



SGS North America Inc.
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Monday, July 27, 2026

Diana Viezca
SGS
20535 Belshaw Ave
Carson, CA 90746
TEL: (310) 604-2034
FAX:

RE: Microplastics in Coffee Beans

Work Order #: 2607235

Dear Diana Viezca:

There were no problems with the analytical events associated with this report unless noted in the Case Narrative.

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Quality control data is within laboratory defined or method specified acceptance limits except if noted.

If you have any questions regarding these tests results, please feel free to call.

Sincerely,

A handwritten signature in black ink, appearing to read "Lloyd Kaufman". The signature is fluid and cursive, with a long horizontal stroke at the end.

Lloyd Kaufman
Research Scientist

SGS North America Inc. - Case Narrative

WO#: 2607235

Date Reported: 7/27/2026

Revision v2

Client: SGS

Project: Microplastics in Coffee Beans

The contained report is consolidated presentation of parameters tested between three SGS laboratories and may contain pagination artifacts from each individual laboratory reporting of data. This report is issued as consolidated with the SGS-Livonia facility.

**SGS North America**

20535 South Belshaw Avenue
Carson, CA 90746
(310) 604-2033

Trevara LLC

PO Box 90069
San Diego, CA 92169
Attn: Maxwell Irvine

Certificate of Analysis**Report Number:** CASG260715-012 **Samples Received:** 7/15/2026 12:30:00 PM

Version: 1

Receipt Temp (°C): 21.6**Finalized:** 7/27/2026 10:57:00 AM**Sample Date:** 07/15/2026**PO #:**

Issued Date: 08/13/2026 3:11 PM

Group Detail:**Comments:** Outsourced for Microplastics and Micotoxins.**SGS Sample ID:** 262519T01071501403**Sample Date:** 07/07/2026**Client Sample ID(s):** Peru Organic - Single OriginRoasted on 7/8 by BR - Profile
RRPD1429

Lot - CMAU0452113130

Roasted Whole Bean Coffee

ID	Analysis (Method)	Result	Unit	Procedure	Lab
1	Arsenic (ICPMS)	<0.025	ppm	T063	7
	Cadmium (ICPMS)	<0.025	ppm	T063	7
	Lead (ICPMS)	<0.025	ppm	T063	7
	Mercury (ICPMS)	<0.025	ppm	T063	7
	Microplastics	See Report 2607235			4
	Mold (Modified BAM 7th Ed.)	<10	cfu/g	MOP 217	4
	Aflatoxin B1 (LC/MS/MS)	<1	ppb		4
	Aflatoxin B2 (LC/MS/MS)	<1	ppb		4
	Aflatoxin G1 (LC/MS/MS)	<1	ppb		4
	Aflatoxin G2 (LC/MS/MS)	<1	ppb		4
	Aflatoxin Summation (LC/MS/MS)	<1	ppb		4
	DON - Vomitoxin (LC/MS/MS)	<0.1	ppm		4
	Fumonisin B1 (LC/MS/MS)	<0.1	ppm		4
	Fumonisin B2 (LC/MS/MS)	<0.1	ppm		4
	Ochratoxin (LC/MS/MS)	<1	ppb		4
	T2 Toxin (LC/MS/MS)	<20	ppb		4
	Zearalenone (LC/MS/MS)	<20	ppb		4

1:SGS North America, North Sioux City, SD

2:SGS North America, Oklahoma City, OK

3:SGS North America, R&D, North Sioux City, SD

4:SGS North America, Carson, CA

5:SGS North America, Fairfield, NJ

7:SGS North America, Harrisburg, PA

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08/13/2026 3:11 PM

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Group Detail:**Comments:** Outsourced for Microplastics and Micotoxins.**Certified By:**

Xi Chen, Ph.D.

Director of Operations

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End of Certificate of Analysis

* Report value is an estimated count

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08/13/2026 12:11 PM



- Report of Analytical Services -

Submitter:

SGS
20535 Belshaw Ave
Carson, CA 90746

Report Date: 7/27/2026**Phone:** (310) 604-2034**FAX:****Attn:** Diana Viezca**P.O. Number:** 5879718**RTI Lab#:** 2607235**Client Sample ID:** Coffee Beans-7/16/26**Ht #:****Sample Type:** Microplastics in Coffee Beans**Sample Receipt Date:** 7/16/2026

One sample of coffee beans was received for analysis. The target of the analysis was to determine the number of microplastic particles (MIP) in the sample using density separation (Zinc chloride – 1.5 g/ml) followed by FTIR identification and polymer database matching. The pertinent results extracted from the spreadsheet data is provided in summary of this report. Detailed analysis for presumptive microplastic particles/fibers, if any are included following the summary. Finally, the acquired data obtained from automated image analysis for particle counting is provided as addendum.

Approved By Edison Reis
General Manager

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Scope of Work and samples:

Approximately 50 g of sample material was received for the quantification and identification of microplastic particles. The sample was wet-sieved, chemically digested, and subjected to density separation. The resulting debris field was isolated on a 20- μ m polycarbonate filter. The filter residue was gravimetrically measured, and particle size distribution was determined using automated optical microscopy. Particles large enough for spectroscopic characterization were subsequently analyzed using micro-FTIR (Fourier Transform Infrared Spectroscopy) with micro-ATR sampling.

Sample Preparation and Filtration:

The sample was wetted with 75 ml saturated calcium chloride solution and filtered through a sieve stack consisting of 2.5 mm, 850 μ m, and 45 μ m stainless-steel meshes. Coffee beans were individually rinsed with deionized water over the sieve stack to recover any surface microplastic debris. Debris retained on the 2.5 mm and 850 μ m sieves was examined microscopically and manually transferred to the 45 μ m sieve.

Material retained on the 45 μ m sieve was rinsed into a glass beaker with deionized water and digested using 30% hydrogen peroxide. The digestate underwent density separation using ZnCl_2 (solution density: 1.5 g/mL) and was transferred to a separatory funnel for settling. The supernatant was filtered through a 20- μ m polycarbonate membrane (MNPS). The filter was dried, and the collected debris was gravimetrically quantified.

Microscopic analysis:

The dried filter was mounted on a microscope slide for particle counting and sizing using a Zeiss Axiozoom V16 microscope with Axiovision software. Sizing followed ISO-16232 classifications for particles >50 μ m (feret maximum). Debris was categorized as either particles or fibers.

Micro-FTIR analysis:

The dried filter was manually scanned using a Bruker Lumos micro-FTIR system with imaging capability. Each particle large enough for ATR analysis was individually imaged and analyzed using a micro-ATR. Raw spectra and best-match identifications were generated using the University of Hawaii Polymer Kit 1.0 spectral library. Composition data were compiled and expressed as a frequency distribution of identified microplastic types. Particles that did not produce a spectral match of > 80% were classified as low spectral match and were qualified as such in the composition distribution table. For ATR analysis, only particles exhibiting sizing greater than approximately 100 microns are capable of composition analysis. Based on this criteria the statistical sampling value (N) for the analyzed sample was 20 and the procedural blank was 12.

Comments:

Residual cellulose originating from the coffee bean matrix, within the size range relevant to this study, is resistant to hydrogen peroxide digestion and has low density. Consequently, it persisted through the digestion, flotation, and filtration steps.

The procedural blank did exhibit two particles in the debris field confirmed identified as polypropylene and represents a laboratory introduced artifact in the analysis, whereas the analyzed sample only contained 1 particle positively identified as polypropylene. Based on the increased frequency distribution in the blank and the same plastic type identified, the conclusion is that all identified plastic in the sample is due to procedural artifacts and therefore zero microplastics contributed by the sample. Without subtracting procedural blank data, the arrived at value for the sample field is 259 (and 43 for the procedural blank due to the decreased number of total particles measured).



Resulting Data Summary:

Particle Size Data (Optical Microscopy):

	Sample 2607235-001A
Parameter	Counts per 8 ounce cup of coffee ¹
Confirmed Microplastic particles > 50 microns	0

¹ Data presented was obtained from composition distribution normalization (statistical sampling) of the entire counted presumptive debris field. The normalization data is based on using 15 grams of coffee beans per 8 ounce cup of coffee. Count data was blank corrected for laboratory introduced contamination.

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Discrete Particle Analysis

Particle Size Data (Optical Microscopy):

	Sample 2607235-001A	Sample 2607235-001A	Procedural Blank (Ottawa sand)	Procedural Blank (Ottawa sand)
Total Dry Weight of Sample Analyzed (Kg)	0.0506		0.0500	
Solids Isolated > 20 microns (mg/Kg)	83		4.0	
Parameter	Counts/Kg	Adjusted Counts/Kg of confirmed identified microplastic (based on frequency distribution results)	Counts/Kg	Adjusted Counts/Kg of confirmed identified microplastic (based on frequency distribution results)
50-100 microns	182846	9142	9720	1652
100-150 microns	73340	3667	4160	707
150-200 microns	38162	1908	1780	303
200-400 microns	44190	2209	900	153
400-600 microns	4328	216	20	3
600-1000 microns	1028	51	0	0
1000-1500 microns	178	9	0	0
1500-2000 microns	20	1	0	0
2000-3000 microns	20	1	0	0
>3000 microns	0	0	0	0
Fibers (counts/Kg)				
50-100 microns	217	11	0	0
100-150 microns	178	9	20	3
150-200 microns	237	12	20	3
200-400 microns	1344	67	340	58
400-600 microns	178	9	80	14
600-1000 microns	40	2	80	14
1000-1500 microns	0	0	20	3
1500-2000 microns	0	0	40	7
2000-3000 microns	20	1	0	0
>3000 microns	0	0	0	0

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Composition Distribution (Micro-FTIR analysis)

Parameter	2607235-001A	Procedural Blank (Ottawa sand)
Plastic types	(% Frequency)	(% Frequency)
Ultralow density polyethylene	Not detected	Not detected
Low density polyethylene	Not detected	Not detected
Medium density polyethylene	Not detected	Not detected
High density polyethylene	Not detected	Not detected
Polypropylene	5	17
Polyester	Not detected	Not detected
Polyethylene terephthalate	Not detected	Not detected
Ethylene-vinyl acetate	10 ²	8 ²
Acrylonitrile-butadiene-styrene	Not detected	Not detected
Polystyrene	Not detected	Not detected
Nylon	10 ²	Not detected
Polyvinyl chloride	Not detected	Not detected
Crumb rubber	Not detected	Not detected
Cellulose acetate	Not detected	Not detected
Low Spectral match quality or unclassified/inorganic	75	75

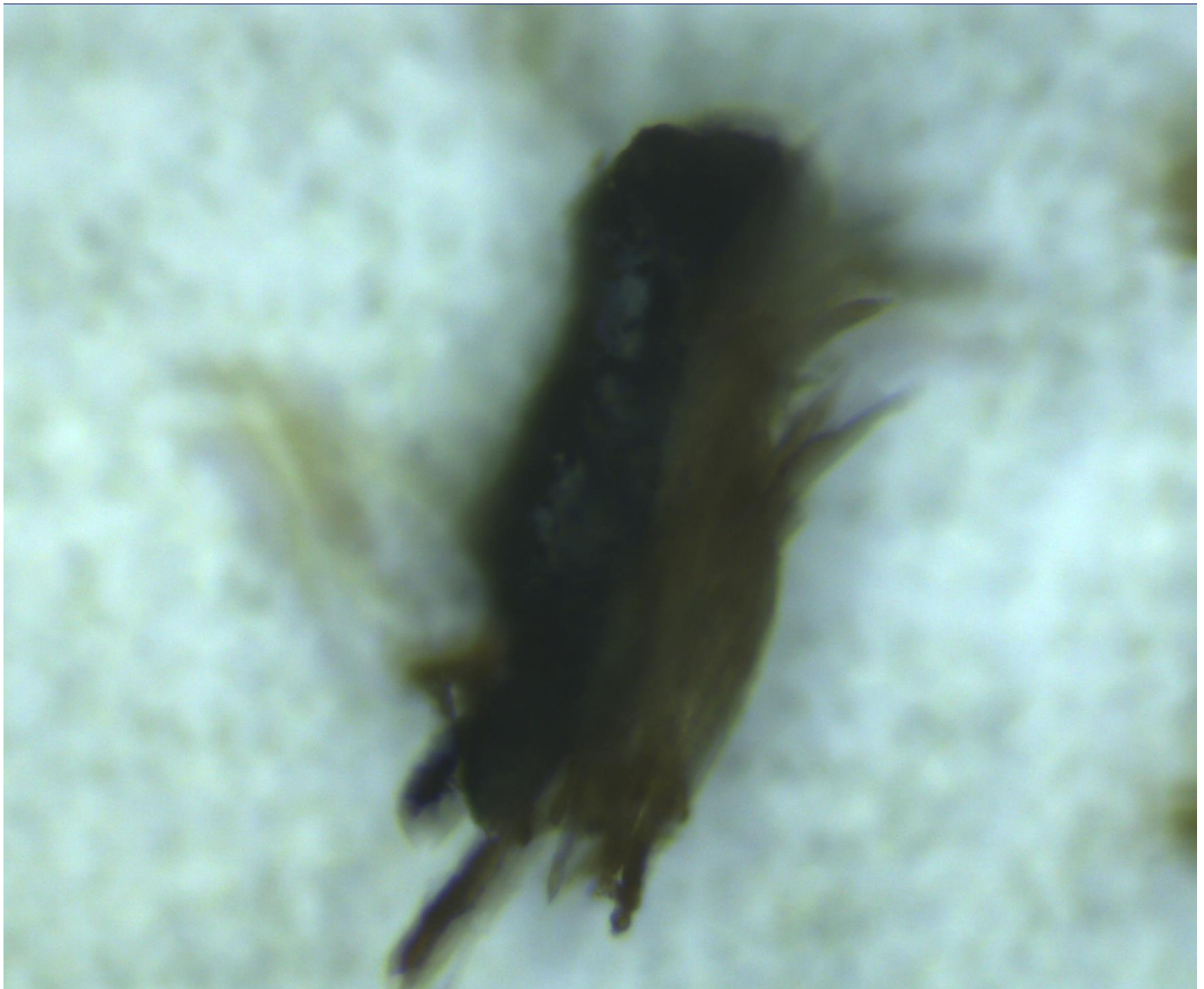
² Particles are interpreted by analyst as possibly microplastic, however did not exhibit a spectral library match greater than 80% when comparing to the standards reference library.

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Confirmed Identified Microplastics Gallery

Particle 1

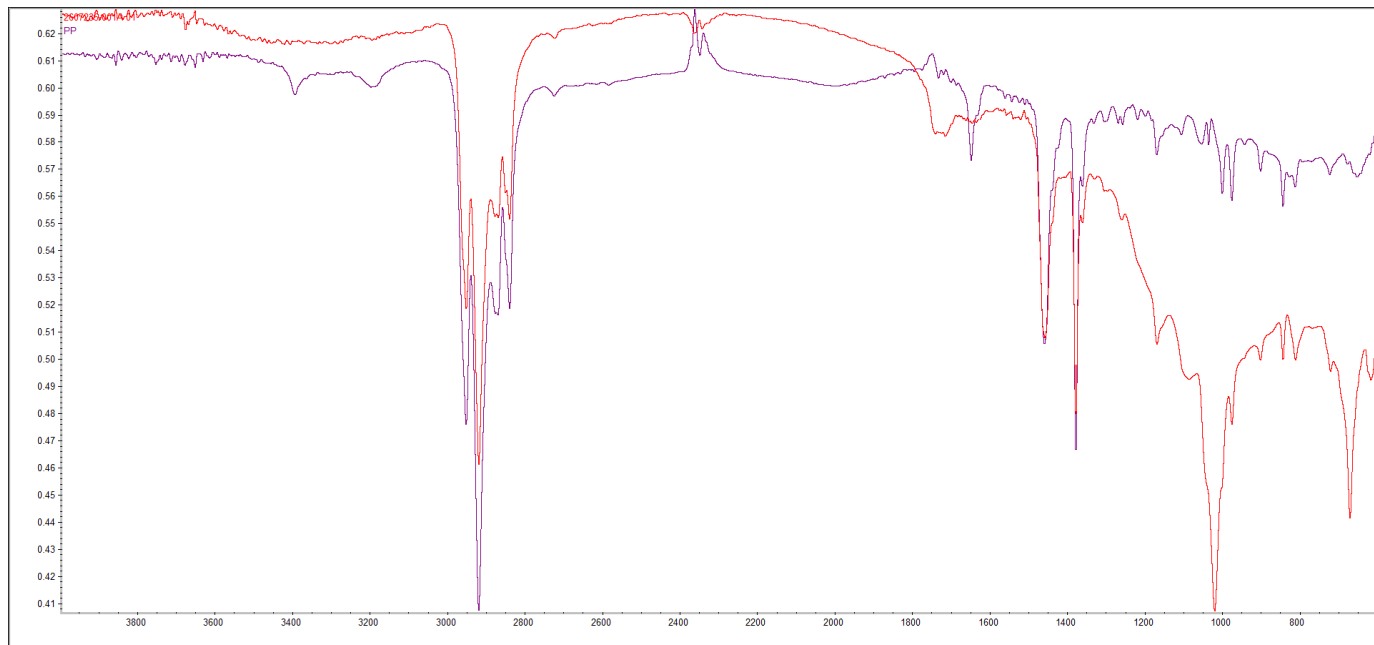
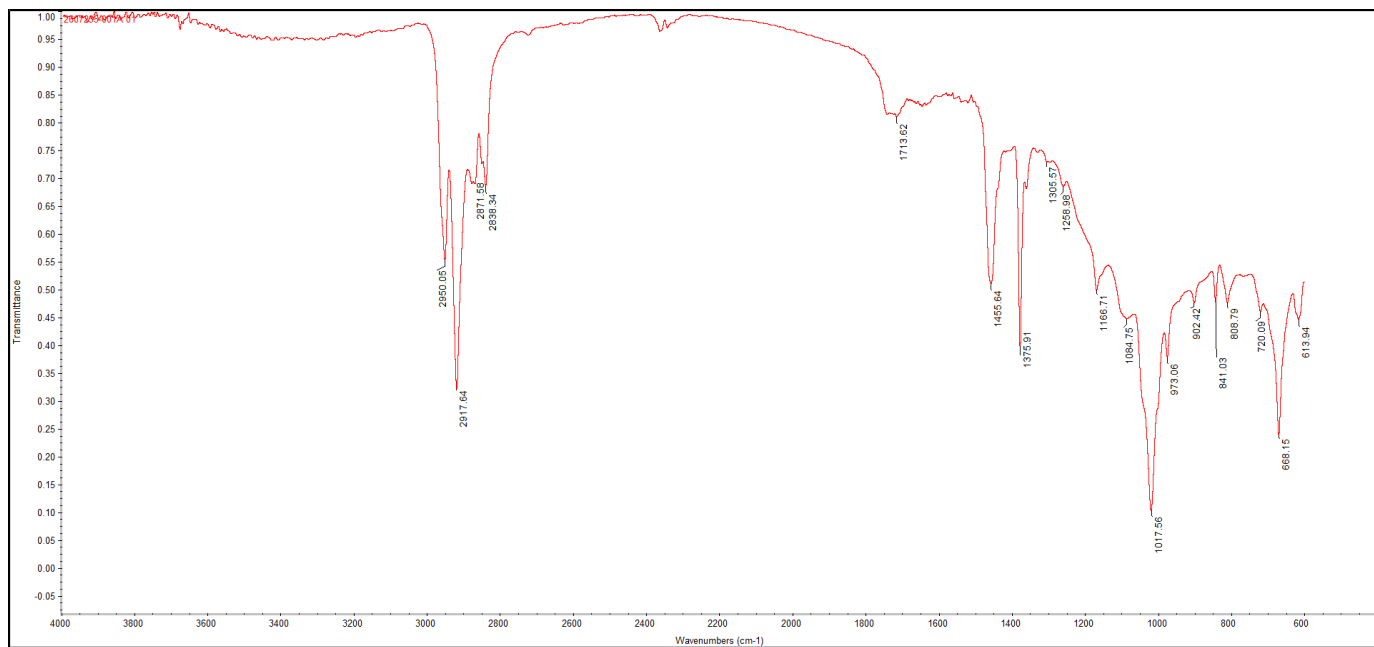
Color	Brown
Best Match	PP
Type	Particle
% Match	84



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Particle 1

Color	Brown
Best Match	PP
Type	Particle
% Match	84



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