Task:

Application field: Chemistry / Plastics

Material: PET-samples: 1. Preforms for bottles; 2. Rings H8 (small) und PX (large), sawn cross sections

Feed size: 0-120 mm (preforms)

Feed quantity: 50 g (approx. per sample for pre-grinding)

Material specification(s): elastic, temperature sensitive

Customer requirement(s): < 1 mm; a few grams/batch; analysis: GC-MS

Subsequent analysis: GC Gas Chromatography

Solution:

Selected instrument(s): Cutting Mill SM 100 Ultra Centrifugal Mill ZM 200

Configuration(s): SM 100:
- Base frame; Standard hopper for SM 100;
- Ring-type filter with trapezoid hole body for collecting receptacle 5 l;
- Bottom sieves of stainless steel, square holes 4 mm

ZM 200:
- Push-fit rotor 12 teeth, stainless steel;
- Ring sieve trapezoid holes 1.0 mm, stainless steel

Parameter(s): Revolution speed: SM 100: approx. 1500 rpm ZM 200: 18000 rpm

Time: 30 s (about for each grinding test)

Achieved result(s): pre-grinding (SM 100): 2 - 3 mm fine-grinding (ZM 200): < 1 mm

The application report is based solely on the processing of the available sample material in the indicated amount. No legal claims shall be derived from this test report. Subject to technical modification and errors. © Retsch GmbH - www.retsch.com - lab@retsch.com
Remark(s): The pre-grinding of the samples in the SM 100 was carried out without pre-embrittlement. The fine grinding only was possible after pre-embrittlement of the pre-ground samples with liquid nitrogen (LN2).

Recommendation: The Cutting Mill SM 100 and the Ultra-Centrifugal Mill ZM 200 are suitable to grind the sample material according to the above mentioned conditions.

Pictures of the sample

Fig. 1: PET preforms for bottles

Fig. 2: Sawn cross sections of the PET preforms

Fig. 3: PET preforms after pre-grinding in SM 100; bottom sieve 4 mm square holes

Fig. 4: PET preforms after fine grinding in ZM 200; ring sieve 1 mm trapezoid holes; pre-embrittled in LN2