

Embryonic Stem Cell Screened Fetal Bovine Serum, US Origin

HYCLONE SERA

Research using embryonic stem (ES) cells continues to increase, and serum suitability is critical for keeping these cells in their valuable undifferentiated state. Historically, researchers were required to screen several serum lots to find one suitable for ES cell research. HyClone™ ES cell screened fetal bovine serum (FBS) eliminates the need for serum prescreening, saving both time and money. This serum has been screened by experienced ES cell culturists. The screening includes plating efficiency, colony morphology, and toxicity tests.

ES cell screened FBS is selected from our highest-quality Defined FBS, and filtered through serial 40 nm (0.04 µm) pore size-rated filters. Before dispensing, each lot of serum is pooled using true pool technology to ensure uniformity and consistency between bottles (Fig 1).

Key features of ES Cell Screened FBS, US Origin

- Complete traceability back to original source
- Low in antibodies and high in growth factors
- Virus panel testing according to 9 CFR 113.53

Product storage and handling

Serum should be stored at -10°C or lower. Once thawed, serum should be stored at 2°C to 8°C for up to six weeks in order to maintain quality. If the serum needs to be stored longer than six weeks after opening, it is recommended to aliquot the serum into convenient volumes and refreeze. Handle bottles that have been stored in the freezer carefully. Avoid large temperature shifts and protect the serum from exposure to light. Refer to safety data sheet for any safety recommendations. Storage requirements are listed on the product label.

Thawing

Remove serum from storage at -10°C or lower and place in a refrigerator overnight at 2°C to 8°C. Transfer the serum to a 37°C water bath, agitate periodically to mix the solutes concentrated



Fig 1. ES Cell Screened FBS, US Origin.

at the bottom of the container. Do not hold the serum at 37°C any longer than necessary after thawing. Thawing serum in a bath above 40°C without mixing can denature the concentrated proteins in the bottom of the container and precipitates might form in the bottle. Thawing serum at higher temperatures is not recommended.

Alternatively, bottles can be placed directly from storage at -10°C or lower into a 37°C water bath. Bottles should be agitated to enhance mixing and thawing. Turbidity and flocculent material might be present after thawing or after prolonged storage.

Experience indicates that regardless of the method used to thaw serum, it is critical that it is mixed during the thawing process to prevent the formation of gradients and subsequent precipitation. Because of differences in thawing rates of different components, serum will form a gradient if it is not mixed as it thaws. If serum is allowed to remain in such a gradient state, precipitation is likely to occur.

Quality control testing

ES cell screened FBS is assayed for progesterone, selenium, insulin, IgG, parathyroid hormone (PTH), sodium, cholesterol, potassium, high density lipoprotein cholesterol, calcium, low density lipoprotein cholesterol, chloride, triglycerides, magnesium, gamma globulin, glucose, phospholipids, copper, alkaline phosphatase, total iron binding capacity (TIBC), lactate dehydrogenase, percent saturation, glutamic pyruvic transaminase (SGPT), glutamic oxaloacetic transaminase (SGOT), thiamine (B1), riboflavin (B2), pyridoxine (B6), nicotinic acid (niacin), vitamin H (biotin), vitamin A (retinol), carotene, total vitamin E (tocopherol), cyanocobalamine (B12), pteroylglutamic acid (folate), vitamin C, 1,25 dihydroxy vitamin D, pH, total protein, albumin, blood urea nitrogen, creatinine, total bilirubin, inorganic phosphorus, osmolality, and iron. Assays are subject to change without notice.

Test specifications are listed in Table 1. Results are provided as a courtesy for information only.

Table 1. Test specifications

Endotoxin (Limulus amebocyte lysate gel clot assay)	≤ 10 EU/mL
Hemoglobin (spectrophotometric)	≤ 10 mg/dL
Sterility testing (current USP)	
Bacteria and fungi	No growth
Virus Testing (9 CFR 113.53)	
Fluorescent antibody	
Bluetongue	Not detected
Bovine adenovirus	Not detected
Bovine parvovirus	Not detected
Bovine respiratory syncytial virus	Not detected
Bovine viral diarrhea virus	Not detected
Rabies	Not detected
Reovirus	Not detected
Cytopathogenic agents (e.g., IBR)	Not detected
Hemadsorbing agents (e.g., PI3)	Not detected
Mycoplasma	
Large volume, direct culture	Not detected
Hoechst™ DNA stain	Not detected
Certificate of suitability	Included

General culture recommendations

Supplementation of classical media such as Dulbecco's Modified Eagle's Medium (DMEM) is recommended at a range between 5% and 10% ES cell screened FBS.

Related products

HyClone classical media

HyClone classical media are manufactured using ISO 9001- and ISO 13485-certified processes. All raw material components have passed strict quality control testing to ensure the appropriate level of quality. The classical media are hydrated using purified process water and have undergone 0.1 µm sterile filtration.

HyClone phosphate buffered saline (PBS)

Our PBS products are manufactured using ISO 9001- and ISO 13485-certified processes. The products have full traceability and documented origin of all formula ingredients.

HyClone trypsin protease

Our trypsin protease is derived from porcine pancreas and is gamma irradiated prior to hydration and filling. The product is formulated without calcium and magnesium.

Ordering information

Product	Size	Product code
HyClone Embryonic Stem Cell	100 mL	SH30070.02E
Screened Fetal Bovine Serum, US Origin	500 mL	SH30070.03E

Find certificates of analysis, safety data sheets, standard formulations, product inserts, and protocols at cytiva.com/hyclonecerts.

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