**Task:**

**Application field:** Environment  
**Material:** Plastic toys, locomotive  
**Feed size:** 20-150 mm  
**Feed quantity:** 150 g (plastic parts after pre cutting in SM 2000)  
**Material specification(s):** elastic, tough  
**Customer requirement(s):** Separation of plastic and electronical parts for dermination of heavy metals acc. to RoHS  
**Subsequent analysis:** MW Micro Wave Digestion and ICP Inductively Coupled Plasma

**Solution:**

**Selected instrument(s):** Heavy-Duty Cutting Mill SM 2000  
*As the SM2000 was discontinued we recommend to use the SM300 now*  
Ultra Centrifugal Mill ZM 200

**Configuration(s):**  
Bottom sieve SM square holes 4 mm, stainless steel; Standard hopper SM; Push-fit rotor ZM 200, 12 teeth, stainless steel; Ring sieve ZM 200 trapezoid holes 0.5 mm, stainless steel

**Parameter(s):**  
Revolution speed of SM 2000 = 695 rpm  
Revolution speed of ZM 200 = 18000 rpm

**Time:** 20 min. (for pre and fine grinding)  
**Achieved result(s):** < 90 % < 200 µm  
**Remark(s):** Metal parts like steel and iron screws, motor and batteries have been separated. The sample preparation was done in following steps:  
1. Pre cutting in the Cutting Mill SM 2000 bottom sieve 4 mm
2. pre cooling of a representative single sample in liquid nitrogen and
3. fine grinding in the Ultra Centrifugal Mill ZM 200, ring sieve 0.5 mm
4. the electronical parts can be prepared without cooling

**Recommendation:** For sample preparation of different children toys acc. to RoHS, the Heavy Duty Cutting Mill SM 2000 is suitable for pre cutting and the Ultra Centrifugal Mill ZM 200 for fine grinding under the above mentioned conditions.

**Pictures of the sample**

- **Fig. 1:** Original locomotive
- **Fig. 2:** Separated plastic parts and batteries
- **Fig. 3:** Pre cutted in SM 2000 bottom sieve 4 mm
- **Fig. 4:** Pre cutted in SM 2000 bottom sieve 4 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.
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