Task:

Application field: Environment

Material: Mobile Phone

Feed size: 10 - 160 mm

Feed quantity: Complete mobile phone

Material specification(s): hard

Customer requirement(s): < 500 µm

Subsequent analysis: MW Micro Wave Digestion

Solution:

Selected instrument(s): Cutting Mill SM 300
Ultra Centrifugal Mill ZM 200

Configuration(s):

SM 300:
6-disc rotor SM 300, stainless steel;
Bottom sieve square holes 4 mm, stainless steel;
Standard hopper;

ZM 200:
Push-fit rotor, 12 teeth, stainless steel;
Ring sieve trapezoid holes 0.5 mm, stainless steel;
Cyclone ZM 200, with 3 litres collector

Parameter(s):
SM 300: Revolution speed 2000 rpm
ZM 200: Revolution speed 18000 rpm

Time: 3 – 5 min.

Achieved result(s): Predominantly < 500 µm

Remark(s):
Separation of bigger pieces of metal like screws and brackets.
Pre-cutting of the mobile phone in our Cutting Mill SM 300 with a 4 mm bottom sieve.
Fine grinding in our Ultra-Centrifugal Mill ZM 200 with a 0.5 mm ringsieve. In order to grind larger quantities of material and to reduce the frictional heat the cyclone is recommended. The wear of the grinding tools can be reduced by using a rotor and a sieve coated with tungsten carbide. For temperature sensitive or elastic materials the sample could be pre-embrittled in liquid nitrogen.

Recommendation: For grinding electronic scrap our Cutting Mill SM 300 and our Ultra-Centrifugal Mill ZM 200 are suitable under the above mentioned conditions.

Pictures of the sample

Fig. 1: Mobile phone

Fig. 2: After pre-cutting in SM 300 with a 4 mm bottom sieve

Fig. 1: After fine grinding in the ZM 200 with a 0.5 mm ring sieve