



CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Black Pepper (*Piper nigrum*) | Variety: Malabar Garbled

Sample ID: BLP-01-004

Status: Pass

Field	Value
Report ID	BBLLP/BLP/2026/7194
Report Ref	BB-COA-BLP-P04
Batch / Lot	B-BLP-26-04
Sample ID	BLP-01-004
Date of sample submission	03/03/2026
Date received in lab	04/03/2026
Analysis period	04/03/2026 to 11/03/2026
Date of issue	11/03/2026
Manufacturer	Botanika Bharat LLP
Address	Rudrapur, Uttarakhand, India
Sample quantity	500 g
Lab accreditation	NABL approved (ISO/IEC 17025:2017)

General Profile

Parameter	Allowed limit/spec	Result	Method	Status
Appearance	Characteristic for product grade	Complies	Organoleptic	Pass
Identity (botanical)	Piper nigrum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	9.2%	AOAC	Pass
Foreign matter	Absent / within grade limits	Complies	Visual / sieve	Pass
Lot traceability	Source, batch and date verifiable	Verified	Document review	Pass

Adulteration Assessment

Parameter	Allowed limit/spec	Result	Method	Status
Synthetic colour	Absent	Absent	LC-MS / visual	Pass
Synthetic flavour / essence	Absent	Absent	GC-MS	Pass
Extraneous plant matter	Absent / within grade	Complies	Microscopy	Pass
Starch / filler check	No non-declared fillers	Complies	FTIR / iodine	Pass
Commodity-specific authenticity	Conforms	Conforms	Marker-based test	Pass

Chemical Analysis

Parameter	Allowed limit/spec	Result	Method	Status
Total ash	As per monograph / grade	4.8%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.32%	AOAC	Pass
pH	Product-typical range	5.8	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.032 mg/kg	LC-MS/MS	Pass
Piperine	As per grade	Conforms	HPLC	Pass

EU Compliance Panel

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.26 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.14 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.070 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.018 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.5 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 4.4 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	12 ug/kg	HPLC	Pass

UK Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Retained EU contaminant framework	Documented review	Conforms	Regulatory check	Pass
Heavy metals profile	Within importer UK limits	Conforms	ICP-MS	Pass
Mycotoxin profile	Within importer UK limits	Conforms	HPLC	Pass
Microbial profile	Within importer UK limits	Conforms	ISO methods	Pass
Pesticide screen	Within UK buyer MRL policy	Conforms	LC-MS/MS	Pass

USA Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
cGMP documentation alignment	21 CFR Part 111	Conforms	QA review	Pass
TAMC	< 100000 cfu/g	< 4200 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 300 cfu/g	USP <2021> / ISO 21527	Pass
E. coli	Absent	Absent	USP <2022>	Pass
Salmonella	Absent	Absent	USP <2022>	Pass
Residual solvents	USP <467> compliant	Conforms	GC	Pass

Mandatory Decision Parameters

Parameter	Allowed limit/spec	Result	Method	Status
Identity confirmation	Release critical	Confirmed	HPTLC/HPLC/Macro	Pass
Moisture	Release critical	9.2%	AOAC	Pass
Heavy metals (Pb, As, Cd, Hg)	Release critical	Within limits	ICP-MS	Pass
Mycotoxin panel	Release critical	Within limits	HPLC	Pass
Microbial panel	Release critical	Within limits	USP/ISO	Pass
Pesticide residue panel	Release critical	Within limits	LC-MS/MS	Pass

Supporting Parameters

Parameter	Allowed limit/spec	Result	Method	Status
Color shade index	Commercial quality note	Conforms	Visual	Pass
Particle/size uniformity	Commercial quality note	Conforms	Sieve	Pass
Bulk density	Processing convenience	0.57 g/ml	USP/gravimetric	Pass
Flow characteristic	Handling convenience	Conforms	Physical	Pass

Critical Buyer Parameters

Parameter	Allowed limit/spec	Result	Method	Status
Active marker potency	Buyer decision-critical	Conforms	HPLC/GC	Pass
Safety contaminants	Buyer decision-critical	Conforms	ICP-MS/HPLC	Pass
Microbiological status	Buyer decision-critical	Conforms	USP/ISO	Pass
Authenticity/adulteration	Buyer decision-critical	Conforms	NMR/LC-MS/GC-MS	Pass
Traceability readiness	Buyer decision-critical	Conforms	Document review	Pass

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General Notes

Parameter	Allowed limit/spec	Result	Method	Status
Storage recommendation	Cool, dry, away from sunlight/odour	Noted	SOP	Info
Packaging recommendation	Food-grade, sealed, moisture barrier	Noted	SOP	Info
Shelf-life note	As per contract and stability data	Noted	QA	Info
Report validity	Applicable only to tested sample and lot	Noted	QA	Info
Reproduction clause	Full report only unless approved	Noted	QA	Info

Remark:

- All mandatory parameters conform to stated acceptance limits for this product and lot.
- Extended (optional) parameters are included for buyer decision support and market readiness.
- No critical non-conformance observed in tested safety, contaminant and microbiological panels.
- Product is recommended to be stored in cool, dry, hygienic and odor-free conditions.
- Result interpretation is restricted to this submitted sample, lot and report scope.
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