

Алматы (7273)495-231
Ангарск (3955)60-70-56
Архангельск (8182)63-90-72
Астрахань (8512)99-46-04
Барнаул (3852)73-04-60
Белгород (4722)40-23-64
Благовещенск (4162)22-76-07
Брянск (4832)59-03-52
Владивосток (423)249-28-31
Владикавказ (8672)28-90-48
Владимир (4922)49-43-18
Волгоград (844)278-03-48
Вологда (8172)26-41-59
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Екатеринбург (343)384-55-89

Иваново (4932)77-34-06
Ижевск (3412)26-03-58
Иркутск (395)279-98-46
Казань (843)206-01-48
Калининград (4012)72-03-81
Калуга (4842)92-23-67
Кемерово (3842)65-04-62
Киров (8332)68-02-04
Коломна (4966)23-41-49
Кострома (4942)77-07-48
Краснодар (861)203-40-90
Красноярск (391)204-63-61
Курск (4712)77-13-04
Курган (3522)50-90-47
Липецк (4742)52-20-81

Магнитогорск (3519)55-03-13
Москва (495)268-04-70
Мурманск (8152)59-64-93
Набережные Челны (8552)20-53-41
Нижний Новгород (831)429-08-12
Новокузнецк (3843)20-46-81
Ноябрьск (3496)41-32-12
Новосибирск (383)227-86-73
Омск (3812)21-46-40
Орел (4862)44-53-42
Оренбург (3532)37-68-04
Пенза (8412)22-31-16
Петрозаводск (8142)55-98-37
Псков (8112)59-10-37

Пермь (342)205-81-47
Ростов-на-Дону (863)308-18-15
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Самара (846)206-03-16
Саранск (8342)22-96-24
Санкт-Петербург (812)309-46-40
Саратов (845)249-38-78
Севастополь (8692)22-31-93
Симферополь (3652)67-13-56
Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97

Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
Хабаровск (4212)92-98-04
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Челябинск (351)202-03-61
Череповец (8202)49-02-64
Чита (3022)38-34-83
Якутск (4112)23-90-97
Ярославль (4852)69-52-93

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Технические характеристики на добавки и реагенты для клеточных культур, ч.1

КОМПАНИИ **Sigma-Aldrich**

Виды товаров: реагенты для замораживания клеток, реагенты для выращивания растений, реагенты для диссоциации клеток, альбумины и транспортные белки, бычий сывороточный альбумин, альбумин из плазмы человека, альбумин из мышьиной сыворотки, альбумин из белка куриного яйца, альбумин фракция, лиофилизированная аккутаза, коллагеназа, раствор для бесферментной диссоциации клеток на основе хэнка, раствор для диссоциации клеток, раствор трипсина, трипсин из поджелудочной железы свиньи, смесь коллагеназы и диспаза, не содержащая животных животных, термолизин, тиабендазол, набор для иммуноанализа абсцизовой кислоты, калиевая соль гибберелловой кислоты, аденин, анцимидол, пиклорам, колхицин, кинетин, рифампицин, диметилсульфоксид, консервационный раствор, среды для криоконсервации клеток и др.

Plant Culture Reagents



Plant cell culture, such as seed culture, meristem culture, callus culture, bud culture, and other plant tissue culture requires specialized supplements and reagents. We offer gelling agents, plant growth regulators, auxins, cytokinins, specialty water and other supplements like antibiotics and amino acids for supporting the growth and development of plant cells in culture.

PLANT TISSUE CULTURE GELLING AGENTS

Plant tissue is cultured in liquid medium or placed on a gel substrate. Agar has long been used as a gelling agent for plant tissue culture. Phytigel™ is an agar substitute produced from a bacterial substrate that is optimized for plant culture. It produces a clear, colorless, high-strength gel, which aids in the detection of microbial contamination. Agargel™ is a blend of agar and Phytigel™ that was developed to help control vitrification in plant tissue cultures, and produces a semi-clear gel that is superior for detecting contamination. Gelrite® (Gelzan™), gelling agent is another agar substitute that can be used in plant tissue culture applications.

PLANT GROWTH REGULATORS

Plant growth regulators can support cell growth and induce metabolic pathways in plant cell and tissue culture protocols. Plant growth regulators include auxins, cytokinins, and zeatin. Our plant hormone collection includes abscisic, jasmonic, and gibberellic acid. Herbicides validated for plant cell culture include dicamba and glyphosate (Roundup®).

PLANT AUXINS AND CYTOKININS

Auxins are used in plant cell culture to promote cell division, cell elongation, and callus formation. Our auxin catalog includes the most commonly used in plant cell culture — 2,4-dichlorophenoxyacetic acid — plus 3-indoleacetic acid, 1-naphthaleneacetic acid, phenylacetic acid, 2,3,5-triiodobenzoic acid, and 2,4,5-trichlorophenoxyacetic acid.

Cytokinins promote cell division and differentiation in plant tissue culture. Kinetin and benzylaminopurine are the most commonly used cytokinins in plant cell culture. Our plant culture-approved cytokinins include kinetin, benzylaminopurines, adenines, zeatin, and thidiazuron.

PLANT CULTURE VITAMIN MIXES AND OTHER REAGENTS

Plant tissue culture requires specialized plant culture media and supplements. We offer Gamborg's vitamin mix, salts, banana powder, antibiotics (neomycin, rifampicin, vancomycin, paromomycin), specialty waters including seawater and coconut water, as well as other vital supplements for optimizing the growth of plant cells and tissues in culture.



P8169

Phytigel™

BioReagent, suitable for plant cell culture, powder



G1910

Gelzan™ CM

Gelrite®



B3408

6-Benzylaminopurine

suitable for plant cell culture



G7645

Gibberellic acid

BioReagent, suitable for plant cell culture, ≥90% gibberellin A₃ basis (of total gibberellins.)



I2886

3-Indoleacetic acid

suitable for plant cell culture, crystalline



I5386

Indole-3-butyric acid

BioReagent, suitable for plant cell culture



C3061

Cyanobacteria BG-11 Freshwater Solution

50 ×, liquid, suitable for plant cell culture



C3915

Colchicine

BioReagent, suitable for plant cell culture, ≥95% (HPLC)



G0154

Guillard's (F/2) Marine Water Enrichment Solution

50 ×, liquid, suitable for plant cell culture



P6186

Thidiazuron

BioReagent, suitable for plant cell culture



M7899

Manganese(II) sulfate monohydrate

BioReagent, suitable for plant cell culture, suitable for cell culture



Z0164

Zeatin

BioReagent, suitable for plant cell culture, powder



K3378

Kinetin

suitable for plant cell culture, BioReagent, amorphous powder



J2500

(±)-Jasmonic acid

suitable for plant cell culture, BioReagent, liquid



C7039

Cefotaxime sodium salt

suitable for plant cell culture, BioReagent, powder or crystals



B3274

6-Benzylaminopurine solution

1 mg/mL, suitable for plant cell culture



D8037

Driselase™ Basidiomycetes sp.

BioReagent, suitable for plant cell culture



G1019

Gamborg's Vitamin Solution

1000 ×, liquid, suitable for plant cell culture



R7382

Rifampicin

suitable for plant cell culture, BioReagent, ≥95% (HPLC), powder or crystals



C1794

Cellulase from *Trichoderma* sp.

BioReagent, suitable for plant cell culture, 3-10 units/mg solid



V1130

Vancomycin hydrochloride from *Streptomyces orientalis*

BioReagent, suitable for plant cell culture



A9431

Ancymidol

suitable for plant cell culture, BioReagent



Z0876

***trans*-Zeatin**

BioReagent, suitable for plant cell culture, $\geq 97\%$



B5282

Bold Modified Basal Freshwater Nutrient Solution

50 ×, liquid, suitable for plant cell culture



K0753

Kinetin

suitable for plant cell culture, crystalline



D7660

6-(γ,γ -Dimethylallylamino)purine

BioReagent, suitable for plant cell culture, 1 mg/mL



D5417

Dicamba

suitable for plant cell culture, BioReagent



P5575

Picloram

suitable for plant cell culture, BioReagent



F0638

Iron(III) sulfate hydrate

suitable for plant cell culture, BioReagent



K3253

Kinetin solution

1 mg/mL, BioReagent, suitable for plant cell culture



D7674

6-(γ,γ -Dimethylallylamino)purine

BioReagent, suitable for plant cell culture, $\geq 98.5\%$



C5915

Coconut water

suitable for plant cell culture



C4049

Chlorocholine chloride

BioReagent, suitable for plant cell culture



D6679

(2,4-Dichlorophenoxy)acetic acid sodium salt monohydrate

suitable for plant cell culture, BioReagent



I7512

Indole-3-butyric acid potassium salt

suitable for plant cell culture, BioReagent



A3301

Agargel™

suitable for plant cell culture, powder



D5912

6-(γ,γ -Dimethylallylamino)purine

suitable for plant cell culture, BioReagent, $\geq 90\%$



C7290

N-Z-Amine® A

suitable for plant cell culture



Z3541

***trans*-Zeatin-riboside**

BioReagent, suitable for plant cell culture, $\sim 95\%$



C3161

Calcium phosphate tribasic

suitable for plant cell culture, BioReagent, powder



G7276

Gibberellin A₄

BioReagent, suitable for plant cell culture, ≥90%



A2545

Adenine hemisulfate salt

suitable for plant cell culture, BioReagent, ≥99%



B4032

Banana powder

suitable for plant cell culture



C2791

N-(2-Chloro-4-pyridyl)-N'-phenylurea

applicable for cell culture, BioReagent



A5665

Adenine

BioReagent, suitable for plant cell culture, ≥99%



P5936

Pectolyase from *Aspergillus japonicus*

suitable for plant cell culture, lyophilized powder



G1025

Gibberellic acid potassium salt

BioReagent, suitable for plant cell culture, ~95%, ≥50% total GA₃ basis



C0413

4-Chlorophenoxyacetic acid

BioReagent, suitable for plant cell culture, crystalline



G1279

G 418 disulfate salt

suitable for plant cell culture, BioReagent



A6685

(S)-trans-2-Amino-4-(2-aminoethoxy)-3-butenoic acid hydrochloride

suitable for plant cell culture, BioReagent, powder



PGR1

Abscisic Acid Immunoassay Detection Kit

Quantitate the levels of abscisic acid (ABA) in plant tissue



N3019

2-Naphthoxyacetic acid

suitable for plant cell culture, BioReagent, crystalline



T5535

Thiabendazole

BioReagent, suitable for plant cell culture, powder



P9556

N-(Phosphonomethyl)glycine

BioReagent, suitable for plant cell culture



P8692

Paromomycin sulfate salt

suitable for plant cell culture, BioReagent



N3144

Neomycin trisulfate salt hydrate

suitable for plant cell culture



V900358

6-(γ,γ -Dimethylallylamino)purine

Vetec™, reagent grade, $\geq 98.5\%$

Cell Freezing Reagents



Cell lines, primary cells, and genetically-modified cell stocks are among the most valuable and difficult-to-replace resources in the life science, biotechnology, or pharma development laboratory. Techniques and tools for appropriately freezing cells and resuscitating them from cryostorage in liquid nitrogen are among the most critical methods in cell culture. Preventing the formation of intracellular ice crystals and minimizing cell stress is paramount to maintaining cell viability during cryopreservation. We offer an extensive line of sterile-filtered, application-tested cryoprotectants like DMSO as well as ready-to-use cell freezing media with and without DMSO that are designed to maximize cell viability during the freezing and thawing processes.

READY-TO-USE CELL FREEZING MEDIA



Convenient cell freezing media reagents eliminate the need to titrate DMSO concentrations, and are also available in DMSO-free formulations.

- **CryoStor**[®] cell cryopreservation media is available in 2%, 5%, and 10% concentrations, as well as a DMSO-free formulation, CryoSOFree[™].
- **pZerve**[™] is a cryopreservation solution for serum-containing or serum-free culture that does not contain dimethyl sulfoxide (DMSO), fetal bovine serum or other animal-derived ingredients
- **EmbryoMax**[®] **2X Freezing Medium** for ES (embryonic stem) cells, formulated with 20% DMSO & fetal bovine serum
- **HypoThermosol**[®] **FRS Preservation Solution** enhances and extends storage of cells, tissues, and organs at 2 – 8 °C

DMSO (DIMETHYL SULFOXIDE) FOR CELL CRYOPRESERVATION

Dimethyl sulfoxide or **DMSO** is an organic solvent that is used as a cryoprotectant when cells are frozen down for cryostorage. As a component of cell freezing media, DMSO protects cells by preventing the formation of both extracellular and intracellular ice crystals. Choose from DMSO reagents that

- Meet USP and EP testing specifications
- Are BioPerformance certified for cell culture
- Are suitable for hybridoma
- Are tested for plant cell culture applications



D2650

Dimethyl sulfoxide

Hybri-Max[™], sterile-filtered, BioReagent, suitable for hybridoma, ≥99.7%



D2438

Dimethyl sulfoxide

sterile-filtered, BioPerformance Certified, meets EP, USP testing specifications, suitable for hybridoma



C2874

CryoStor® cell cryopreservation media

CS10



D4540

Dimethyl sulfoxide

≥99.5% (GC), suitable for plant cell culture



C6295

Cell Freezing Medium-DMSO Serum free 1x

sterile-filtered, suitable for cell culture



C6164

Cell Freezing Medium-DMSO 1×

sterile-filtered, suitable for cell culture



D1435

Dimethyl sulfoxide

meets EP testing specifications, meets USP testing specifications



C2999

CryoStor® cell cryopreservation media

CS5



H4416

HypoThermosol® FRS Preservation Solution



S-002-M

Dimethyl sulfoxide

liquid, Cell Culture Freezing Media



C9249

CryoSOfree™ DMSO-free Cryopreservation Medium



C3124

CryoStor® cell cryopreservation media

CS2



20-139

Dimethyl sulfoxide



ES-002

EmbryoMax® 2X Freezing Medium for ES Cells, formulated with 20% DMSO & Fetal Bovine Serum

The EmbryoMax 2X Freezing Medium for ES Cells is formulated with 20% DMSO & Fetal Bovine Serum and available in a 10 x 10 mL format.



Z1653

pZerve™

Cryopreservation Solution



D2447

Dimethyl Sulfoxide DMSO/Dextran 40

55% w/v DMSO USP, Ph.Eur. 5% w/v Dextran 40 USP in NaCl



C2639

Cell Freezing Medium-Serum-free 1×

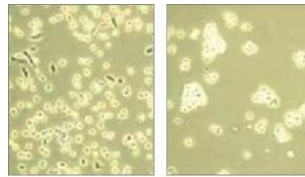
sterile-filtered, suitable for cell culture



040-50

Freezing Medium (50 ml)

Cell Dissociation Reagents



In order to replicate their native environments, adherent cell phenotypes (such as epithelial cells) are typically seeded onto tissue culture-treated surfaces, to which they attach in order to survive and proliferate. For propagation, enumeration, and downstream analysis, adherent cells and cells from solid tissues must be dissociated to create suspensions. Single-cell suspensions are required for cell counting, reseeding for subculture, and cellular assays/analysis.

Dissociation reagents can include naturally occurring enzymes or gentler non-enzymatic alternatives. These reagents work by chelating calcium to prevent cadherins from attaching to the surface or one another, releasing cells from these surfaces during the culturing process. Cell dissociation reagents that are used in the cell culture workflow may be specific for extracellular matrix (ECM) substrates.

Our comprehensive collection of cell dissociation reagents includes:

- **Trypsin, Recombinant Trypsin, StableCell™ Trypsin**
- **Collagenase and Dispase**
- **Dissociation Reagents for Specialty Cultures**
- **Single Cell Analysis**

TRYPSIN, RECOMBINANT TRYPSIN, STABLECELL™ TRYPSIN



Trypsin is a serine protease and one of the most common detachment enzymes used with **adherent cell lines** and for tissue dissociation. Crude trypsin preparations have typically been found to be more efficient for both applications, but incubating cells with a high trypsin concentration or for too long risks damage to cell membranes and can kill the cells. Cultured cells are most commonly removed from the culture substrate by treatment with trypsin in combination with EDTA (ethylenediaminetetraacetic acid), in which the concentration of trypsin can range from 0.025% to 0.5%.

StableCell™ Trypsin solutions were developed to perform cell detachment as standard trypsin solutions do, without the need to aliquot, freeze, and thaw the trypsin. This saves significant time by eliminating the need to aliquot and wait for trypsin to thaw for cell passaging or experiments and frees precious space in lab freezers. Our StableCell™ Trypsin solutions are recommended for storage at 2-8 °C, but our studies indicate that StableCell™ Trypsin retains >90% activity and performance even when stored at 37 °C.

COLLAGENASE AND DISPASE

Collagenase cleaves the peptide bonds in native, triple-helical collagen. Because of its unique ability to hydrolyze native collagen, it is widely used in isolation of cells from animal tissue. Collagenases occur in a variety of microorganisms and in many different animal cells. The most potent is the “crude” collagenase secreted by the anaerobic bacterium *Clostridium histolyticum*.

Dispases are rapid, effective, gentle, and neutral proteases that can separate intact epithelial sheets in culture from the substratum. Dispase I has been used to digest lung tissue, and to process cells for flow staining, as well as for murine CD4 T cell isolation.

DISSOCIATION REAGENTS FOR SPECIALTY CULTURES

For dissociating or detaching cell and tissue types that may require gentler enzymatic activity, **Accutase®** and **Accumax™** solutions use efficient enzymes at lower concentration. These solutions:

- Efficiently detach embryonic and neuronal stem cells
- Gently detach to preserve cell viability & can enhance cell yield
- Do not require neutralization

SINGLE CELL ANALYSIS

Single cell analysis requires viable single cells as an input when working with tissue samples. With these analyses, researchers can study variations in cell culture populations for stem cell, immunology, and cancer research.

Discover our high-quality disassociation reagents, which are essential to optimize protocols, create best practices, and ensure reliable single cell analysis data.



A6964

Accutase® solution

sterile-filtered, suitable for cell culture



T4049

Trypsin-EDTA solution

0.25%, sterile-filtered, BioReagent, suitable for cell culture, 2.5 g porcine trypsin and 0.2 g EDTA, 4Na per liter of Hanks' Balanced Salt Solution with phenol red



H3506

Hyaluronidase from bovine testes

Type I-S, lyophilized powder, 400-1000 units/mg solid



C5138

Collagenase from *Clostridium histolyticum*

suitable for release of physiologically active rat hepatocytes, Type IV, 0.5-5.0 FALGPA units/mg solid, ≥ 125 CDU/mg solid



D4902

Dexamethasone

powder, BioReagent, suitable for cell culture, $\geq 97\%$



T3924

Trypsin-EDTA solution

1 ×, sterile; sterile-filtered, BioReagent, suitable for cell culture, 0.5 g porcine trypsin and 0.2 g EDTA, 4Na per liter of Hanks' Balanced Salt Solution with phenol red



I6634

Insulin from bovine pancreas

powder, BioReagent, suitable for cell culture



I0516

Insulin solution from bovine pancreas

10 mg/mL insulin in 25 mM HEPES, pH 8.2, BioReagent, sterile-filtered, suitable for cell culture



D4693

Dispase® II

protease



I3146

ITS Liquid Media Supplement (100×)

liquid, sterile-filtered, BioReagent, suitable for cell culture



T4799

Trypsin from porcine pancreas

lyophilized powder, BioReagent, suitable for cell culture, 1,000-2,000 BAEE units/mg solid



S8636

Sodium pyruvate solution

100 mM, sterile-filtered, BioReagent, suitable for cell culture



T4174

Trypsin-EDTA solution

10 ×, sterile-filtered, BioReagent, suitable for cell culture, 5.0 g porcine trypsin and 2 g EDTA, 4Na per liter of 0.9% sodium chloride



C9891

Collagenase from *Clostridium histolyticum*

Type IA, 0.5-5.0 FALGPA units/mg solid, ≥125 CDU/mg solid, For general use



E2758

β-Estradiol

BioReagent, powder, suitable for cell culture



A7089

Accumax™ solution

sterile-filtered, suitable for cell culture



P4762

Papain from papaya latex

lyophilized powder, ≥10 units/mg protein



M6145

1-Thioglycerol

liquid, BioReagent, suitable for cell culture, ≥97% (titration)



T6522

Trypsin inhibitor from *Glycine max* (soybean)

powder, BioReagent, suitable for cell culture



E8008

Ethylenediaminetetraacetic acid solution

0.02% in DPBS (0.5 mM), sterile-filtered, BioReagent, suitable for cell culture



C4-BIOC

Collagenase Type IV, Cls IV



C2-BIOC

Collagenase Type II, Cls II



SCR103

Collagenase type I

The collagenase type I (from *Clostridium histolyticum*) is a crude collagenase preparation that can be used for the isolation of primary cells or for tissue dissociation by enzymatic means.



C2674

Collagenase from *Clostridium histolyticum*

lyophilized powder, ≥ 125 CDU/mg solid (CDU = collagen digestion units), 0.5-5.0 FALGPA units/mg solid



C1345

Catalase from bovine liver

powder, suitable for cell culture, 2,000-5,000 units/mg protein



C9407

Collagenase from *Clostridium histolyticum*

powder, Suitable for the digestion and isolation of physiologically active pancreatic islet cells, suitable for cell culture



E6511

Ethylenediaminetetraacetic acid tetrasodium salt dihydrate

BioReagent, suitable for cell culture, 98.5-102.0%



P3292

Pancreatin from porcine pancreas

powder, suitable for cell culture, 4 × USP specifications



C5914

Cell Dissociation Solution Non-enzymatic 1x

Prepared in phosphate buffered saline without calcium and magnesium, sterile-filtered, BioReagent, suitable for cell culture



E7885

Elastase from porcine pancreas

lyophilized powder, suitable for cell culture



76216

Papain from *Carica papaya*

solution, light brown, ≥ 10 U/mg protein (~25 mg/ml)



S5395

Superoxide Dismutase from bovine erythrocytes

$\geq 3,000$ units/mg protein, BioReagent, lyophilized powder, suitable for cell culture



D4818

Dispase® I

protease



T6414

Trypsin inhibitor from *Glycine max* (soybean)

solution, sterile-filtered, suitable for, suitable for cell culture



T4549

Trypsin solution from porcine pancreas

sterile-filtered, BioReagent, suitable for cell culture, 25 g porcine trypsin per liter in 0.9% sodium chloride



T2601

StableCell™ Trypsin Solution

1X, sterile-filtered, BioReagent, suitable for cell culture, 0.5 g porcine trypsin and 0.2 g EDTA, 4Na per liter of Hanks' Balanced Salt Solution with phenol red



SM-2003

Trypsin-EDTA, In Hank's Balanced Salt Solution, 0.25% Trypsin and 1mM EDTA, without Ca²⁺ and Mg²⁺

The Trypsin-EDTA, In Hank's Balanced Salt Solution, 0.25% Trypsin & 1mM EDTA, without Ca²⁺ & Mg²⁺ is available in a 100 mL format.



T4299

Trypsin-EDTA solution

1 ×, sterile-filtered, BioReagent, suitable for cell culture, 500 BAEE units porcine trypsin and 180 µg EDTA, 4Na per ml in Dulbecco's PBS without calcium and magnesium



C9697

Collagenase from *Clostridium histolyticum*

lyophilized powder (from 0.2 µm filtered solution), suitable for cell culture



T7902

Thermolysin from *Geobacillus stearothermophilus*

powder, BioReagent, 30-350 units/mg protein (E1%/280), suitable for cell culture



S-004-M

Enzyme Free Cell Dissociation Solution Hank's Based (1X), liquid, 500ml

The Enzyme-Free Cell Dissociation Solution is a Hank's based formulation of chelating agents & agents to stabilize their activity on cells. This solution is available in a 500ml format.



C5789

Cell Dissociation Solution Non-enzymatic 1x

Prepared in Hanks' Balanced Salt Solution without calcium and magnesium, sterile-filtered, BioReagent, suitable for cell culture



SCR006

Accumax™ Cell Counting Solution in DPBS Sterile-filtered Cell Culture Tested

A cell detachment solution of proteolytic, collagenolytic & DNase enzymes. The reagent is useful for creating single cell suspensions from clumped cell cultures for accurate cell counting, detachment of cells from primary tissue.



T2610

StableCell™ Trypsin Solution

10X, sterile-filtered, BioReagent, suitable for cell culture, 5.0 g porcine trypsin and 2 g EDTA, 4Na per liter of 0.9% sodium chloride



T4424

Trypsin solution from porcine pancreas

1 ×, sterile-filtered, BioReagent, suitable for cell culture, 2.5 g porcine trypsin per liter in Hanks' Balanced Salt Solution with phenol red



C1-BIOC

Collagenase Type I, Cls I



T3449

TrypZean® Solution, 1×

recombinant, expressed in corn, sterile-filtered



SCM133

PluriSTEM® Dispase-II Solution

Dispase-II has proven to be a rapid and effective, yet gentle, agent for separating many tissues and cells grown in vitro.



SM-2004

Low Trypsin-High EDTA, PBS Based, 0.025% Trypsin and 0.75mM EDTA (1X), without Ca²⁺ and Mg²⁺

The Low Trypsin-High EDTA, PBS Based, 0.025% Trypsin & 0.75mM EDTA (1X), without Ca²⁺ & Mg²⁺ is available in a 100 mL format.



C9722

Collagenase from *Clostridium histolyticum*

lyophilized powder (from 0.2µm filtered solution), 0.5-5.0 FALGPA units/mg solid, suitable for cell culture



T4674

Trypsin solution from porcine pancreas

sterile-filtered, BioReagent, suitable for cell culture, 25 g porcine trypsin per liter in Hanks' Balanced Salt Solution with phenol red



T5266

Trypsin from porcine pancreas

lyophilized powder, γ-irradiated, BioXtra, suitable for cell culture, 1,000-2,000 BAAE units/mg solid



T2605

StableCell™ Trypsin Solution

5X, sterile-filtered, BioReagent, suitable for cell culture, 2.5 g porcine trypsin and 0.2 g EDTA, 4Na per liter of Hanks' Balanced Salt Solution with phenol red



SCR140

Animal Free Collagenase/Dispase Blend II

Animal Free Collagenase/Dispase Blend II is a mixture of animal free collagenase, type B, and neutral protease/dispase, and is intended to be used when a more potent enzymatic dissociation solution than collagenase is desired.



SM-2001

Trypsin 0.25%, In Hank's Balanced Salt Solution, without Ca²⁺ and Mg²⁺

The Trypsin 0.25%, In Hank's Balanced Salt Solution, without Ca²⁺ & Mg²⁺ is available in a 100 mL format.



T7659

Trypsin Inhibitor, Defined (1X) Solution

Animal component free, BioReagent, suitable for cell culture



SCR139

Animal Free Collagenase/Dispase Blend I

Animal Free Collagenase/Dispase Blend I is a mixture of animal free collagenase, type B, and neutral protease/dispase, and is intended to be used when a more potent enzymatic dissociation solution than collagenase is desired.



SCR137

Animal Free Collagenase, Type B

Animal Free Collagenase, Type B, is designed to have collagenase and secondary proteases similar to Types II collagenase.



C2799

Collagenase from *Clostridium histolyticum*

powder, suitable for cell culture, ≥4 FALGPA units/mg solid, high purity, ≥700 CDU/mg solid (CDU = collagen digestion units)



SCR136

Animal Free Collagenase, Type A

Animal Free Collagenase, Type A, is designed to have collagenase and secondary proteases similar to Types I and II collagenase.



SCR104

Accutase®XL Lyophilized Accutase

AccutaseXL is a lyophilized form of Accutase with extended stability used for the routine detachment of cells from standard tissue culture plasticware



SCR138

Animal Free Collagenase, Type C

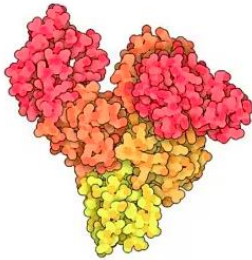
Animal Free Collagenase, Type C, is designed to have collagenase and secondary proteases similar to Types III and IV collagenase.



V900893

Collagenase from *Clostridium histolyticum*

Type IV, Vetec™, reagent grade, powder, ≥160 CDU/mg solid **Albumins and Transport Proteins**



Many molecules are unstable or insoluble when they exist in non-complexed forms. *In vitro*, albumins and other carrier proteins are often used to bind, sequester and stabilize a range of important small molecules and proteins. Albumins are simple water-soluble proteins found in animal fluids and tissues, and to a lesser extent in plants. Albumins are used in the biomanufacture of therapeutic monoclonal antibodies and recombinant proteins.

We provide albumins for comprehensive application needs, including cell culture, protein quantitation, enzyme stabilization, ELISA, and antibody-related processes. Along with albumins from diverse sources, we offer these essential proteins in different formats and formulations.

Read more about

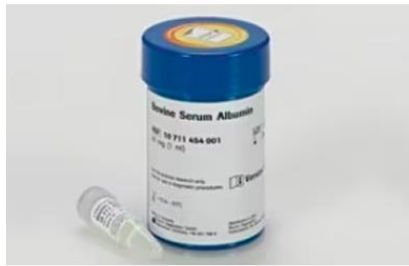
- **Albumins in Cell Culture**
- **Bovine Serum Albumin (BSA)**
- **Human Serum Albumin (HSA)**
- **Other Albumin Products**

- **Transferrins and Transferrin Replacements**

ALBUMINS IN CELL CULTURE

Albumins, particularly from bovine serum (BSA) are an important component of many **serum-free** cell culture systems, particularly those that utilize hybridoma or Chinese Hamster Ovary (CHO) cells. In cell culture media, albumin functions by binding and delivering other essential molecules to cells in culture. Because all albumins do not have identical efficacy in culture media, it is advisable to choose those that have been tested for cell culture applications.

BOVINE SERUM ALBUMIN (BSA)



Bovine serum albumin (BSA) is a globular protein (~66 kDa MW) that is used in numerous biochemical applications due to its stability and lack of interference with biological reactions. The BSA structure is a single polypeptide chain consisting of about 583 amino acid residues and no carbohydrates. Learn more about the BSA protein structure, BSA molecular weight, properties, and applications in our BSA physical properties and application guide.

BSA is the classic workhorse of albumin products used in numerous applications. Our diverse formats for albumin from bovine serum include purities ranging from 95-99%. We manufacture and distribute BSA purified from a variety of primary methods including the true Cohn fractionation method, modified ethanol fractionation methods, heat shock, and chromatography. Additional purification steps may include crystallization or charcoal filtration. For convenience, our BSAs are defined by method of preparation:

- Chromatographic purification of albumin typically yields a more highly conserved native protein conformation than the ethanol and heat shock fractionation methods.
- The ethanol and heat shock method combine both processes using Cohn fractionation to perform the initial purification followed by a heat step to further purify the albumin to $\geq 99\%$ by Agarose electrophoresis.
- Ethanol fractionation is a fractionation method that includes the adjustment of ethanol concentration, pH, and temperature. Unlike the heat shock method, this process is kept at a low temperature ensuring a non-denaturing condition for the proteins and preserves the native albumin structure and function.
- The heat shock fractionation process of heat and pH adjustment relies on the addition of a protein stabilizer. This addition allows the albumin to tolerate the increased temperature of $> 65\text{ }^{\circ}\text{C}$. Most other plasma proteins denature and precipitate during this process yielding an albumin with increased purity.

HUMAN SERUM ALBUMIN (HSA)

Human serum albumin (HSA) is the most abundant protein in human plasma with a molecular weight of ~66 kDa (based on amino acid composition). Serum albumin may be referred to as Cohn Fraction V. This naming convention is taken from the original Cohn method of fractionating serum proteins using cold ethanol precipitation, as serum albumin was found in the fifth ethanol fraction using Cohn's method. Since then, the term "Cohn Fraction V" has been used by some to describe serum albumin regardless of the method of

preparation. We produce human serum albumins using a cold alcohol fractionation process derived from the traditional Cohn method, as well as from the heat shock method, and offer both native and recombinant versions of HSA in powder and solution formats.

OTHER ALBUMIN PRODUCTS

Our portfolio includes additional albumin products for specific applications requiring human and other nonbovine proteins. Recombinant human albumins and animal component-free (ACF) albumin are supplied in aqueous buffers or lyophilized powder formats. Albumins available from other species include those derived from the following sources:

- chicken egg white
- mouse serum
- rat serum
- porcine serum
- ovine serum

Our albumins are of high purity and superior solubility to ensure low background in protein quantitation assays, and to minimize interference in bioprocesses.

TRANSFERRINS AND TRANSFERRIN REPLACEMENTS

Cells require iron to bind available oxygen from the extracellular environment. Transferrins are single chain glycoproteins found in serum that facilitate the uptake of iron in culture medium and its subsequent intracellular transport. Although transferrin is the physiologically optimal method for delivering iron to cells in culture and has therefore been integral in the production of biopharmaceuticals such as monoclonal antibodies, lower-risk animal-free systems have led to some adoption of small-molecule alternatives to transferrin in biomanufacturing. Many of these transferrin alternatives are iron chelators, which must be used with appropriate protocols in culture systems as many do not manage redox cycling of iron and can therefore contribute to oxidative stress. Our cell culture reagents include a complete selection of transferrins and transferrin replacements.

RELATED RESOURCES

- **Albumin in Cell Culture**

This page segues to comprehensive insights on how serum albumin and other important cell culture components affect the performance of serum-free cell culture systems used for biomanufacturing heterologous proteins including monoclonal antibodies. The page introduces the in vitro chemistry and biochemistry of albumin. These insights may also be applied to ex vivo and tissue engineering applications.



A7030

Bovine Serum Albumin

heat shock fraction, protease free, fatty acid free, essentially globulin free, pH 7, ≥98%



A7906

Bovine Serum Albumin

heat shock fraction, pH 7, ≥98%



A2153

Bovine Serum Albumin

lyophilized powder, ≥96% (agarose gel electrophoresis)



A9647

Bovine Serum Albumin

heat shock fraction, pH 7, ≥98%



A9418

Bovine Serum Albumin

lyophilized powder, BioReagent, suitable for cell culture



A9576

Bovine Serum Albumin solution

30% in DPBS, sterile-filtered, BioXtra, suitable for cell culture



BSAV-RO

Bovine Serum Albumin

≥98.5%, New Zealand origin



A8806

Bovine Serum Albumin

fatty acid free, low endotoxin, lyophilized powder, BioReagent, suitable for cell culture, ≥96% (agarose gel electrophoresis)



T0665

holo-Transferrin human

powder, BioReagent, suitable for cell culture, $\geq 97\%$



A5503

Albumin from chicken egg white

lyophilized powder, $\geq 98\%$ (agarose gel electrophoresis)



A3059

Bovine Serum Albumin

heat shock fraction, protease free, essentially globulin free, pH 7, $\geq 98\%$



A4503

Bovine Serum Albumin

cold ethanol fraction, pH 5.2, $\geq 96\%$



A8412

Bovine Serum Albumin solution

7.5% in DPBS, sterile-filtered, BioXtra, suitable for cell culture



A3294

Bovine Serum Albumin

heat shock fraction, protease free, pH 7, $\geq 98\%$



A1595

Bovine Serum Albumin solution

10% in DPBS, low endotoxin, fatty acid free, suitable for cell culture, sterile-filtered



A7979

Bovine Serum Albumin solution

35% in DPBS, sterile-filtered, BioXtra, suitable for cell culture



A1653

Albumin from human serum

lyophilized powder, $\geq 96\%$ (agarose gel electrophoresis)



P0834

Protein standard

liquid, 2 mg protein/ml



A6003

Bovine Serum Albumin

lyophilized powder, essentially fatty acid free, $\geq 96\%$ (agarose gel electrophoresis)



T8158

Transferrin human

powder, BioReagent, suitable for cell culture



A8022

Bovine Serum Albumin

heat shock fraction, pH 5.2, $\geq 96\%$



10874477001

Plasminogen

from human serum



A9731

Albumin human

recombinant, expressed in rice, lyophilized powder, suitable for cell culture, low endotoxin, $\geq 96\%$ (SDS-PAGE)



T1147

apo-Transferrin human

powder, BioReagent, suitable for cell culture, $\geq 98\%$ (agarose gel electrophoresis)



A3782

Albumin from human serum

lyophilized powder, Fatty acid free, Globulin free, $\geq 99\%$ (agarose gel electrophoresis)



A3803

Bovine Serum Albumin

heat shock fraction, lyophilized powder, essentially fatty acid free, $\geq 98\%$ (agarose gel electrophoresis)



A9511

Albumin from human serum

lyophilized powder, $\geq 97\%$ (agarose gel electrophoresis)



A7638

Bovine Serum Albumin

lyophilized powder, essentially globulin free, $\geq 99\%$ (agarose gel electrophoresis)



A7888

Bovine Serum Albumin

heat shock fraction, suitable for RIA, pH 5.2, $\geq 96\%$



B8667

Bovine Serum Albumin solution

20 mg/mL in H₂O, low bioburden, protease free, for molecular biology



126615

Albumin, Bovine Serum, 10% Aqueous Solution, Nuclease-Free



P0914

Protein standard

Micro Standard, liquid



05470

Bovine Serum Albumin

lyophilized powder, crystallized, $\geq 98.0\%$ (GE)



A3311

Bovine Serum Albumin

powder, BioXtra



10711454001

Bovine Serum Albumin

blood typing: suitable, Endonuclease, Exonuclease, Rnases, Proteinases free



10775835001

Bovine Serum Albumin

98.5% (electrophoresis), Fatty acids (total) ≤ 0.2 mg/g, Triglycerides (enzym.) free, Immunoglobulins not detectable, microbiological culture: suitable, USA origin



A8763

Albumin from human serum

lyophilized powder, essentially globulin free, $\geq 99\%$ (agarose gel electrophoresis)



B4287

Bovine Serum Albumin

heat shock fraction, protease free, suitable for hybridization, pH 7, $\geq 98\%$



A8577

Bovine Serum Albumin solution

30% in saline, protease free, aseptically filled



A1470

Bovine Serum Albumin

lyophilized powder, low endotoxin, BioReagent, suitable for cell culture, $\geq 98\%$ (agarose gel electrophoresis)



A9205

Bovine Serum Albumin solution

30% in saline, fatty acid free, aseptically filled



126609

Albumin, Bovine Serum, Fraction V, Fatty Acid-Free, Nuclease- and Protease-Free

BSA Fatty Acid-free is designed for use in serological testing, RIA, and hormone response studies. Suitable for use in Molecular Biology applications, such as Northern and Southern blots.



A2512

Albumin from chicken egg white

lyophilized powder, $\geq 98\%$ (agarose gel electrophoresis)



A7284

Bovine Serum Albumin solution

$30\% \pm 2\%$ in 0.85% sodium chloride, aseptically filled



A6608

Albumin human

recombinant, expressed in *Saccharomyces cerevisiae*, aqueous solution, 10% in aqueous buffer, $\geq 99\%$ (agarose gel electrophoresis)



03117332001

Bovine Serum Albumin Fraction V, protease-free

from bovine serum



A8549

Albumin, biotin labeled bovine

lyophilized powder



B6917

Bovine Serum Albumin

lyophilized powder, suitable for (for molecular biology), Non-acetylated



A3912

Bovine Serum Albumin

heat shock fraction, pH 5.2, ≥96%



10602400001

Thrombin

from human plasma



L9530

Linoleic Acid-Albumin from bovine serum albumin

liquid, sterile-filtered, BioReagent, suitable for cell culture



A5611

Bovine Serum Albumin

Cohn Fraction V, lyophilized powder, ≥96% (agarose gel electrophoresis)



126575

Albumin, Bovine Serum, Fraction V, Fatty Acid-Free



A0281

Bovine Serum Albumin

lyophilized powder, essentially fatty acid free and essentially globulin free, ≥99% (agarose gel electrophoresis)



A7409

Bovine Serum Albumin solution

35% in 0.85% sodium chloride, aseptically filled



12659-M

Albumin, Bovine Serum, Fraction V, Low Heavy Metals



03117057001

Bovine Serum Albumin Fraction V, heat shock, fatty acid free

from bovine serum



A3139

Albumin from mouse serum

lyophilized powder, $\geq 96\%$ (agarose gel electrophoresis)



A7034

Bovine Serum Albumin solution

22% in saline, contains azide, aseptically filled



A5253

Albumin from chicken egg white

powder, 62-88% (agarose gel electrophoresis)



126593

Albumin, Bovine Serum, Fraction V, RIA and ELISA Grade



A5378

Albumin from chicken egg white

lyophilized powder, $\geq 90\%$ (agarose gel electrophoresis)



A5843

Albumin from human serum

lyophilized powder, low endotoxin



T2036

apo-Transferrin human

powder, BioReagent, suitable for cell culture, $\geq 98\%$ (agarose gel electrophoresis)



A7641

Albumin from chicken egg white

lyophilized powder



A1887

Albumin from human serum

lyophilized powder, essentially fatty acid free



T3705

Transferrin human

recombinant, expressed in rice



A8327

Bovine Serum Albumin solution

$30\% \pm 2\%$ in 0.85% sodium chloride, aseptically filled



BSAVHS-RO

Bovine Serum Albumin

$\geq 98.5\%$, Ash 1%, Heavy metals < 10 ppm, stem cell culture, Mycoplasma Negative, USA origin



1.12018

Albumin fraction V

(from bovine serum) for biochemistry



T1283

holo-Transferrin bovine

Iron-saturated, BioReagent, suitable for cell culture



A9080

Albumin solution human

30% in 0.85% sodium chloride, protease free



A4161

Bovine Serum Albumin

lyophilized powder, essentially globulin free, BioReagent, suitable for cell culture



A2934

Bovine Serum Albumin

lyophilized powder, essentially globulin free, low endotoxin, $\geq 98\%$ (agarose gel electrophoresis)



L5385

α -Lactalbumin from bovine milk

Type I, $\geq 85\%$ (PAGE), lyophilized powder



A4919

Bovine Serum Albumin

heat shock fraction, protease free, low endotoxin, suitable for cell culture, pH 7, $\geq 98\%$



A3733

Bovine Serum Albumin

lyophilized powder, $\geq 98\%$ (agarose gel electrophoresis)



T5391

apo-Transferrin human

γ -irradiated, powder, BioXtra, suitable for cell culture, $\geq 98\%$



O1641

Ovalbumin (323-339) (chicken, Japanese quail)



A6784

Albumin solution human

10% in 0.85% sodium chloride and 0.05% sodium azide, aseptically filled



A7223

Albumin human

recombinant, expressed in *Pichia pastoris*, 5% in aqueous buffer, $\geq 90\%$ (SDS-PAGE)



A3559

Albumin from mouse serum

lyophilized powder, essentially globulin free, $\geq 99\%$ (agarose gel electrophoresis)



A6661

Albumin, dinitrophenyl

lyophilized powder



T1428

apo-Transferrin bovine

BioReagent, suitable for cell culture, $\geq 98\%$



126625

Albumin, Bovine Serum, 30% Aqueous Solution, Stabilizer-Free



10602361001

Plasmin, human

from human plasma



A3608

Bovine Serum Albumin

lyophilized powder, $\geq 96\%$ (agarose gel electrophoresis)



121800-M

Advanced Glycation Endproduct-BSA

AGE-BSA has been reported to induce apoptosis in cultured human umbilical vein endothelial cells and inhibit nitric oxide synthase activity in proximal tubular epithelial cells.



A1900

Albumin, Monomer bovine

Monomer $\geq 97\%$



A4378

Bovine Serum Albumin

lyophilized powder, 1 × crystallized, $\geq 97\%$ (agarose gel electrophoresis)



A8301

Albumin, glycated human

lyophilized powder



P1742

Prealbumin from human plasma

lyophilized powder



A3858

Bovine Serum Albumin

lyophilized powder, Protease, essentially free, $\geq 98\%$ (agarose gel electrophoresis)



126579

Albumin, Bovine Serum, Fraction V, Fatty Acid-Poor, Endotoxin-Free



L6010

α -Lactalbumin from bovine milk

Type III, calcium depleted, $\geq 85\%$ (PAGE), lyophilized powder



126658

Albumin, Human Serum, Fraction V, High Purity



A3156

Bovine Serum Albumin

lyophilized powder, γ -irradiated, Globulin Free, BioXtra, suitable for cell culture



B2518

Albumin, Acetylated from bovine serum

lyophilized powder, suitable for microbiology



A4628

Bovine Serum Albumin solution

5% in 0.85% sodium chloride, aseptically filled



820456

Probumin® Bovine Serum Albumin Diagnostic Grade

lyophilized powder, pkg of 5 kg



D5197

SigMatrix Ultra Serum Diluent



L7269

α -Lactalbumin from human milk

$\geq 95\%$ (SDS-PAGE), lyophilized powder



C0755

Conalbumin from chicken egg white

Substantially iron-free



A7511

Bovine Serum Albumin

lyophilized powder, essentially fatty acid free, $\geq 97\%$ (agarose gel electrophoresis), 1X Crystallized



126626

Albumin, Bovine Serum, 30% Sterile-Filtered Aqueous Solution, Preservative-Free



A3299

Bovine Serum Albumin solution

30% in 0.85% sodium chloride, aseptically filled



12657

Albumin, Bovine Serum, Fraction V, Crystalline



A6414

Albumin from rat serum

lyophilized powder, essentially fatty acid free, essentially globulin free, $\geq 99\%$ (agarose gel electrophoresis)



A4327

Albumin from human serum

lyophilized powder, essentially protease free, $\geq 96\%$ (agarose gel electrophoresis)



324101

DNP-Albumin Conjugate, Bovine

DNP-Albumin Conjugate, Bovine, is useful for production of antibodies specific for DNP and albumin. Contains >30 DNP-groups per molecule protein.



A9543

Bovine Serum Albumin

heat shock fraction, low endotoxin, pH 7, $\geq 98\%$



A9056

Bovine Serum Albumin

heat shock fraction, microbiologically tested, $\geq 96\%$ (agarose gel electrophoresis)



B8894

Albumin, Acetylated from bovine serum

protease free, for molecular biology



SRP6516

Albumin from human plasma

≥95% (SDS-PAGE)



A6272

Albumin from rat serum

lyophilized powder, ≥96% (agarose gel electrophoresis)



820452

Probumin® Bovine Serum Albumin Diagnostic Grade

lyophilized powder, pkg of 1 kg



12660

Albumin, Bovine Serum, Fraction V, Modified Cohn, pH 5.2



A3983

Bovine Serum Albumin

lyophilized powder, essentially γ -globulin free, ≥98% (agarose gel electrophoresis)



A9430

Bovine Serum Albumin

heat shock fraction, low endotoxin, pH 7, ≥98%



A1662

Bovine Serum Albumin solution

30%±2% in 0.85% sodium chloride, aseptically filled



V900933

Bovine Serum Albumin

≥98%, ≤5% Loss on drying, suitable for western blot



B7542

Maleimide Activated BSA



A6710

Albumin hydrolysate



126674

Albumin, Mouse



820463

Probumin® Bovine Serum Albumin Diagnostic Grade

solution (30%), pkg of 1 L



12666

Albumin, Human Serum, Fraction V, Low Heavy Metals



A2514

Albumin from goat

≥96% (agarose gel electrophoresis)



A3174

Bovine Serum Albumin solution

30% in saline, high avidity, contains azide and caprylate, aseptically filled



SRP6472

Transferrin human

recombinant, expressed in HEK 293 cells, ≥95% (SDS-PAGE)



12668-M

Albumin, Human Serum, Fraction V

A4414

Albumin from porcine serum

lyophilized powder, essentially globulin free, ≥99% (agarose gel electrophoresis)



C0880

Conalbumin from chicken egg white

Iron complex



P3717

Phosphoserine-BSA

2 mg/mL, buffered aqueous solution

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Псков (8112)59-10-37

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Смоленск (4812)29-41-54
Сочи (862)225-72-31
Ставрополь (8652)20-65-13
Сургут (3462)77-98-35
Сыктывкар (8212)25-95-17
Тамбов (4752)50-40-97

Тверь (4822)63-31-35
Тольятти (8482)63-91-07
Томск (3822)98-41-53
Тула (4872)33-79-87
Тюмень (3452)66-21-18
Ульяновск (8422)24-23-59
Улан-Удэ (3012)59-97-51
Уфа (347)229-48-12
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