

# Grinding Balls and Size

Grinding balls  $\geq 5$  mm: Recommended number of balls per grinding bowl

| Grinding bowl/<br>Useful capacity<br>(sample volume) | 12 ml<br>0.5 - 5 ml | 20 ml<br>1 - 9 ml | 45 ml<br>3-20 ml | 80 ml<br>10-30 ml | 125 ml<br>15-50 ml | 150 ml<br>20-70 ml | 250 ml<br>30-125 ml | 420 ml<br>60-200 ml | 500 ml<br>80-225 ml |
|------------------------------------------------------|---------------------|-------------------|------------------|-------------------|--------------------|--------------------|---------------------|---------------------|---------------------|
| Balls dia.                                           |                     |                   |                  |                   |                    |                    |                     |                     |                     |
| 5 mm                                                 | 50                  | 80                | 180              | 250               | 600                | 900                | 1200                | 1800                | 2000                |
| 10 mm                                                | 6                   | 10                | 18               | 25                | 35                 | 40                 | 50                  | 80                  | 100                 |
| 15 mm                                                |                     |                   | 7                | 10                | 25                 | 35                 | 45                  | 60                  | 70                  |
| 20 mm                                                |                     |                   |                  | 5                 | 9                  | 12                 | 15                  | 20                  | 25                  |
| 30 mm                                                |                     |                   |                  |                   |                    |                    | 6 <sup>1)</sup>     |                     | 8 <sup>1)</sup>     |
| 40 mm                                                |                     |                   |                  |                   |                    |                    |                     |                     | 4 <sup>1)</sup>     |

1) Caution with P5pl - only up to 20 mm Ø balls allowed

Grinding balls  $\leq 3$  mm: Recommended number of balls per grinding bowl in gram

| Grinding bowl/<br>Useful capacity<br>(sample volume) | 12 ml<br>0.5-5 ml | 20 ml<br>1-9 ml | 45 ml<br>3-20 ml | 80 ml<br>10-30 ml | 125 ml<br>15-50 ml | 150 ml<br>20-70 ml | 250 ml<br>30-125 ml | 420 ml<br>60-200 ml | 500 ml<br>80-225 ml |
|------------------------------------------------------|-------------------|-----------------|------------------|-------------------|--------------------|--------------------|---------------------|---------------------|---------------------|
| Material                                             |                   |                 |                  |                   |                    |                    |                     |                     |                     |
| zirconium oxide                                      | 50                | 80              | 180              | 250               | 600                | 900                | 1200                | 1800                | 2000                |
| hardened,<br>stainless steel                         | 6                 | 10              | 18               | 25                | 35                 | 40                 | 50                  | 80                  | 100                 |
| hardmetal<br>tungsten carbide                        |                   |                 | 7                | 10                | 25                 | 35                 | 45                  | 60                  | 70                  |

Mini - Mill PULVERISETTE 23

Recommended number of balls per grinding bowl

| Grinding bowl/<br>Useful capacity<br>(sample volume) | 30 ml<br>1-10 ml | 15 ml<br>0.5-5 ml | 10 ml<br>0.2-1 ml | 5 ml<br>0.1-1 ml |
|------------------------------------------------------|------------------|-------------------|-------------------|------------------|
| Balls dia.                                           |                  |                   |                   |                  |
| 5 mm                                                 |                  | 60                | 30                | 20               |
| 10 mm                                                |                  | 5                 | 3                 | 1                |
| 15 mm                                                |                  | 2                 | 1                 |                  |