



Analysing Microplastics

Small particles, large reach

Introduction to Microplastics

Recently, the topic of microplastics can be found in several headlines. Not only have the small plastic particles been detected in cosmetics and cleansing detergents, but also in several foods.

Generally speaking, microplastics are plastic particles between 1 and 5000 μm . On the one hand, primary microplastics are used deliberately to achieve certain properties, e.g. as abrasive bodies in peelings or toothpastes. Secondary microplastics, on the other hand, are the result of abrasion or degradation of larger plastic parts during their use or in the environment.

To date, microplastics have been detected in water, waste water, soil, fish, sea salt, beer and honey, as well as in other matrices.

Current research has not yet conclusively determined the impact of microplastics on animal or human organisms. Studies suggest that smaller microplastics particles may be absorbed by organisms. The German Federal Institute for Risk Assessment assumes that larger particles ($< 1 \text{ mm}$) are excreted completely.

However, the latter may pose a risk of injuries (BfR FAQ: Microplastics: Facts, research and open questions, 5 June 2019). So far, there are no legal regulations regarding levels of microplastics in different foods. Nevertheless, there is a rising awareness and growing interest among producers, public authorities and customer protection organisations to determine the amount of microplastics occurring in food and in the environment, and to limit it as much as possible.

Analysing Microplastics

As one of only a few laboratories, Eurofins offers the commercial analysis of microplastics $>20 \mu\text{m}$ in clean water (i.e. drinking water, mineral water), water soluble foods (e.g. salt, sugar) and clear beverages (e.g. clear juices, wine, beer without yeast, spirits). This list of analysable matrices will be extended continuously. Your personal Account Manager will gladly keep you updated.

To identify the materials of different particles, and to classify them according to their size, Eurofins uses infrared (FTIR-) microscopy. Using this technique makes

it possible to record infrared spectra of single particles between 20 – 5000 µm.

Infrared spectra reflect the wave number dependent absorption of infrared radiation that is caused by the excitation of specific molecular vibrations. By comparing the measured spectra with stored library spectra, the material of the particles can be identified.

During analysis, the following size ranges can be distinguished:

- Particles from 20 - 100 µm
- Particles from >100 – 1000 µm
- Particles from >1000 – 5000 µm

The following table shows the polymers that Eurofins currently analyses:

Analysable Polymers	Abbreviations
Polyamide 6	Nylon 6, PA6
Polycarbonate	PC
Polyethylene	PE
Polyethylene terephthalate	PET
Polymethylmethacrylate	PMMA
Polypropylene	PP
Polystyrene	PS
Polyvinyl chloride	PVC

Analysable polymers as of 02-2020

Expertise & Analysis

The Eurofins Group offers a uniquely comprehensive range of laboratory, quality management, consulting and training services. With our extensive analysis portfolio and the worldwide competence network we are a strong partner at your side in the field of food analysis. Through memberships in relevant committees and project groups focused on microplastics, we are continuously expanding our expertise in this area. By adding the analysis of microplastics to our portfolio, we have taken another step to offer our customers effective solutions for their current needs.



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