

# USDA-Tested FBS

## HYCLONE SERA

USDA-Tested fetal bovine serum (FBS) is intended for low risk applications. The serum is sourced from countries where serum can be imported into the United States. These countries include North America, Central America, Australia, and New Zealand. The serum is safety tested by the United States Department of Agriculture (USDA) when required, and considered to be foot-and-mouth disease (FMD) free. HyClone™ USDA-Tested FBS is processed and packaged in the United States. As with all HyClone products, the certificate of analysis (CoA) includes the specific countries of origin used in each lot (Fig 1). The percentage of each included country of origin is stated.

Key features of USDA-Tested FBS include:

- Low level of endotoxin and hemoglobin
- Virus panel testing according to 9 CFR 113.53
- Filtered through triple 100 nm (0.1 µm) pore size-rated filters
- Complete traceability to original source and USDA safety tested
- Low in antibodies and high in growth factors
- Produced using true pool technology, minimizing variability

## Specifications

USDA-Tested FBS is filtered through three sequential 100 nm (0.1 µm) pore size-rated filters. Before dispensing, each lot of serum is pooled to ensure uniformity and consistency between bottles (true pool technology).

## Product handling

### **Storage and handling**

Sera should be stored at -10°C or lower. Once thawed, sera should be stored at 2°C to 8°C. To maintain quality, a conservative storage recommendation for sera at this temperature is no longer than six weeks. 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.

### **Thawing**

Remove serum from -10°C (or lower) storage 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.** USDA-Tested FBS supplements cell culture growth.

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 -10°C (or lower) storage 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. Handle bottles that have been stored in freezer carefully. Avoid large temperature shifts and protect the serum from exposure to light. Wear protective clothes and equipment. Storage requirements are listed on the product label.

## 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% FBS to support culture of a wide variety of cell lines and applications.

## Quality control testing

USDA-Tested FBS is assayed for alkaline phosphatase, lactate dehydrogenase, glutamic pyruvic transaminase (SGPT), glutamic oxaloacetic transaminase (SGOT), pH, total protein, albumin, blood urea nitrogen, creatinine, total bilirubin, sodium, potassium, calcium, chloride, inorganic phosphorus, osmolality, glucose, gamma globulin, and IgG. List of assays are subject to change without notice.

Quality control test specifications are listed in Table 1.

**Table 1.** Test specifications

Endotoxin (Limulus amebocyte lysate gel clot assay)	≤ 25 EU/mL
Hemoglobin (spectrophotometric)	≤ 25 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 diarrhoea 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
USDA safety	
Antibodies against:	
Akabane virus	Not detected
Bluetongue virus	Not detected
USDA safety testing	Passed
Certificate of analysis	Included

## Related products

### **HyClone classical media**

HyClone classical media are manufactured using ISO 9001:2008- and ISO 13485:2003-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 water for injection-grade water and have undergone 0.1 µm sterile filtration. Classical media that have been system tested with USDA-Tested FBS to confirm product efficacy and homogeneity are:

- Dulbecco's modified Eagle's medium (DMEM)
- Minimal essential medium (MEM)
- Eagle's minimal essential medium (EMEM)
- RPMI 1640 medium

### **HyClone phosphate buffered saline (PBS)**

HyClone PBS products are manufactured according to cGMP guidelines using ISO 9001:2000-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
USDA-Tested FBS*	100 mL	SH30910.02
	500 mL	SH30910.03
USDA-Tested FBS* Heat inactivated	100 mL	SH30910.02HI
	500 mL	SH30910.03HI

\* Due to import/export restrictions this product may not be available in all countries.

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