

### • What is the difference between Foetal Bovine Serum and Foetal Calf Serum?

Foetal Bovine Serum (FBS) was once known as Foetal Calf Serum (FCS). They are one and the same thing.

### • My FBS contains flocculence. What could it be?

Flocculence may appear in FBS for a variety of reasons. The most common reason is the denaturation of serum lipoproteins. You may observe fibrin, one of the clot-forming proteins present in the serum, after the serum has been thawed. This should not affect product performance.

To remove the flocculence, transfer the serum to sterile tubes and centrifuge the material briefly at 400 g. Then filter the resulting supernatant along with your media. Do not attempt to filter serum containing flocculence — it may clog filters.

### • How should I thaw FBS to ensure that the performance is not compromised?

We recommend you remove serum from the freezer and allow it to thaw in the refrigerator at 2-8°C. The thawing process may then be completed at room temperature. Note: the serum must be regularly mixed during this process.

We do not recommend that you incubate FBS at 37°C for extended periods of time to verify product sterility. FBS treated in this manner will appear cloudy. Under these conditions, the product's performance may be affected due to the labile nature of many serum components.

### • If my FBS arrives partially thawed, can I still use it?

All Gibco® FBS is shipped frozen and packaged in dry ice, so it should arrive frozen. You can still use FBS that is partially thawed, but we recommend that it be allowed to fully thaw in the refrigerator, then mixed by careful swirling, before storing in the freezer (-5°C to -20°C).

### • What does heat-inactivation do to the serum?

The heating process inactivates portions of the complement cascade. Complement occurs in the following events: cytolytic activities, contraction of smooth muscle, release of histamine from mast cells and platelets, enhanced phagocytosis, chemotaxis, and activation of lymphocytic and macrophage cell types. Applications where heat-inactivated serum is recommended include immunological studies and the culture of ES cells, insect cells and smooth muscle cells. Some common mycoplasmas are inactivated when serum is held at 56°C for 30 minutes.

### • At what temperature, and for how long, should serum be heat-inactivated?

You can incubate the thawed product at a thermostatically controlled temperature of 56°C for 30 minutes. Place thermometer in a bottle of water in the water-bath alongside the bottles of serum. This will allow you to determine when the serum reaches 56°C. Swirl the water in the bottle every 10 minutes and begin the 30 minute timing once the temperature reaches 56°C. Warning: do not attempt to heat-inactivate at a higher temperature for prolonged periods as this may compromise the product's performance through protein denaturation.

### • What is the importance of gamma-irradiated sera?

Gamma irradiation is recognized as an effective method for inactivating viruses in animal-origin material.

We will gamma-irradiate serum on request. We have validated a process for utilizing gamma irradiation to inactivate the most common bovine viruses and mycoplasmas which may be present in FBS. We have also demonstrated that the physiochemical properties and the cell culture performance of serum may not be significantly altered by gamma irradiation of up to 45 kGy.

### • What size packaging is available?

Gibco® FBS is routinely available in 100 ml and 500 ml bottles. It is also available by special order in 1000 ml bottles and in 3.5 L and 4 L volumes.



These products may be covered by one or more Limited Use Label Licenses (See the Invitrogen catalogue or [www.invitrogen.com](http://www.invitrogen.com)). By the use of these products you accept the terms and conditions of all applicable Limited Use Label Licenses.

For research use only. Not intended for any animal or human therapeutic or diagnostic use.  
©2004 Invitrogen Corporation. All rights reserved. Reproduction without permission forbidden. Printed in the UK.

#### European headquarters:

Invitrogen Ltd • Inchinnan Business Park • 3 Fountain Drive • Paisley PA4 9RF, UK • Tel: +44 (0) 141 814 6100 • Fax: +44 (0) 141 814 6260 • E-mail: [eurotech@invitrogen.com](mailto:eurotech@invitrogen.com)