**Fetal Bovine Serum**

**Sourced in USDA Approved Countries**

**CATALOG NO. 12303C**

**Description**
Animal serum is commonly used to supplement basal media formulations for the optimal growth of many cell types *in vitro*. Fetal Bovine Serum (FBS) is the most commonly used serum to supplement cell culture media due to its high nutritional content. FBS is effective in promoting and sustaining growth of vertebrate, mammalian and insect cells.

**Raw Serum Processing**
Animal blood is collected in countries located in Central America and is USDA approved for shipment into the United States. Whole fetal blood is aseptically collected via cardiac puncture and allowed to clot under controlled conditions. Following clot separation, the raw serum is pooled and immediately frozen.

**Filtration and Packaging**
Frozen raw serum is thawed under controlled conditions, pooled, then processed through a series of membrane filters in descending pore size, culminating in 0.1 μm filters. Integrity tests are conducted on the sterilizing filter pre- and post-filtration by bubble point and diffusive flow methods. The serum filtration process meets the sterility assurance level of $10^{-3}$ as verified by aseptic media fill validation. Serum is dispensed under HEPA filtered, Class 100 conditions into sterile, graduated plastic bottles and sealed with a tamper indicator. Bottles are identified with sequentially numbered labels and frozen at -10 to -40 °C.

Filtered serum batches are Quality Control tested and released against detailed finished product specifications. Additional testing may be undertaken as directed by a customer’s individual product specification.

**Traceability**
This material was sourced from Central American countries and approved for import by the USDA. A Certificate of Analysis indicating the country of origin is available for each lot of serum.

**Precautions**
This product is for further manufacturing use. THIS PRODUCT IS NOT INTENDED FOR HUMAN OR THERAPEUTIC USE. For stability and optimal performance, serum should be stored at -10 to -40 °C and used prior to the labeled expiration date.

Use aseptic technique when handling serum. Refiltering sterile serum before or after being added to sterile medium is not recommended because the growth promoting capability may be reduced.

Upon request, SAFC will provide serum gamma irradiated according to our validated SER-TAIN® Gamma Irradiation process.

**Storage**
To effectively preserve the integrity of animal serum, it should be stored frozen and protected from light. For stability and optimal performance, serum should be stored at -10 to -40 °C and used prior to the labeled expiration date. Multiple thaw/freeze cycles should be avoided as they may hasten the degradation of serum nutrients and can result in the formation of insoluble precipitates.
Preparation Instructions

Thawing
1. Remove the serum bottles from the freezer and allow them to acclimate to room temperature for approximately 10 minutes.

2. Place each container in a 30 to 37 °C water bath or incubator. Excessive temperatures will degrade heat labile nutrients. If using a water bath, prevent the bottle caps from being completely submerged.

3. Gently swirl or shake the bottles every 10 - 15 minutes until the serum is completely thawed.

4. After thawing, use the serum promptly. Liquid serum may be stored refrigerated (2 to 8 °C) up to four weeks. To avoid thaw/freeze cycles or long periods of refrigeration, it is recommended that any unused serum be immediately dispensed into small, useful aliquots and refrozen for future use.

Periodic agitation is crucial to its optimum performance. If a bottle of serum is not periodically shaken or swirled as it thaws, gradients containing high concentrations of salts, proteins and lipids will form throughout the liquid portion and lead to the formation of crystalline or flocculent precipitates. These cryoprecipitates are not toxic to cell cultures, but they affect the appearance and consistency of each bottle of serum. Small amounts of cryoprecipitates are not uncommon, and will not affect product performance. Gently warming and mixing the serum will generally promote dissolution of precipitates.

Characteristics

Electrophoretic Profile
- Record Result Albumin (g/dL)

Endotoxin
- ≤ 10.0 EU/mL

Growth Promotion
- Tested

Hemoglobin
- ≤ 25 mg/dL

Mycoplasma
- None detected

Osmolality
- 260 - 330 mOsm/kg H₂O

pH (at 25 °C)
- 6.8 - 8.1

Sterility
- No microbial growth detected

Total Protein
- 3.0 - 4.5 g/dL

Test results are recorded on the following: Adventitious Viral Agents (AVA), Cloning Efficiency and Plating Efficiency.