Application field: Chemistry / Plastics

Material: PET pre-form (for Coca Cola bottles)

Feed size: 25-100 mm

Feed quantity: 20 g

Material specification: medium-hard, elastic

Customer requirement: Particle size of 0.5 mm approx.

Subsequent analysis: Not defined

Instrument: SM 100 Cutting Mill, ZM 200 Ultra-Centrifugal Mill

Configuration: 1. SM 100: standard hopper; bottom sieves of stainless steel with Conidur holes of 4.0 mm; Ring-type filter with conidur hole body for collecting receptacle 5 l; collecting receptacle 5 l;
2. ZM 200: push-fit rotor of stainless steel with 12 teeth; ring sieve of stainless steel with Conidur holes of 0.75 mm.

Parameter: Rotational speeds:
SM 100: 1500 rpm
ZM 200: 18000 rpm

Time: 2 min.

Result: 1. Pre-cutting in SM 100: particle sizes predominantly 2 - 3 mm
2. Fine grinding in ZM 200: approx. 70% < 500 µm (sieve cut)

Remark: For the pre-cutting in the SM 100 the usage of liquid nitrogen (LN2) is not necessary. The fine grinding is not possible without LN2 due to the increasing temperature; the pre-cut samples have to be pre-embrittled by LN2 in a separate container. Before the fine grinding, a bit of LN2 can be filled onto the bottom of the cassette pan. Electrostatic charging can be avoided by spraying the
cassette pan and its cover with anti-static spray.

**Recommendation:** For the pre-cutting of medium-hard, elastic PET materials our Cutting Mill SM 100 and for the following fine grinding our Ultra Centrifugal Mill ZM 200 is suitable under the above mentioned conditions.

**Pictures of the sample**

Fig. 1: *Initial samples*

Fig. 2: *Initial samples*

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

Fig. 4: *PET-Preforms after fine grinding in the ZM 200; ring sieve 0.75 mm Conidur holes; pre-cooled by LN₂*