



**EMSL Analytical, Inc.**

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Attn.: Alexander Muhr  
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EMSL Order No.: 362101768  
Sample(s) Received: 6/7/2021  
Date Reported: 6/21/2021  
Date Printed: 6/21/2021  
Reported By: J.Newton

**- Laboratory Report -**

**Analysis of Microplastics**

**WAT-HAL-STL-05-US, s/n. 18012021133235TO0528**

Conclusions:

The data obtained during analysis indicates the following:

- No microplastic particles were detected in sample WAT-HAL-STL-05-US.

Procurement of Samples and Analytical Overview:

The sample submitted for analysis arrived at EMSL Analytical on 6/7/2021. The package arrived in satisfactory condition with no evidence of damage to the contents. The data reported herein has been obtained using the following equipment and methodologies.

Methods & Equipment: Polarized Light Microscopy (PLM) – *Zeiss, Universal Petrographic Microscope*  
Reflected Light Microscopy (RLM) – *Nikon, DF Microscope*  
Fluorescence Microscopy (FLM) – *Zeiss, Fluorescence Microscope*

Analyzed by:

John Newton  
Senior Materials Scientist

21 June 2021

Date

Reviewed/Approved by :

Eugenia Mirica, Ph.D.  
Laboratory Manager

21 June 2021

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Background:

One sample was submitted for analysis. The purpose of the analysis was to determine the microplastic concentration in the beverage product.



Figure 1: Samples as received for analysis.

| Sample ID         | Description          | Date/Time Sampled   |
|-------------------|----------------------|---------------------|
| WAT-HAL-STL-05-US | 18012021133235TO0528 | 2021-12-01 13:55:32 |

Microplastics are generally defined as polymeric particles smaller than 5 mm in size in any one dimension, present in waste water, rivers, lakes and oceans. Due to the small size, they may not be easily removed during the waste water filtration processes and can enter the ecosystem, negatively impacting the environment. The common sources of microplastics are: additives in personal care products, synthetic fibers, resin pellets, tire recycling, medical products, abrasion and exfoliating beads used in furniture and insulation, fragments of larger plastic items as they degrade from the effects of ultraviolet rays and other weathering factors. Microplastics can potentially leach toxic chemicals, including endocrine disruption chemicals, such as bisphenol A and phthalates.



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Summary of Results:

Table 1: Summary of microplastics analysis.

| Sample ID         | Description                                               | Microplastics |
|-------------------|-----------------------------------------------------------|---------------|
| WAT-HAL-STL-05-US | s/n. 18012021133235TO0528<br>Bottled: 2021-12-01 13:55:32 | None Detected |

Sample Preparation:

The sample was filtered through 0.8µm polycarbonate filters and suspended in Nile Red reagent in order to stain the microplastic particles.

All suspensions were then sonicated to remove the particles from the filter media after the staining process. The resulting suspension was filtered through a clean (not introduced to Nile Red reagent) 0.8µm polycarbonate filter for analysis.



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Results and Discussion:

Table 2: Microplastics results for sample WAT-HAL-STL-6PC-750-US.

| <b>EMSL ID:</b>            | 362101768-0001                 |                            |                     |
|----------------------------|--------------------------------|----------------------------|---------------------|
| <b>Sample ID:</b>          | WAT-HAL-STL-05-US              |                            |                     |
| <b>Description:</b>        | s/n. 18012021133235TO0528      |                            |                     |
| <b>Amount Analyzed:</b>    | 1500(ml)                       | LOQ (Particles/(ml)): 0.71 |                     |
| Preparation Parameters     | Value                          | Units                      | Comments            |
| Sub-sample (prepared):     | 1500                           | (ml)                       | A                   |
| Effective Filter Area:     | 1070                           | (mm <sup>2</sup> )         |                     |
| Field Area:                | 1                              | (mm <sup>2</sup> )         |                     |
| No. Fields Analyzed:       | 1                              | (No.)                      |                     |
| Area Analyzed:             | 1                              | (mm <sup>2</sup> )         |                     |
| Limit of Quantitation:     | 0.71                           | P/(ml)                     |                     |
| Particle Size Range (µm)   | Concentration (Particles/(ml)) | Percent in Range           | Comments            |
| <1                         | <LOQ                           | N/A                        | B                   |
| 1 - 5                      | <LOQ                           | N/A                        | B                   |
| 5 - 10                     | <LOQ                           | N/A                        | B                   |
| 10 - 50                    | <LOQ                           | N/A                        | B                   |
| 50 - 100                   | <LOQ                           | N/A                        | B                   |
| 100 - 500                  | <LOQ                           | N/A                        | B                   |
| 500 - 1000                 | <LOQ                           | N/A                        | B,C                 |
| 1000 - 5000                | <LOQ                           | N/A                        | C                   |
| >5000.0                    | <LOQ                           | N/A                        | C, D                |
| <b>Total Microplastics</b> | <b>None Detected</b>           | <b>Min. Diam. = N/A</b>    | <b>Max. Diam. =</b> |

Comments: LOQ = Limit of Quantitation

- A) Parameters used in the preparation of the sample.
  - B) Particles observed by microscopic analysis.
  - C) Particles observed by sieve separation and stereo microscopic analysis.
  - D) Particles larger than the generally accepted definition of microplastics.
- Sample volume based upon filtration rate and suspended particle concentration.



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Descriptions & Definitions:

None Detected (ND) denotes the absence of analyte in the subsample analyzed. Trace levels of the analyte may be present in the sample below the limit of detection (LOD).

Limit of Detection (LOD): The minimum concentration that can be theoretically achieved for a given analytical procedure in the absence of matrix or sample processing effects. Particle analysis is limited to a single occurrence of an analyte particle in the sub-sample analyzed.

Limit of Quantitation (LOQ): The minimum concentration of an analyte that can be measured within specified limits of precision and accuracy during routine laboratory operating conditions

Trace concentration: Denotes the presence of an analyte above LOD but below LOQ. When results are reported as Trace Concentration, at least one particle was detected in the collection of particles that represents the sample.

Concentrations for bulk samples are derived from Visual Area Estimation (VAE) unless otherwise noted. Air sample concentrations are calculated to particles per unit volume.

VAE technique estimates the relative projected area of a certain type of particulate from a mixture of particulate by comparison to data derived from analysis of calibration materials having similar texture and particulate content. Due to bi-dimensional nature of the measurements, in some cases the particle thickness could affect the results.

Important Terms, Conditions, and Limitations:

Sample Retention: Samples analyzed by EMSL will be retained for 60 days after analysis date. Storage beyond this period is available for a fee with written request prior to the initial 30 day period. Samples containing hazardous/toxic substances which require special handling may be returned to the client immediately. EMSL reserves the right to charge a sample disposal or return shipping fee.

Change Orders and Cancellation: All changes in the scope of work or turnaround time requested by the client after sample acceptance must be made in writing and confirmed in writing by EMSL. If requested changes result in a change in cost the client must accept payment responsibility. In the event work is cancelled by a client, EMSL will complete work in progress and invoice for work completed to the point of cancellation notice. EMSL is not responsible for holding times that are exceeded due to such changes.

Warranty: EMSL warrants to its clients that all services provided hereunder shall be performed in accordance with established and recognized analytical testing procedures, when available. The foregoing express warranty is exclusive and is given in lieu of all other warranties, expressed or implied. EMSL disclaims any other warranties, express or implied, including a warranty of fitness for particular purpose and warranty of merchantability.

Limits of Liability: In no event shall EMSL be liable for indirect, special, consequential, or incidental damages, including, but not limited to, damages for loss of profit or goodwill regardless of the negligence (either sole or concurrent) of EMSL and whether EMSL has been informed of the possibility of such damages, arising out of or in connection with EMSL's services thereunder or the delivery, use, reliance upon or interpretation of test results by client or any third party. We accept no legal responsibility for the purposes for which the client uses the test results. EMSL will not be held responsible for the improper selection of sampling devices even if we supply the device to the user. The user of the sampling device has the sole responsibility to select the proper sampler and sampling conditions to ensure that a valid sample is taken for analysis. Any resampling performed will be at the sole discretion of EMSL, the cost of which shall be limited to the reasonable value of the original sample delivery group (SDG) samples. In no event shall EMSL be liable to a client or any third party, whether based upon theories of tort, contract or any other legal or equitable theory, in excess of the amount paid to EMSL by client thereunder.

The data and other information contained in this report, as well as any accompanying documents, represent only the samples analyzed. They are reported upon the condition that they are not to be reproduced wholly or in part for advertising or other purposes without the written approval from the laboratory.