## Technical information

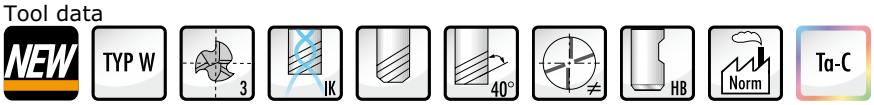
**Art.-Nr. 251 / 1** - Aluminium

### VHM - Schruppfräser PRIMUS

Art.-Nr. **251**

Flutes **3**

Tool data




Tool recommendation


Capabilities


## Areas of application and special features

HPC roughing cutter PRIMUS with internal cooling, vario twist, micro geometry and Ta-C coating.

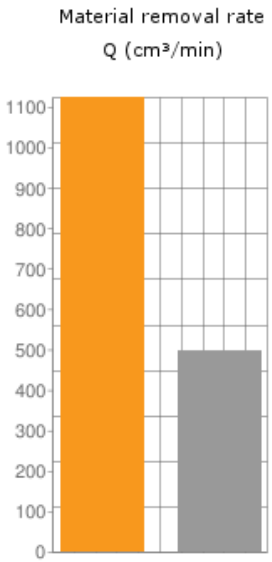
## Competitive advantages and profitability

Highest removal rate with up to vc=750m/min.

## Example application

Art.-Nr.: **25112010**
Material: **Aluminium long-chipping**

| Inovatools – Roughing | | | |
|---|---|---|---|
| D1 | 12,00 | mm | Diameter |
| z | 3 | | Flutes |
| ae | 12,000 | mm | Row pitch |
| ap | 12,000 | mm | Cutting depth |
| vc | 530,33 | m/min | Cutting speed |
| n | 14067 | U/min | Rotation speed |
| fz | 0,18500 | mm | Feed per tooth |
| vf | 7807,31 | mm/min | Feed rate |
| Q | 1124,25305000 | cm³/min | Material removal rate |
| hm | 0,11777 | mm | Middle chipping thickness |
| K/M | | €/std | Machine hourly cost |
| K/W | | € | Tool cost |
| T | | min | Tool life |
| V | | cm³ | Processing volume |
| Tb | | min | Process time |
| €/Ws | | € | Cost workpiece |




Competitor:
Art.-Nr.:

| Calculator | | | |
|---|---|---|---|
| D1 | 12,00 | mm | Diameter |
| z | 3 | | Flutes |
| ae | 12 | mm | Row pitch |
| ap | 12 | mm | Cutting depth |
| vc | 438,40 | m/min | Cutting speed |
| n | 11629 | U/min | Rotation speed |
| fz | 0,1 | mm | Feed per tooth |
| vf | 3488,70 | mm/min | Feed rate |
| Q | 502,37280000 | cm³/min | Material removal rate |
| hm | 0,06366 | mm | Middle chipping thickness |
| K/M | | €/std | Machine hourly cost |
| K/W | | € | Tool cost |
| T | | min | Tool life |
| V | | cm³ | Processing volume |
| Tb | | min | Process time |
| €/Ws | | € | Cost workpiece |

## Cutting data and application recommendations

**Art.-Nr. 251 / 1** - Aluminium

Roughing

ap: 1,00
ae:1,00

Caption:
Ideal
Good
Applicable
Limited applicable

| Material | vc m/min | φ Grad | D1 6,00 fz mm | D1 8,00 fz mm | D1 10,00 fz mm | D1 12,00 fz mm | D1 16,00 fz mm | D1 20,00 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General steels <500 N/mm² (<150 HB) | | | | | | | | | | | | | | | | |
| General steels <700 N/mm² (<205 HB) | | | | | | | | | | | | | | | | |
| Tempering steel <850 N/mm² (<25 HRC) | | | | | | | | | | | | | | | | |
| Tempering steel <1000 N/mm² (<32 HRC) | | | | | | | | | | | | | | | | |
| Tempering steel <1400 N/mm² (<44 HRC) | | | | | | | | | | | | | | | | |
| Hardened steel 45-55 HRC (1400-2000 N/mm² | | | | | | | | | | | | | | | | |
| Hardened steel 55-60 HRC (>2000 N/mm²) | | | | | | | | | | | | | | | | |
| Hardened steel 60-65 HRC | | | | | | | | | | | | | | | | |
| Cast iron <180HB | | | | | | | | | | | | | | | | |
| Malleable cast iron | | | | | | | | | | | | | | | | |
| Cast iron with nodular graphite | | | | | | | | | | | | | | | | |
| Aluminium long-chipping | 530 | 70 | 0,092 | 0,118 | 0,151 | 0,185 | 0,235 | 0,294 | | | | | | | | |
| Aluminium short-chipping | 495 | 65 | 0,092 | 0,118 | 0,151 | 0,185 | 0,235 | 0,294 | | | | | | | | |
| Aluminium alloyed over >8% S | 247 | 45 | 0,055 | 0,071 | 0,084 | 0,101 | 0,126 | 0,168 | | | | | | | | |
| Copper, brass, bronze, red brass | 177 | 55 | 0,038 | 0,042 | 0,046 | 0,050 | 0,063 | 0,076 | | | | | | | | |
| Plastics - thermoplast | 283 | 90 | 0,038 | 0,046 | 0,059 | 0,063 | 0,076 | 0,101 | | | | | | | | |
| Plastics - duroplast | | | | | | | | | | | | | | | | |
| GFK/CFK (fibreglass/carbon fibre plastics) | | | | | | | | | | | | | | | | |
| Graphite | | | | | | | | | | | | | | | | |
| Rust and acid constant steels <700 N/mm² (<2( | | | | | | | | | | | | | | | | |
| Rust and acid constant steels >700 N/mm² (>2( | | | | | | | | | | | | | | | | |
| Inconel, Hastelloy, Nimonic, Monel | | | | | | | | | | | | | | | | |
| Titanium | | | | | | | | | | | | | | | | |

Finishing

ap: 1,00
ae:0,50

Caption:
Ideal
Good
Applicable
Limited applicable

| Material | vc m/min | φ Grad | D1 6,00 fz mm | D1 8,00 fz mm | D1 10,00 fz mm | D1 12,00 fz mm | D1 16,00 fz mm | D1 20,00 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm | D1 fz mm |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General steels <500 N/mm² (<150 HB) | | | | | | | | | | | | | | | | |
| General steels <700 N/mm² (<205 HB) | | | | | | | | | | | | | | | | |
| Tempering steel <850 N/mm² (<25 HRC) | | | | | | | | | | | | | | | | |
| Tempering steel <1000 N/mm² (<32 HRC) | | | | | | | | | | | | | | | | |
| Tempering steel <1400 N/mm² (<44 HRC) | | | | | | | | | | | | | | | | |
| Hardened steel 45-55 HRC (1400-2000 N/mm² | | | | | | | | | | | | | | | | |
| Hardened steel 55-60 HRC (>2000 N/mm²) | | | | | | | | | | | | | | | | |
| Hardened steel 60-65 HRC | | | | | | | | | | | | | | | | |
| Cast iron <180HB | | | | | | | | | | | | | | | | |
| Malleable cast iron | | | | | | | | | | | | | | | | |
| Cast iron with nodular graphite | | | | | | | | | | | | | | | | |
| Aluminium long-chipping | 750 | 70 | 0,110 | 0,140 | 0,180 | 0,220 | 0,280 | 0,350 | | | | | | | | |
| Aluminium short-chipping | 700 | 65 | 0,110 | 0,140 | 0,180 | 0,220 | 0,280 | 0,350 | | | | | | | | |
| Aluminium alloyed over >8% S | 350 | 45 | 0,065 | 0,085 | 0,100 | 0,120 | 0,150 | 0,200 | | | | | | | | |
| Copper, brass, bronze, red brass | 250 | 55 | 0,045 | 0,050 | 0,055 | 0,060 | 0,075 | 0,090 | | | | | | | | |
| Plastics - thermoplast | 400 | 90 | 0,045 | 0,055 | 0,070 | 0,075 | 0,090 | 0,120 | | | | | | | | |
| Plastics - duroplast | | | | | | | | | | | | | | | | |
| GFK/CFK (fibreglass/carbon fibre plastics) | | | | | | | | | | | | | | | | |
| Graphite | | | | | | | | | | | | | | | | |
| Rust and acid constant steels <700 N/mm² (<2( | | | | | | | | | | | | | | | | |
| Rust and acid constant steels >700 N/mm² (>2( | | | | | | | | | | | | | | | | |
| Inconel, Hastelloy, Nimonic, Monel | | | | | | | | | | | | | | | | |
| Titanium | | | | | | | | | | | | | | | | |