



PRODUCTS & SERVICES

For veterinary vaccine production

An integrated approach designed to support quality, continuity of supply and long-term industrial collaboration.



CONTENTS



I. COMPANY OVERVIEW

(P3-4)

Our global manufacturing approach

3

Sustainability and animal welfare

4

II. PRODUCT RANGE

(P5-8)

A broad variety of animal sera

5

FBS BVDV-free

6

Packaging options

7

Cell culture media for veterinary vaccine production

8

III. MANUFACTURING & QUALITY

(P9-13)

Manufacturing and collaboration process

9

Shared forecast and quality tracking document

10

From blood collection to bottling: the value chain

11

Finishing operations & vertical integration

12

How do we make the difference?

13

IV. SUPPORTING YOUR PROJECT

(P14-15)

Sample forecast and quality tracking document

14

Supporting your veterinary vaccine production

15

How can we support you?

15

Let's discuss your next project

15

QUALITY

Consistent quality supported by defined specifications, in-process controls and batch-specific documentation

COMPLIANCE

Aligned with applicable requirements and
agreed customer specifications

SUPPLY CHAIN SECURITY

Diversified sourcing and long-term planning to support continuity of supply

SUSTAINABILITY

Working to reduce environmental impact across sourcing, processing and logistics

REGULATORY SUPPORT

Serum risk-assessment expertise supported by
SeraScandia, BioNordic and the Global Serum
Alliance

ANIMAL WELFARE

Responsible sourcing guided by the 3R principles and the efficient use of animal-derived materials

PART OF A SPECIALISED GLOBAL SERUM NETWORK



biosera



Bio Nutrientes

Biowest supports these objectives by reviewing its sourcing, processing and logistics practices to reduce environmental impact across its operations.

Net emissions by 2030

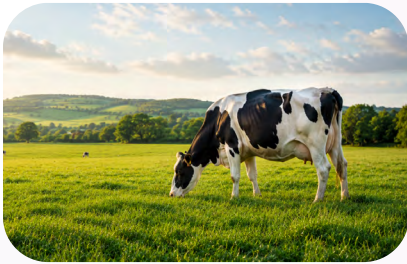
The objective is to reduce the use of laboratory animals wherever suitable alternatives are available. Cell culture can contribute to this approach in certain research, testing and production applications.

Refinement

In addition: Responsibility and Recycling:
Where animal-derived materials remain necessary,
there is a responsibility to use them efficiently, reduce
avoidable waste and maximise the value obtained from
each resource.

Recycle

A BROAD VARIETY OF ANIMAL SERA



Fetal Bovine Serum (global)
Newborn Calf (NZ)
Calf (F)
Iron Supplemented Calf (F)
Adult Bovine (F)



Sourced from qualified European
collection partners



French origin



French origin



European Origin



European origin



European origin

PRODUCT RANGE

FBS BVDV-FREE



 **BOVINE**



Frozen



-20°C



60 months

Fetal Bovine Serum, BVDV-free

S1450 - 050	50 ml
S1450 - 100	100 ml
S1450 - 500	500 ml

A TRUSTED FOUNDATION FOR MASTER CELL BANKS AND MASTER SEED BANKS

The quality of biological raw materials is critical to the successful establishment of master cell banks (MCBs) and master seed banks (MSBs).

This reference of BVDV-free FBS is specifically qualified to support demanding cell culture applications, with enhanced control of bovine viral diarrhea virus (BVDV) risk.

Key quality attributes:

- ◆ **BVDV PCR negative**
No detectable BVDV genomic material by validated molecular testing.
- ◆ **BVDV antibody negative**
No detectable BVDV-specific antibodies, supporting consistent performance in sensitive biological applications.
- ◆ **Designed for critical cell culture applications suitable for:**
 - ◆ Master cell bank establishment
 - ◆ Master seed bank and vaccine development workflows
 - ◆ Working cell bank production
 - ◆ 9 CFR virus testing

Optional:

- ◆ Gamma Irradiation, Heat Inactivation
- ◆ Other virus testing or EMA virus testing available on request

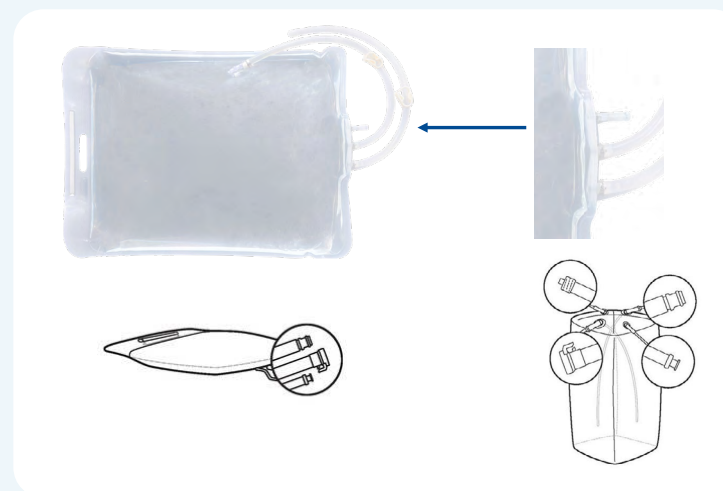
Start your industrial manufacturing process with confidence

By selecting FBS with advanced BVDV qualification, industrial developers and manufacturers can strengthen their raw material control strategy and support robust, reproducible biological production.

- ◆ 500 mL bottles
- ◆ 1 L bottles
- ◆ 5 L containers with a 4.5 L serum fill volume, available for selected serum products

A range of formats designed to accommodate different batch sizes, from laboratory-scale evaluation to full-scale production, while helping to reduce product waste and simplify inventory planning.

NEW PACKAGING DEVELOPMENTS



Single-use BioProcess Containers (BPCs): flexible bag formats designed to support streamlined, closed-system handling and reduce contamination risk, alongside our standard bottled range.

A BROAD RANGE OF ESTABLISHED CELL CULTURE MEDIA...

- ◆ Glasgow MEM for BHK-21 cell culture
- ◆ RPMI 1640 Medium
- ◆ Minimum Essential Medium (MEM)
- ◆ Dulbecco's Modified Eagle Medium (DMEM)
- ◆ DMEM/Ham's F12
- ◆ Iscove's Modified Dulbecco's Medium (IMDM)
- ◆ Medium 199

Other established media available on request

Buffer and salt solutions
Antibiotics & other products
Specialised cell culture media
Custom formulations

... CUSTOMISED TO YOUR REQUIREMENTS

Biowest translates customer requirements into customised media formulations suitable for development and industrial-scale production.

Quality Control

Testing aligned with agreed customer specifications, where technically feasible

Confidentiality

Confidential handling of proprietary formulations, supported by a non-disclosure agreement where required

Technical Specifications

CAS numbers and customer-specific technical requirements

Packaging

Packaging formats defined jointly with the customer

R&D Support

Biowest specialists support formulation development and optimisation

Flexibility

A collaborative approach from initial development through to routine supply

MANUFACTURING AND COLLABORATION PROCESS



Advanced manufacturing capabilities support precision, traceability and reproducibility in dry-powder media production.

FULL TRACEABILITY

ERP-connected weighing system

MICRONISATION

Air-jet milling using an opposed-jet microniser

AUTOMATION

Semi-automated dispensing system (MOM)

A 9-STEP INDUSTRIAL COLLABORATION MODEL

- 1 Requirements Definition**
Product description, packaging, testing and documentation requirements
- 2 Quality Alignment**
Alignment between Biowest and the customer's quality teams
- 3 Audit and Qualification**
On-site audit and technical assessment
- 4 Commercial Agreement**
Quotation, quantities and commercial terms
- 5 Initial Order**
Agreement on expected delivery terms
- 6 Order Confirmation**
Confirmation of the shipping method and logistics plan
- 7 Delivery**
Delivery in accordance with the agreed plan
- 8 Continuous Improvement**
Review of performance, lessons learned and agreed actions
- 9 Forecasting**
Up to 24 months' visibility to support supply chain security

9 structured steps - from the first requirements to reliable, repeatable delivery

24 months of forecasting visibility for supply chain security

SHARED FORECAST AND QUALITY TRACKING DOCUMENT



A shared planning document providing Biowest and the customer with visibility over orders, quality-control activities and delivery status across a 24-month horizon.

WHAT IT TRACKS

Quality control:

Reservation number, customer order reference, number of bottles, unit volume, batch number and delivery or invoicing quarter

Accepted lots register:

A dedicated record of batches approved by the customer

24-Month Planning:

Product, packaging format and forecast quantities for each serum and cell culture medium reference

Status tracking:

Colour-coded status indicators for delivery, invoicing and customer acceptance

WHY IT MATTERS

A single reference document shared by Biowest and the customer's quality and purchasing teams

Clear visibility over reservations, product references and expected delivery quarters

Supports the forecasting stage of the nine-step collaboration model and provides up to 24 months of supply planning visibility.

Can reduce email exchanges and supports documented traceability and audit preparation.

SAMPLE EXTRACT

Illustrative extract from a shared Biowest-customer forecast document, showing the quality-control, customer-approved lot and 24-month planning sections. A full example is shown on page 13.

FROM BLOOD COLLECTION TO BOTTLING: THE VALUE CHAIN



A traceable and controlled value chain, from sourcing through to distribution.

1

UPSTREAM

Sourcing & Collection

- ◆ Approved slaughterhouse partners only, qualified and audited
- ◆ Compliance with EU regulations 1069/2009 & 142/2011 and WOAH animal welfare guidelines
- ◆ Blood harvested from slaughtered animals, collected into sterile bags and clotted under controlled cold-chain conditions

2

MIDSTREAM

Transport & Centrifugation

- ◆ Controlled transportation of whole blood
- ◆ Centrifugation separates serum from cellular material
- ◆ Raw serum frozen and stored in 3-5 liters bottles

3

DOWNSTREAM

Manufacturing & Distribution

- ◆ Sterile filtration and aseptic bottling
- ◆ Certificate of analysis and quality control at every stage
- ◆ Delivery to OEM partners and distributors worldwide



MSE BlueForce 12L R centrifuge

Processing equipment used at midstream stage – part of Biowest's global serum network (see p2).

FINISHING OPERATIONS & VERTICAL INTEGRATION



Controlled finishing operations support sterility, consistency and product integrity, from raw serum receipt to final bottling.

- 1 Raw serum transport**
Transport to Biowest's finishing facility
- 2 Thawing**
Controlled thawing of raw serum
- 3 Pooling**
Preparation of homogeneous serum pools
- 4 Sterile filtration**
Multi-stage filtration down to 0.1µm
- 5 Final homogeneous pool**
Final homogenisation prior to release
- 6 Bottling**
Aseptic filling into pre-sterilised bottles

VERTICALLY INTEGRATED PROCESS

Biowest maintains documented control across the value chain, from collection through to final bottling:

Animal source → Blood collection and centrifugation →
Raw serum → Pooling → Prefiltration →
Three-stage 0.1 µm filtration → Final FBS product



Biowest finishing plant

Biowest finishing facility
Sterile filtration line within a controlled-environment production area.

HOW DO WE MAKE THE DIFFERENCE?



A vertically integrated model designed to maximise traceability, reproducibility and quality.

EP2262

Full traceability

1,200 L

Batch size

≤ 2,500

Animals / batch

100%

Process control

≤ 1 EU/mL

Endotoxin (majority of FBS batches)

≤ 20 mg/100 mL

Haemoglobin (60-70% score even lower)

SLAUGHTERHOUSE → COLLECTION → FILTRATION → BOTTLING

**«BIG ENOUGH TO DELIVER.
SMALL ENOUGH TO CARE»**

Quality system based on GMP principles

Biowest works according to Good Manufacturing Practice (GMP) principles, ensuring consistency, control and continuous improvement across the entire vertically integrated chain.

biowest
The Serum Specialist

Printed 05/08/26

[illegible]

LET'S WORK TOGETHER

SUPPORTING YOUR VETERINARY VACCINE PRODUCTION



From serum selection and customised cell culture media to packaging, quality documentation and long-term supply planning, our teams are ready to support your project from development through to routine production.

HOW CAN WE SUPPORT YOU?

1

DISCUSS YOUR REQUIREMENTS

Share your product, formulation, packaging and quality-control requirements with our technical and commercial teams.

2

REQUEST TECHNICAL DOCUMENTATION

Request product specifications, certificates, quality documents or supplier-qualification information.

3

PLAN YOUR FUTURE SUPPLY

Build a long-term supply plan with forecast visibility of up to 24 months.

LET'S DISCUSS YOUR NEXT PROJECT



BIOWEST
Rue de la Caille
49340 Nuaillé
FRANCE

+33 2 41 46 42 42
biowest@biowest.net
www.biowest.net

