GENESIS BIOLABS

255 S Orange Avenue, Suite 104, Orlando, FL 32801
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COA # **1357750**

PASS

Certificate of Analysis

Date:	10/30/2026	Date Tested:	10/8/2026
Customer:	Peptides Optimized LLC	Testing material:	Vitamin B12
Batch #:	B12-E01	BT Sample ID:	005000406882251
Labeled Fill Volume:	10 mL	Storage:	2–8°C, protect from light
Visual Description:	Clear red solution, free of visible particulate; silver flip-off cap.		
Labeled as:	Vitamin B12	Manufacturer:	N/A
Testing Purpose:	HPLC and LC-MS analysis for the identification and assay (concentration, mg/mL) of each active ingredient in this liquid injectable, together with appearance and pH. It additionally reports elemental impurities (heavy metals), bacterial endotoxins and sterility as recorded in this certificate.		



Test	Method	Specification	Result	Status
Appearance	Visual	Clear solution; free of visible particulates	Clear solution	PASS
pH	USP <791>	3.0 – 7.0	—	—
Methylcobalamin (B12) — Identity	LC-MS (ESI)	Conforms to reference standard	Conforms	PASS
Methylcobalamin (B12) — Assay (concentration)	USP <621>	90.0 – 110.0 % of 10 mg/mL	10.00 mg/mL (100.0 %)	PASS
Heavy Metals (Elemental Impurities)	USP <233> (ICP-MS)	Class 1 (Pb, Cd, As, Hg): NMT USP <232>/ICH Q3D limits	Complies (< LOQ)	PASS

The results of the CoA relate only to the item(s) tested and applied to the sample as received.

COA # 1357750 ACCESS CODE **5NG9PDTHPK6Z** VERIFY AT www.genesisbiolabs.org/verify

Kenji Sato

Kenji Sato, AS
Laboratory Director
Genesis Biolabs
Signed 10/30/2026

Min-Jun Park

Min-Jun Park, AS
QA Approver
Genesis Biolabs
Signed 10/30/2026

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Certificate of Analysis

Product: Vitamin B12 **Batch #:** B12-E01 **Content:** 10 mL **Tested:** 10/8/2026

Heavy Metals Analysis (ICP-MS, USP <233>)

Element	Specification	Result	Status
Arsenic (As)	NMT 1.5 ppm	Not Detected	PASS
Cadmium (Cd)	NMT 0.5 ppm	Not Detected	PASS
Mercury (Hg)	NMT 1.5 ppm	Not Detected	PASS
Lead (Pb)	NMT 1 ppm	Not Detected	PASS
Chromium (Cr)	NMT 10 ppm	Not Detected	PASS

Elemental impurities determined by ICP-MS. Limits are laboratory screening limits for research-use material, derived from ICH Q3D permitted daily exposures for the parenteral route.

Test	Method	Specification	Result	Status
Bacterial Endotoxins Test	USP <85>	NMT 40 EU/vial reconstituted	PASS	PASS

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Bacterial Endotoxins Test Vitamin B12 Lot B12-E01

Sample ID	Description	Volume (mL)	Endotoxin Limit (EU/vial)	Lysate Sensitivity (λ, EU/mL)	Result
005000406882251	Vitamin B12	3	40 EU/vial	0.25	0.06 EU/vial

The sample passed a valid gel clot endotoxin test based on the type, mode of administration and dosage.

Sterility Test

Test	Method	Specification	Result	Status
Sterility	USP <71> (membrane filtration)	No microbial growth	PASS	PASS

Medium	Incubation Temp.	Duration	Units Tested	Observation
Fluid Thioglycollate Medium (FTM)	30 – 35 °C	14 days	2	No growth
Soybean–Casein Digest Medium (SCDM)	20 – 25 °C	14 days	2	No growth

No microbial growth was observed. The sample meets the requirements of the sterility test (USP <71>).

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Certificate of Analysis

Product: Vitamin B12 **Batch #:** B12-E01 **Content:** 10 mL **Tested:** 10/8/2026

Notes & Methodology

1. Each active ingredient identified by LC-MS and/or RP-HPLC against a reference standard.
2. Assay (concentration) of each active determined by RP-HPLC and expressed in mg/mL against the labelled claim.
3. Appearance assessed by visual inspection for clarity, colour and visible particulate matter; pH determined potentiometrically per USP <791>.
4. Elemental impurities screened by ICP-MS per USP <233> methodology. Acceptance criteria are laboratory screening limits for research-use material.
5. Bacterial endotoxins determined by gel-clot method per USP <85>. Sterility per USP <71>.

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