
Microplastics on the rocks: adaption of a method for the preparation and storage of reference material

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Abstract

Microplastic research and associated sample processing and analytics is a rapidly developing area of research. The parallel development of numerous different approaches and methods results in the fact that results are method-specific and thus, only comparable to a limited extent. The use of reference samples in parallel to processing of real environmental samples is essential for checking one's own laboratory performance. However, there are currently no commercially available certified reference materials. To take this into account, the MRC working group adapted a procedure based on Seghers et al. (2022), with the help of which the method-specific recovery rates can be monitored.

In brief, a suspension is produced with commercially available synthetic polymer particles of a specific size spectrum. It is important to ensure that the particles are distributed as homogeneously as possible in suspension. This is achieved through adding a surfactant reagent and several wet sieving steps. In contrast to Seghers et al. (2022) the aliquots of the reference samples are not pressed into tablets but frozen in metal cans. The ice cubes prepared in this way can easily be added to any type of sample. Particle concentrations of a relevant number of these reference samples are determined in order to calculate mean and standard deviation values that can be related to real environmental samples and that are valid for the whole reference sample set. With this approach a specific set of synthetic polymers of different densities can easily be combined and furthermore, the targeted size fraction can easily be adapted by using specific sieve mesh sizes.

Seghers, J., Stefaniak, E.A., La Spina, R., Cella, C., Mehn, D., Gililand, D., Held, A., Jacobsson, U. & H. Emteborg: Preparation of a reference material for microplastics in water-evaluation of homogeneity. *Anal Bioanal Chem* 414, 385–397 (2022). <https://doi.org/10.1007/s00216-021-03198-7>

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