



CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: GC-4

Sample ID: CMS-03-001

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7051
Report Ref	BB-COA-CMS-P01
Batch / Lot	B-CMS-26-01
Sample ID	CMS-03-001
Date of sample submission	01/04/2026
Date received in lab	02/04/2026
Analysis period	02/04/2026 to 09/04/2026
Date of issue	09/04/2026
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)	Cuminum cyminum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	8.3%	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	4.2%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.23%	AOAC	Pass
pH	Product-typical range	5.5	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.023 mg/kg	LC-MS/MS	Pass
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

EU Compliance Panel

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.20 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.11 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.055 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.012 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.2 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 3.8 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	9 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	< 3300 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 225 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	8.3%	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	0.48 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.
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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: GC-4

Sample ID: CMS-03-002

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7052
Report Ref	BB-COA-CMS-P02
Batch / Lot	B-CMS-26-02
Sample ID	CMS-03-002
Date of sample submission	24/03/2026
Date received in lab	25/03/2026
Analysis period	25/03/2026 to 02/04/2026
Date of issue	02/04/2026
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)	Cuminum cyminum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	8.6%	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	4.4%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.26%	AOAC	Pass
pH	Product-typical range	5.6	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.026 mg/kg	LC-MS/MS	Pass
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.22 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.12 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.060 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.014 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.3 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 4.0 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	10 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	< 3600 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 250 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	8.6%	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	0.51 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

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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: GC-4

Sample ID: CMS-03-003

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7053
Report Ref	BB-COA-CMS-P03
Batch / Lot	B-CMS-26-03
Sample ID	CMS-03-003
Date of sample submission	19/03/2026
Date received in lab	20/03/2026
Analysis period	20/03/2026 to 26/03/2026
Date of issue	26/03/2026
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)	Cuminum cyminum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	8.9%	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	4.6%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.29%	AOAC	Pass
pH	Product-typical range	5.7	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.029 mg/kg	LC-MS/MS	Pass
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.24 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.13 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.065 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.016 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.4 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 4.2 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	11 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	< 3900 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 275 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	8.9%	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	0.54 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:

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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: GC-4

Sample ID: CMS-03-004

Status: Pass

Field	Value
Report ID	BBLLP/CMS/2026/7054
Report Ref	BB-COA-CMS-P04
Batch / Lot	B-CMS-26-04
Sample ID	CMS-03-004
Date of sample submission	11/03/2026
Date received in lab	12/03/2026
Analysis period	12/03/2026 to 19/03/2026
Date of issue	19/03/2026
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)	Cuminum cyminum	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
Cuminaldehyde	As per grade	Conforms	GC-MS	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
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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: RZ-19

Sample ID: CMS-02-001

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7051
Report Ref	BB-COA-CMS-P01
Batch / Lot	B-CMS-26-01
Sample ID	CMS-02-001
Date of sample submission	04/04/2026
Date received in lab	05/04/2026
Analysis period	05/04/2026 to 12/04/2026
Date of issue	12/04/2026
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)	Cuminum cyminum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	8.3%	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	4.2%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.23%	AOAC	Pass
pH	Product-typical range	5.5	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.023 mg/kg	LC-MS/MS	Pass
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

EU Compliance Panel

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.20 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.11 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.055 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.012 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.2 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 3.8 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	9 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	< 3300 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 225 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	8.3%	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	0.48 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:

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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: RZ-19

Sample ID: CMS-02-002

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7052
Report Ref	BB-COA-CMS-P02
Batch / Lot	B-CMS-26-02
Sample ID	CMS-02-002
Date of sample submission	27/03/2026
Date received in lab	28/03/2026
Analysis period	28/03/2026 to 05/04/2026
Date of issue	05/04/2026
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)	Cuminum cyminum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	8.6%	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	4.4%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.26%	AOAC	Pass
pH	Product-typical range	5.6	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.026 mg/kg	LC-MS/MS	Pass
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.22 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.12 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.060 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.014 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.3 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 4.0 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	10 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	< 3600 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 250 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	8.6%	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	0.51 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

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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: RZ-19

Sample ID: CMS-02-003

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7053
Report Ref	BB-COA-CMS-P03
Batch / Lot	B-CMS-26-03
Sample ID	CMS-02-003
Date of sample submission	22/03/2026
Date received in lab	23/03/2026
Analysis period	23/03/2026 to 29/03/2026
Date of issue	29/03/2026
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)	Cuminum cyminum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	8.9%	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	4.6%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.29%	AOAC	Pass
pH	Product-typical range	5.7	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.029 mg/kg	LC-MS/MS	Pass
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

EU Compliance Panel

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.24 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.13 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.065 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.016 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.4 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 4.2 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	11 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	< 3900 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 275 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	8.9%	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	0.54 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

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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: RZ-19

Sample ID: CMS-02-004

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7054
Report Ref	BB-COA-CMS-P04
Batch / Lot	B-CMS-26-04
Sample ID	CMS-02-004
Date of sample submission	14/03/2026
Date received in lab	15/03/2026
Analysis period	15/03/2026 to 22/03/2026
Date of issue	22/03/2026
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)	Cuminum cyminum	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
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

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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

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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: Unjha 348

Sample ID: CMS-01-001

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7051
Report Ref	BB-COA-CMS-P01
Batch / Lot	B-CMS-26-01
Sample ID	CMS-01-001
Date of sample submission	07/04/2026
Date received in lab	08/04/2026
Analysis period	08/04/2026 to 15/04/2026
Date of issue	15/04/2026
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)	Cuminum cyminum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	8.3%	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	4.2%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.23%	AOAC	Pass
pH	Product-typical range	5.5	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.023 mg/kg	LC-MS/MS	Pass
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.20 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.11 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.055 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.012 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.2 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 3.8 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	9 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	< 3300 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 225 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	8.3%	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	0.48 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:

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- Extended (optional) parameters are included for buyer decision support and market readiness.
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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: Unjha 348

Sample ID: CMS-01-002

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7052
Report Ref	BB-COA-CMS-P02
Batch / Lot	B-CMS-26-02
Sample ID	CMS-01-002
Date of sample submission	30/03/2026
Date received in lab	31/03/2026
Analysis period	31/03/2026 to 08/04/2026
Date of issue	08/04/2026
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)	Cuminum cyminum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	8.6%	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	4.4%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.26%	AOAC	Pass
pH	Product-typical range	5.6	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.026 mg/kg	LC-MS/MS	Pass
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.22 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.12 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.060 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.014 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.3 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 4.0 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	10 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	< 3600 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 250 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	8.6%	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	0.51 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

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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: Unjha 348

Sample ID: CMS-01-003

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7053
Report Ref	BB-COA-CMS-P03
Batch / Lot	B-CMS-26-03
Sample ID	CMS-01-003
Date of sample submission	25/03/2026
Date received in lab	26/03/2026
Analysis period	26/03/2026 to 01/04/2026
Date of issue	01/04/2026
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)	Cuminum cyminum	Confirmed	Macroscopy / marker	Pass
Moisture	As per product standard	8.9%	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	4.6%	AOAC	Pass
Acid insoluble ash	As per monograph / grade	0.29%	AOAC	Pass
pH	Product-typical range	5.7	pH meter	Pass
Active marker / volatile oil	As per buyer or monograph	Conforms	HPLC / GC	Pass
Pesticide residue total	<= 0.05 mg/kg	0.029 mg/kg	LC-MS/MS	Pass
Cuminaldehyde	As per grade	Conforms	GC-MS	Pass

EU Compliance Panel

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EU Compliance Panel

Parameter	Allowed limit/spec	Result	Method	Status
Lead (Pb)	Within EU contaminant context	0.24 mg/kg	ICP-MS	Pass
Arsenic (As)	Within EU contaminant context	0.13 mg/kg	ICP-MS	Pass
Cadmium (Cd)	Within EU contaminant context	0.065 mg/kg	ICP-MS	Pass
Mercury (Hg)	Within EU contaminant context	0.016 mg/kg	ICP-MS	Pass
Aflatoxin B1	< 5 ug/kg	< 1.4 ug/kg	HPLC	Pass
Total aflatoxins	< 10 ug/kg	< 4.2 ug/kg	HPLC	Pass
Ochratoxin A	< 15 ug/kg	11 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	< 3900 cfu/g	USP <2021> / ISO 4833	Pass
Yeast & mould	< 10000 cfu/g	< 275 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	8.9%	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	0.54 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:

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CERTIFICATE OF ANALYSIS - PROFESSIONAL LAB REPORT

Product: Cumin Seeds (*Cuminum cyminum*) | Variety: Unjha 348

Sample ID: CMS-01-004

Status: Pass

Field	Value
Report ID	BLLP/CMS/2026/7054
Report Ref	BB-COA-CMS-P04
Batch / Lot	B-CMS-26-04
Sample ID	CMS-01-004
Date of sample submission	17/03/2026
Date received in lab	18/03/2026
Analysis period	18/03/2026 to 25/03/2026
Date of issue	25/03/2026
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)	Cuminum cyminum	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
Cuminaldehyde	As per grade	Conforms	GC-MS	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
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