Task:

Application field: Environment

Material: Toys (racing car)

Feed size: < 5 mm (after pre-cutting)

Feed quantity: 100 g

Material specification(s): elastic, abrasive

Customer requirement(s): Dismantling and grinding of the different components (plastics, circuit boards etc.); according to RoHS

Subsequent analysis: MW Micro Wave Digestion

Solution:

Selected instrument(s): Heavy-Duty Cutting Mill SM 2000
Ultra Centrifugal Mill ZM 200

Configuration(s): Bottom sieve square holes 4 mm, stainless steel;
Push-fit rotor, 12 teeth, stainless steel;
Ring sieve trapezoid holes 0.25 mm, stainless steel;
Ring sieve trapezoid holes 0.5 mm, stainless steel

Parameter(s): SM 2000: revolution speed 700 rpm
ZM 200: revolution speed 18000 rpm

Time: 10 min.

Achieved result(s): < 100 - 200 µm
d90 = 180 µm (circuit board)

Remark(s): First the car has to be dismantled and sorted by different materials.
Compact metal parts (e. g. iron or steel) are sorted out.
They will be evaluated separately.
For pre- and fine grinding of elastomers and rubber wheels, the material has to be pre-embrittled in liquid nitrogen.

Recommendation: For this application the Heavy-Duty Cutting Mill SM 2000 and the Ultra Centrifugal Mill ZM 200 are suitable under the above mentioned conditions.

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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Pictures of the sample

**Fig. 1:** Original racing car (with remote control)

**Fig. 2:** Dismantled car

**Fig. 3:** Circuit board (original)

**Fig. 4:** Circuit board after pre-grinding in SM 2000 (bottom sieve 4 mm)

**Fig. 5:** Pre-embrittlement of elastomer in liquid nitrogen

**Fig. 6:** Elastomer before / after pre-grinding in SM 2000 (bottom sieve 4 mm)

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