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Product Brochure



STAINLESS STEEL VACUUM GLOVE BOX

GBV-2 Stainless Steel Vacuum Glove Box

GBV-2

GBV-2 stainless steel vacuum glove box with an 800 × 650 × 650 mm chamber for inert-atmosphere powder handling and air-sensitive material processing.

<https://www.gloveboxs.com/products/stainless-steel-vacuum-glove-box/gbv-2-stainless-steel-vacuum-glove-box.html>

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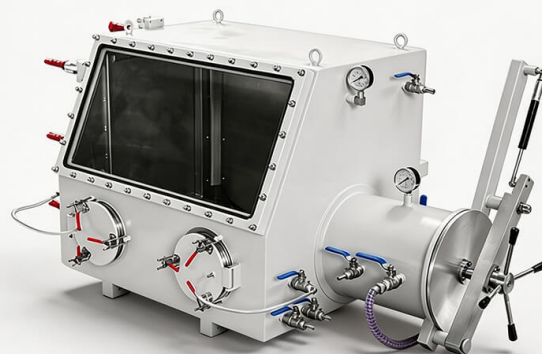
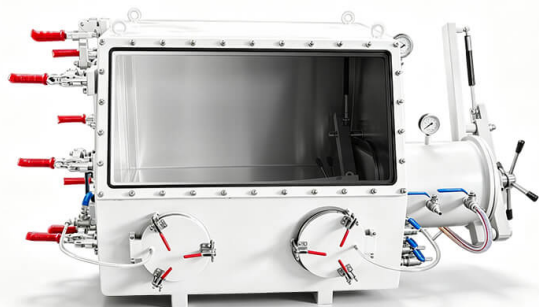


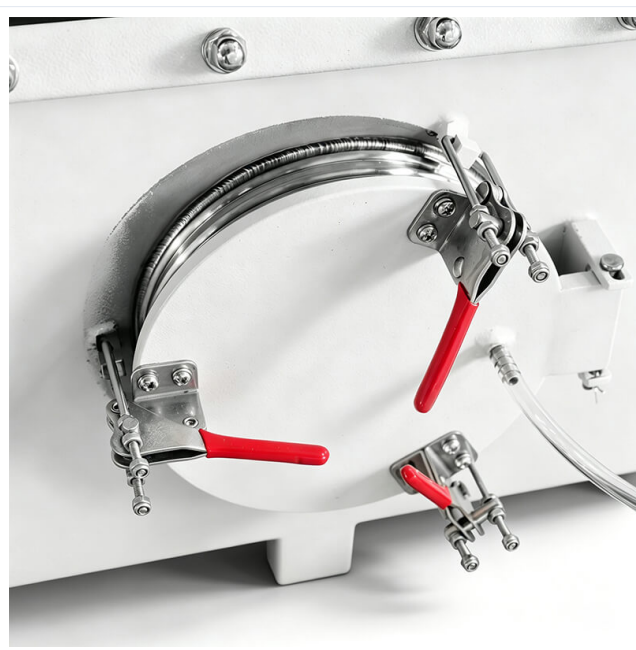
Product Overview

GBV-2 stainless steel vacuum glove box with an 800 × 650 × 650 mm chamber for inert-atmosphere powder handling and air-sensitive material processing.

Technical Parameters

Parameter	GBV-2
Parameter 1	
Parameter 2	





Product Introduction

The **GBV-2 Stainless Steel Vacuum Glove Box** is a controlled-atmosphere workstation designed for laboratory powder handling, sample preparation, and processing of materials that require reduced exposure to ambient air, oxygen, or moisture.

The system uses **vacuum evacuation and inert-gas replacement** to establish a controlled working environment inside the sealed chamber. After evacuation, nitrogen, argon, or another process-compatible inert gas can be introduced according to experimental requirements. This makes the GBV-2 suitable for weighing, mixing, transferring, loading, packaging, and preparing sensitive powders and samples before subsequent laboratory processing.

Compared with the smaller GBV-1 configuration, the GBV-2 provides a larger **800 × 650 × 650 mm main chamber**, offering additional workspace for samples, containers, tools, and

small laboratory accessories. The official configuration also includes a **Ø273 × 350 mm vacuum antechamber** and **Ø150 mm glove ports**.

A large front viewing window provides clear visibility of the working area, while sealed glove ports allow materials to be manipulated without opening the main chamber. An independent vacuum antechamber enables tools and samples to enter or leave the glove box while minimizing disturbance to the atmosphere inside the main working chamber.

The GBV-2 is particularly suitable for **powder metallurgy, advanced materials, ceramics, battery-material research, chemistry, materials science, and university or industrial R&D laboratories** where a practical vacuum/inert-atmosphere workspace is required.

Technical Specifications

Parameter	GBV-2
Product Type	Stainless Steel Vacuum Glove Box
Overall Dimensions	1295 × 715 × 675 mm
Main Chamber Dimensions	800 × 650 × 650 mm
Internal Clear Dimensions	660 × 460 mm (upper) 640 mm (lower) × 640 mm
Vacuum Antechamber	Ø273 × 350 mm
Glove Port Diameter	Ø150 mm
Optional Side Door	360 × 480 mm
Optional Antechamber Drawer	202 × 320 mm
Tool Chamber	Not included
Chamber Working Pressure Range	0–0.1 MPa
Pressure Holding Time	12 hours
Customization	Available

Key Features

01. Stainless Steel Chamber

The main chamber is constructed from stainless steel and reinforced for reliable laboratory operation. The robust structure offers good durability and corrosion resistance, while smooth surfaces simplify routine cleaning after powder or sample handling. The product page identifies stainless steel construction and reinforced treatment as key structural features.

02. Large Working Chamber

The GBV-2 features a main chamber measuring:

800 × 650 × 650 mm

This provides sufficient internal space for powder containers, laboratory tools, sample holders, small instruments, and routine experimental operations. The overall dimensions listed for the GBV-2 are **1295 × 715 × 675 mm**.

03. Wide Viewing Window

A large transparent front window provides a broad field of view, allowing operators to clearly observe samples, tools, and experimental procedures inside the chamber.

The design is particularly useful for operations requiring continuous visual monitoring, such as powder weighing, sample transfer, mixing, container loading, and experimental assembly.

04. Sealed Glove-Port Operation

Front glove ports allow operators to handle samples inside the sealed chamber without opening the main working space.

The GBV-2 uses **Ø150 mm glove ports**, providing convenient access for routine laboratory manipulation while helping maintain isolation between the internal working atmosphere and the surrounding laboratory environment.

05. Independent Vacuum Antechamber

The GBV-2 is equipped with a **Ø273 × 350 mm vacuum antechamber**, also referred to as a transfer chamber or airlock.

Samples, containers, tools, and accessories can be placed into the antechamber first. After the outer door is closed, the chamber can be evacuated and/or refilled with inert gas before the inner door is opened.

This arrangement reduces the need to repeatedly evacuate the entire main chamber and helps minimize atmospheric disturbance during routine material transfer.

06. Vacuum Ball Valves

Vacuum ball valves provide connection points for evacuation, gas introduction, and other compatible process utilities.

According to the operating requirements, users can connect the chamber to an appropriate vacuum source or gas supply system for evacuation and inert-gas replacement. The current product configuration lists two vacuum ball valves.

07. Vacuum and Inert-Gas Atmosphere Control

The glove box can first be evacuated to remove a substantial portion of the air inside the chamber and then filled with an inert gas.

Repeating the evacuation and backfilling process can further reduce atmospheric exposure before sensitive materials are introduced or processed.

This operating principle is especially suitable for laboratory applications requiring **general oxidation and moisture protection without continuous gas purification**.

08. Internal Lighting and Power Supply

The main chamber can incorporate internal lighting and electrical outlets, providing convenient

power access for suitable small laboratory instruments and improving visibility during operation. These features are included in the current product description.

09. Reliable Sealed Structure

The chamber, viewing window, glove ports, transfer chamber, valves, and access components form an enclosed operating system designed to support vacuum evacuation and controlled-atmosphere operation.

The product page specifically highlights the sealing structure as being designed for reliable sealing and convenient opening.

10. Customizable Configuration

The GBV series can be customized according to experimental and process requirements, including modifications to:

Chamber dimensions · Construction materials · Chamber shape · Access openings · Transfer components · Other structural configurations

The manufacturer's product page explicitly lists material, dimensions, shape, and other requirements as customization options.

Working Principle

The **GBV-2 Stainless Steel Vacuum Glove Box** establishes a controlled working atmosphere through **vacuum evacuation and inert-gas backfilling**.

Before an experiment begins, the main chamber is sealed and connected to a suitable vacuum source. Air is evacuated from the chamber, after which an inert gas such as nitrogen or argon can be introduced.

Depending on the required atmospheric conditions, the evacuation and gas-refilling procedure may be repeated. This helps reduce the amount of residual oxygen, moisture, and ambient air within the working chamber.

Once the desired operating environment has been established, samples can be manipulated through the sealed glove ports while the main chamber remains closed.

For routine sample transfer, materials are first placed inside the independent antechamber. The outer door is then closed, and the transfer chamber is evacuated and/or filled with inert gas before the inner door is opened. This design reduces direct air exchange with the main chamber and avoids repeatedly evacuating the entire glove box. The two-door transfer-chamber design is specifically identified on the manufacturer's product page.

Product Features

The GBV-2 can be used for a wide range of controlled-atmosphere laboratory procedures, including:

- Powder weighing and dispensing
- Powder mixing and blending
- Sample preparation
- Material transfer
- Container loading and unloading
- Sample packaging under inert atmosphere
- Crucible loading
- Powder batching
- Specimen assembly
- Temporary storage of sensitive samples
- Preparation before ball milling
- Preparation before pressing or forming
- Preparation before sintering
- Sample preparation before characterization
- Handling materials requiring reduced exposure to ambient air

Industry Applications

1. Powder Metallurgy

The GBV-2 is well suited to laboratory-scale **powder metallurgy and metal-powder research**, where oxidation or moisture exposure may affect powders during weighing, blending, transfer, or sample preparation.

Typical operations include:

Metal powder weighing · Alloy powder batching · Powder blending · Sample transfer · Crucible loading · Container filling · Preparation before milling · Preparation before pressing and sintering

The larger GBV-2 working chamber provides additional space for powder containers, laboratory accessories, and sample-handling equipment.

2. Advanced Materials Research

Advanced material development frequently involves powders, precursors, or intermediate samples that require controlled handling conditions.

The GBV-2 provides an enclosed working environment for laboratory preparation of materials such as:

Metal powders · Alloy powders · Composite materials · Functional powders · Ceramic materials · Nanomaterials · Research-grade material formulations

Vacuum evacuation followed by inert-gas replacement helps reduce unnecessary exposure of these materials to the surrounding laboratory atmosphere.

3. Battery Material Research

The GBV-2 can support selected laboratory operations involving battery materials where reduced atmospheric exposure is desirable.

Typical applications include:

Electrode powder handling · Powder weighing · Material batching · Sample transfer · Container loading · Sample packaging · Preliminary battery-material preparation

For battery research requiring **continuously maintained ultra-low H₂O and O₂ concentrations**, particularly demanding lithium-metal, solid-state electrolyte, or long-duration cell-assembly processes, a glove box equipped with a dedicated gas purification system is generally the more appropriate product category.

This distinction is important because your current website separately lists purification glove boxes capable of sub-ppm water and oxygen control, whereas the GBV series is positioned as a vacuum glove box for more general atmosphere-control requirements.

4. Ceramic and Functional Powder Materials

Ceramic powders and functional materials may adsorb moisture or undergo undesirable surface changes during prolonged exposure to laboratory air.

The GBV-2 can provide a controlled workspace for:

Powder weighing · Formulation · Blending · Sample loading · Crucible preparation · Material transfer · Pre-treatment before milling, forming, or heat treatment

It is suitable for R&D laboratories working with ceramic powders, functional ceramics, composite materials, and specialty powder formulations.

5. Chemical and Air-Sensitive Materials

For suitable materials that need to be isolated from ambient oxygen or moisture during laboratory handling, the GBV-2 provides an enclosed workspace for operations such as:

Reagent preparation · Sample weighing · Mixing · Material transfer · Container loading · Temporary storage · Experimental assembly

Material compatibility and process safety should be evaluated before handling hazardous, volatile, flammable, corrosive, or toxic substances inside any glove box system.

6. Ball Milling and Powder Preparation

The GBV-2 can be integrated into laboratory powder-processing workflows before or after ball milling.

For oxidation-sensitive powders, operators can use the glove box to:

Load grinding jars · Prepare powder batches · Transfer milled materials · Seal containers · Prepare samples before vacuum or inert-atmosphere milling

This makes the glove box particularly relevant to laboratories conducting powder preparation alongside planetary ball mills, vacuum grinding jars, or other sealed powder-processing equipment.

7. Universities and Research Institutes

The GBV-2 is suitable for controlled-atmosphere experimental work in:

Materials Science · Powder Metallurgy · Chemistry · Ceramics · Energy Materials · Nanomaterials · Metallurgy · Laboratory Powder Processing

Its straightforward vacuum-and-gas replacement principle makes it suitable for research groups that require atmospheric isolation but do not necessarily require a continuously regenerated gas purification system.

Typical Materials

Metal and Alloy Powders

Metal powders, alloy powders, powder metallurgy samples, and other oxidation-sensitive research materials.

Ceramic Materials

Ceramic powders, functional ceramic materials, precursors, and composite powders.

Battery Materials

Selected electrode powders, conductive materials, and energy-storage research samples requiring reduced exposure to ambient air.

Advanced Materials

Nanomaterials, functional powders, composite materials, specialty powders, and experimental formulations.

Chemical Materials

Compatible moisture-sensitive or oxidation-sensitive chemicals and experimental intermediates, subject to process and safety evaluation.

Why Choose the GBV-2?

Larger Working Space

With an **800 × 650 × 650 mm main chamber**, the GBV-2 provides significantly more internal workspace than the GBV-1 while remaining suitable for laboratory and R&D environments.

Controlled Atmosphere for Sensitive Materials

Vacuum evacuation combined with inert-gas replacement provides a practical method for reducing contact between sensitive powders or samples and ambient air.

Efficient Sample Transfer

The independent **Ø273 × 350 mm vacuum antechamber** allows materials and tools to enter or leave the glove box without routinely opening and reconditioning the main chamber.

Designed for Powder Processing Workflows

The chamber is particularly useful for laboratory operations involving powder weighing, mixing, loading, transfer, packaging, and preparation before grinding, pressing, sintering, or characterization.

Flexible Configuration

Optional access doors and antechamber drawers are available, while chamber dimensions, materials, shapes, and other structural configurations can be customized according to application requirements.

Accessories & Customization

Accessories

Grinding jars, heating elements, sample holders, control modules and other matching accessories can be selected according to the product configuration.

Customization

For voltage, capacity, chamber size, process temperature or application requirements, please contact TENCAN for a suitable configuration.