hybridoma cultures KG-1, COS-7, Jurkat |
| Minimum Essential Media | | | | | |
| ROTI®Cell Eagle's MEM / Earle's | 9044.1 | 5,0 | recommend | For cells with special nutritional Requirements. | Numerous suspension and adherent cells, mammalian fibroblasts Hek293, BS-C-1, CV-1, Hep G2, JEG-3, L-929, McCoy, MDBK, MDCK, PK(15), PtK1, RK13, Vero |
| ROTI®Cell Eagle's MEM / Earle's | 1TE6.1 | 5,0 | recommend | | |
| ROTI®Cell Eagle's MEM / Earle's | 9047.1 | 5,0 | recommend | | |
| ROTI®Cell Eagle's MEM-Alpha | 9058.1 | 5,0 | recommend | Additionally suitable for selection of transfected DG44 and other AHFR-negative cells. | BHK-21, BT, Caco-2, CRFK, D-17, HeLa, HT-1080, XC |
| ROTI®Cell Eagle's MEM-Alpha | 1TEA.1 | 5,0 | recommend | For cells with special nutritional Requirements. | |
| RPMI Media | | | | | |
| ROTI®Cell RPMI 1640 | 9085.1 9086.1 9091.1 9099.1 9104.1 | 4,5 | recommend | For single cell lines also suitable without serum. | Lymphocytes, leukemia cells, hybridoma cultures, astrocytes, carcinoma cells Daudi, H9, HCT-15, HL-60, IM-9, Jurkat, K-562, Raji, MCF-7, HeLa, PC12, PBMC |
| Special Media | | | | | |
| ROTI®Cell Ham's F12 | 9108.1 | 2,5 | optional | Widely used, highly complex medium. | Specifically for mouse CHO cells, lung cells and L cells CHO-K1 |
| ROTI®Cell Leibovitz's L15 | 9109.1 | 0,0* | recommend | Suitable for fast growing cells in relatively high density. | Tumor and embryonic cells HeLa, Hep-2, SW-13 |
| ROTI®Cell McCoy's 5A | 9111.1 | 5,0 | recommend | Standard medium for clonal growth of hepatoma cell lines Used in virus production. | Hepatoma cell lines, other permanent cell lines and also primary cells HT-29, Jensen |
| ROTI®Cell Medium 199 / Earle's | 9112.1 | 5,0 | optional | Highly complex medium versatile. | Especially suitable for non-transformed cells LLC-PK1, LLC-WRC 256 |
| ROTI®Cell TC100 | 9114.2 | 0,0* | recommend | Insect medium for the culture of a variety of Lepidoptera species cells. | Sf9, Sf21 |

* Cultivation outside the CO₂ incubator.