Bundesanstalt für Materialforschung und -prüfung (BAM)

Reference Material

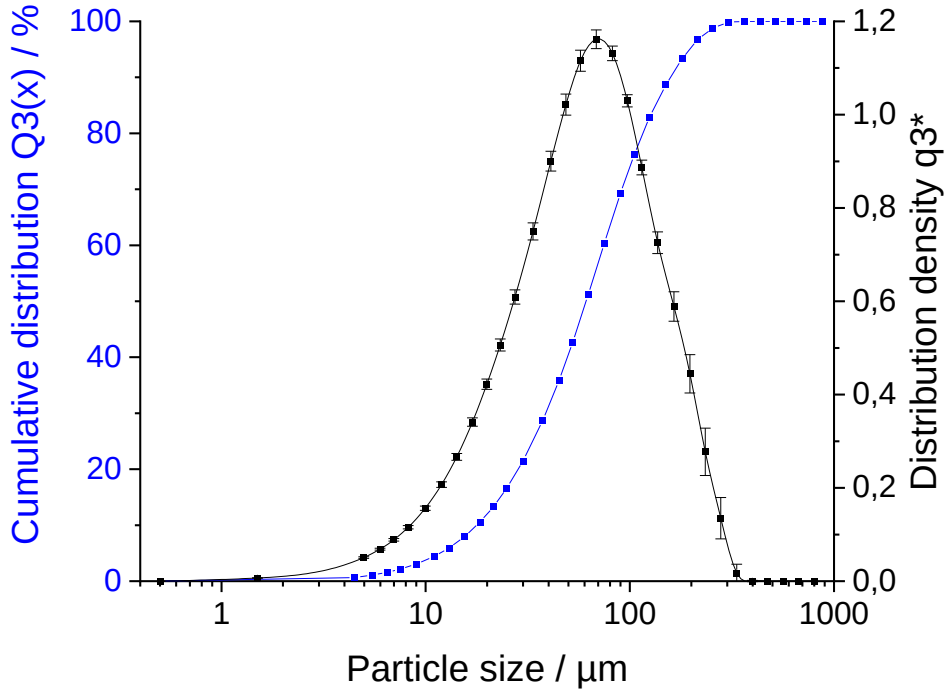
BAM-P201

Artificially aged Polyethylene (PE)

Values

Particle size distribution

(Average value spectrum, n = 30)



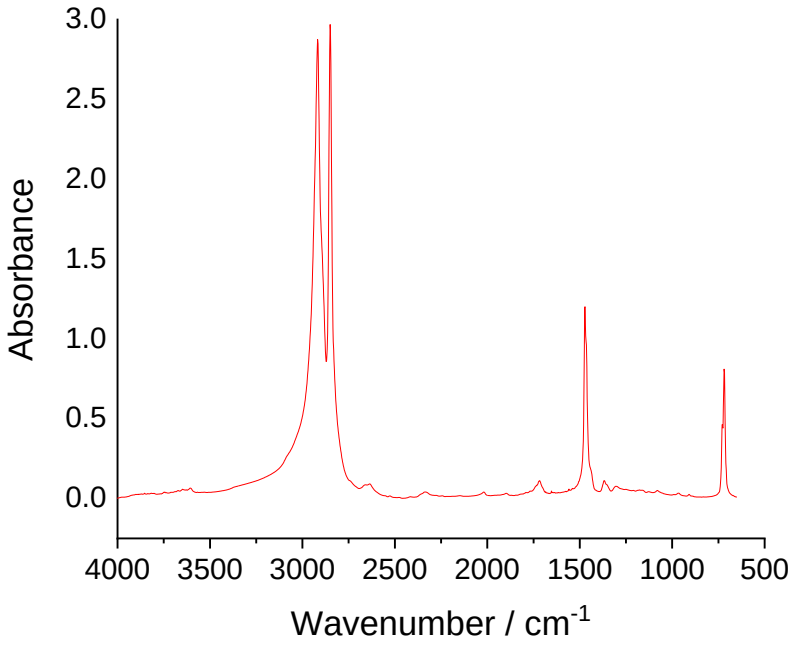
	Particle size[1] in µm	**Standard deviation s** in µm	**Rel. Standard deviation s** in %
D10	17.9	0.3	1.8
D50	61.2	1.4	2.3
D90	158.6	7.5	4.7

Mean values of 30 measurements with 10 randomly selected sample bottles of 10 mg, where each was tested 3 times with 3 mg of BAM-P201 by laser diffraction under dry dispersion (HELOS/BR+RODOS/L+ASPIROS, Sympatec, Germany)

Date of dispatch:

Transmission – Fourier-transform infrared spectroscopy

(Average value spectrum, n=6)

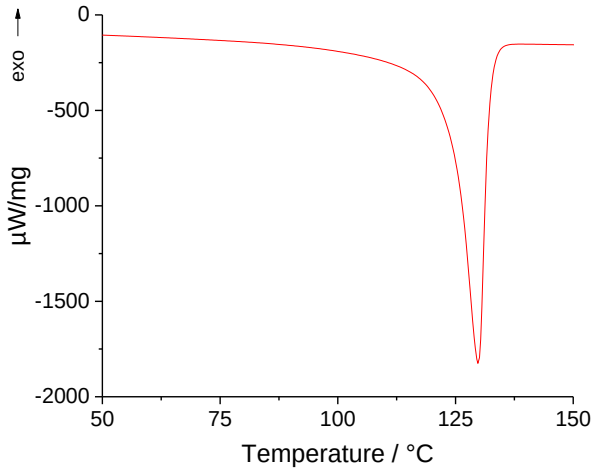


Carbonyl-Index*	Standard deviation s	Rel. Standard deviation s in %
1.86	0.12	6.7

* Mean value of 6 measurements of BAM-P-201 embedded in KBr pill by Transmission – Fourier-transform infrared spectroscopy; integration limit: 1805 - 1679 cm^{-1} and 1390 – 1330 cm^{-1} (C=O ; C-H) (Nicolet Nexus 6700 FTIR spectrometer, Thermo Scientific, USA)

Differential scanning calorimetry (DSC)

(Average value spectrum, n=3)



ΔH* in µW/mg	Standard deviation s in µW/mg	Rel. Standard deviation s in %
12360	1012	8.2

* Mean value of 3 measurements of BAM-P-201 by Differential scanning calorimetry; integration limit: 75 – 136 °C, last calibration date: 26th of March 2019 (DSC 7020, Seiko, THASS, Germany)

End of Validity

This data sheet is valid for 2 years after dispatch.

Material Description

The reference material consists of HD-PE powder and is delivered in a brown glass bottle with metal lid. The seal in the metal lid is made of silicone and polytetrafluorethylene. The bottled mass is 10 +/- 0.035 mg.

Recommended Use

PE is a material with a density less than 1 g/cm^3, which causes it to float in water on the surface. It can only be produced as a stable suspension by adding compartibilisers. In the environment, however, PE is present in an aged state and thus changes its hydrophilicity. It is easier to suspend and shows a changed sinking behaviour in the water column.

BAM-P201 is developed as a reference material close to reality for the validation of sampling, sample preparation and detection of microplastics. It can be used either for the evaluation of effects in the field of ecotoxicology or human toxicology, pollutant transport and agglomeration behaviour related to microplastics.

The material is produced as "one shot" reference material and intended for single use with the entire volume. The glass bottle must be rinsed carefully with a liquid to transfer the 10 mg of material completely.

Handling

There are no special safety regulations to be followed.

Transport and Storage

The material should be stored in a dark, dry and cool (5 +/- 3 °C) environment.

Accepted as a BAM-RM on December 10th, 2019

Bundesanstalt für Materialforschung und -prüfung (BAM)

Dr. Silke Richter
Committee for Certification

Dr. Korinna Altmann
Project Coordinator
6.6 Nanotribology and
Nanostructuring of Surfaces

This Reference Material is offered by:

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