

Test Certificate - Amended

Description: D-Glucosamine Hydrochloride (40 Mesh)

Sample ID: GE170105

Lot No:

Part Code:

Location:

PO No:

Received: 10/26/2017

Client: Mid-West Nutrition

925 W 6th St

Fremont, NE 68025

Lab No: 143529-01A

Completed: 11/3/2017

Analysis	Result	Per Unit	Method
†Glucosamine HCl	99.14	%	HPLC

Glucosamine HCl analysis performed using HPLC by method adapted from Liang ZM, Leslie J, Adebowale A, Ashraf M, Eddington ND, "Determination of the nutraceutical, glucosamine hydrochloride, in raw materials, dosage forms and plasma using pre-column derivatization with ultraviolet HPLC" as published in Journal Of Pharmaceutical And Biomedical Analysis 20 (5): 807-814 Sep 1999; utilizing pre-column derivatization with phenylisothiocyanate followed by isocratic elution on a Waters Symmetry C18 3mm (250 x 4.6 mm) column with mobile phase consisting of MeOH/H₂O/CH₃COOH (10:89.6:0.04). Detection performed by scanning PDA (200-400nm) with signal extraction at 254nm for quantification.

Result was reported on a dry basis.

THESE RESULTS APPLY ONLY TO THE SAMPLE SUBMITTED AND NOT TO THE PRODUCT FROM WHICH IT WAS TAKEN. THESE RESULTS ARE PROVIDED ONLY FOR THE BENEFIT OF CLIENT, WITHOUT REPRESENTATION OR WARRANTY OF ANY KIND, EXCEPT FOR THE EXPRESS LIMITED WARRANTY PROVIDED SOLELY TO CLIENT IN ADVANCED LABORATORIES' TERMS OF SERVICE.

THIS CERTIFICATE SHALL NOT BE REPRODUCED EXCEPT IN FULL, WITHOUT WRITTEN APPROVAL FROM ADVANCED LABORATORIES.

Results Approved By:



Shane Shupe-Technical Manager

Dated: 11/3/2017

Tests marked with † were done at Atlas Bioscience Labs, LLC, a joint venture with Advanced Laboratories. - 1775 S. Pantano Rd - Ste #110, Tucson, AZ 85710

Printed: 11/3/2017 1:42:40 PM

Lab No. 143529-01A
replaces 143529-01



Address: 925 W 6th St., Fremont, NE 68025 Tel: 402-721-7347 Fax: 415-329-1920

Certificate of Analysis

Product Name: D-Glucosamine Hydrochloride (40 mesh)

Batch No.: GE170105

Country of Origin: P. R. China

Manufacture Date: Jan. 05, 2017

Expired Date: Jan. 04, 2020

Non-Irradiated/Non-ETO/Treat by Heat Only

CAS No.: 3416-24-8

Analysis Item	Specification	Result	Method
Assay	98.0% – 102.0%	99.56%	HPLC
Appearance	White crystalline powder	Complies	Visual
Specific Rotation [α] _D ²⁰	+70.0° – +73.0°	+72.14°	USP39-NF34<781S>
Identification	Positive	Complies	USP39-NF34<197K>
pH	3.0 – 5.0	4.13	USP39-NF34<791>
Powder Size	100% through 40 mesh	Complies	USP #40 Sieve
Bulk Density	≥ 0.70 g/mL	0.74 g/mL	USP39-NF34<616>
Loss on Drying	≤ 0.5%	0.05%	USP39-NF34<731>
Residue on Ignition	≤ 0.1%	0.06%	USP39-NF34<281>
Sulfate (SO ₄)	≤ 0.24%	Complies	USP39-NF34<221>
Chloride (Cl)	16.2% - 16.7%	16.47%	USP39-NF34<221>
Total Heavy Metals	≤ 10 µg/g	Complies	USP39-NF34<231>
Arsenic (As)	≤ 3.0 µg/g	Complies	ICP-MS
Cadmium (Cd)	≤ 1.0 µg/g	Complies	ICP-MS
Lead (Pb)	≤ 1.0 µg/g	Complies	ICP-MS
Mercury (Hg)	≤ 0.1 µg/g	Complies	ICP-MS
Total Plate Count	≤ 1,000 cfu/g	Complies	USP39-NF34<2021>
Molds and Yeasts	≤ 100 cfu/g	Complies	USP39-NF34<2021>
<i>Salmonella</i>	Absence	Complies	USP39-NF34<2022>
<i>E. Coli</i>	Absence	Complies	USP39-NF34<2022>
<i>Staphylococcus aureus</i>	Absence	Complies	USP39-NF34<2022>

Packing: 25 kg/drum, packing in paper-drums and two sealed plastic-bags inside.

Storage: Store in a well-closed container away from moisture, direct light and heat.

Expired date: Re-test after three years from the manufacturing date.

Conclusion: Conform to Specification.

Quality Assurance officer: 李利军

Analyst: 鞠向慧