

## Analysis of Microplastics in Environmental Samples and Products

Our laboratory offers you **qualitative screening** for the presence of microplastics in diverse environmental samples as well as in products. We also perform **quantification** measurements to determine the **number and mass of microplastic particles**. The measurements are performed using **FT-IR micro-spectroscopy**; we apply up to three different measurement techniques (ATR, transmission, and imaging), depending on the particle size range of interest.

**Screening** is available for **three different size categories (0.005-0.05 mm, 0.05-0.5 mm and 0.5-5 mm)**, while **quantification** is available for two size categories (**0.05-0.5 mm und 0.5-5 mm**). It is possible to go down to 0.025 mm as the lowest particle size limit for quantification if the sample is only sparsely loaded with particles. Optionally, the given size categories can be further divided into smaller size ranges.

Pretreatment of samples (**sample preparation**) ensures that the major fraction of interfering (non-plastic) particles is removed from the sample. Environmental samples (except for drinking water/ground water) and products can contain a considerable number of non-plastic particles of very diverse chemical composition. Therefore, we apply tailor-made sample preparation techniques (simple/complex) to improve microplastic identification.

- **Simple sample preparation** is required e.g. for surface water with a low particle content, water-soluble products (peelings, detergents) or water-soluble foods (salt, honey).
- **Complex sample preparation** is required e.g. for surface water with a high particle content, waste water effluents, soil, sediment, sewage sludge, water-insoluble products (creams, lotions) or water-insoluble foods (e.g. fish).

**Please find details on our analytical services for microplastics overleaf.**

Please note that these parameters are currently not covered by our defined scope of accreditation. All our tests will nevertheless be performed with the same skill, care and diligence as that afforded to our accredited detection methods.

### For further information please contact:

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### Screening for Microplastics

Sample preparation before screening – none, simple or complex

<i>Parameter</i>	<i>Description of result</i>
Screening for microplastics 0.5-5 mm	Microplastics 0.5-5 mm present in random sample yes/no, stating the identified plastic type
Screening for microplastics 0.05-0.5 mm	Microplastics 0.05-0.5 mm present in random sample yes/no, analysis of 10 different plastic types*
Screening for microplastics 0.005-0.05 mm	Microplastics 0.005-0.05 mm present in random sample yes/no, analysis of 10 different plastic types*

### Quantification of Microplastics

Sample preparation before quantification – none, simple or complex

<i>Parameter</i>	<i>Description of result</i>
Quantification of microplastic weight 0.5-5 mm	Microplastics 0.5-5 mm present in sample: sorting into a max. of 5 categories (e.g. pellets, fragments, foils, fibres), stating the identified plastic type(s) of up to 10 particles per category and the weight of microplastics per category
<i>Alternatively:</i> Quantification of microplastic weight and particle number 0.5-5 mm	<i>As stated above plus</i> the number of microplastic particles 0.5-5 mm in each category
Quantification of microplastic particle number 0.05 (0.025 <sup>**</sup> ) -0.5 mm	Microplastics 0.05 (0.025 <sup>**</sup> ) - 0.5 mm present in sample: number of microplastic particles derived from analysis of 10 different plastic types*

### Optional Analytical Services for Microplastics

<i>Parameter</i>	<i>Description of result</i>
Photographic documentation	Photographic documentation of microplastics > 0.05 mm under the light microscope
Further sub-division of size range (optional in addition to quantification for 0.05-0.5 mm)	Data analysis for the number of microplastic particles (for each plastic polymer) in three smaller size ranges, e.g. 0.05 (0.025 <sup>**</sup> ) - 0.1 mm, 0.1-0.25 mm and 0.25-0.5 mm
Additional plastic type (optional in addition to quantification 0.05-0.5 mm)	Determination of the number of particles of 0.05 (0.025 <sup>**</sup> ) - 0.5 mm in size for additional plastic polymers that are not included in the standard list*

#### Notes:

\*) Unless otherwise agreed with the customer, we test for the 10 most frequent microplastic materials (PE, PP, PVC, PS, PET, PA, PU, PC, PMMA, and POM), with the exception of microplastics larger than 0.5 mm for which we specify each plastic type identified by FT-IR spectroscopy.

\*\*\*) Depending on the sample characteristics (e.g. sparse particle loading), we can go down to a lowest particle size threshold of 0.025 mm for quantification.