

Technical information

Art.-Nr. 377 / 1 - Example Nimonic / competition



VHM - Schafffräser Flutemax

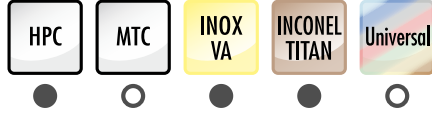
Art.-Nr. **377** Flutes **4**



Tool data



Tool recommendation



Capabilities



Areas of application and special features

Successful in difficult materials like Inox, titanium, Inconel und Nimonic.
Uneven partition, uneven helix, form flute and polished highend coating.

Competitive advantages and profitability

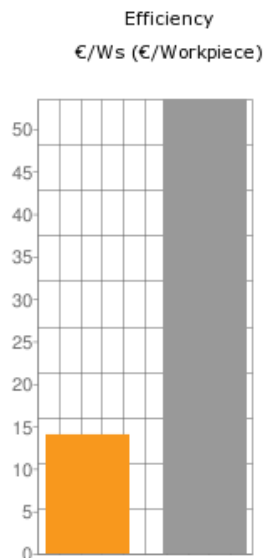
competition to Hoffmann Tisi and WNT Monstermill

Example application

Art.-Nr.: **377.120.00**
Material: **Inconel, Hastelloy, Nimonic, Monel**

Competitor: **bekannt**
Art.-Nr.: **unbekannt**

| Inovatools | | | |
|------------|------------|---------|---------------------------|
| D1 | 12,00 | mm | Diameter |
| z | 4 | | Flutes |
| ae | 12,000 | mm | Row pitch |
| ap | 9,000 | mm | Cutting depth |
| vc | 28,58 | m/min | Cutting speed |
| n | 758 | U/min | Rotation speed |
| fz | 0,02892 | mm | Feed per tooth |
| vf | 87,68 | mm/min | Feed rate |
| Q | 9,46895835 | cm³/min | Material removal rate |
| hm | 0,01841 | mm | Middle chipping thickness |
| K/M | 60 | €/std | Machine hourly cost |
| K/W | 82 | € | Tool cost |
| T | 17,86 | min | Tool life |
| V | 23,67 | cm³ | Processing volume |
| Tb | 2,50 | min | Process time |
| €/Ws | 13,98 | € | Cost workpiece |



| Calculator | | | |
|------------|------------|---------|---------------------------|
| D1 | 12,00 | mm | Diameter |
| z | 4 | | Flutes |
| ae | 12 | mm | Row pitch |
| ap | 9 | mm | Cutting depth |
| vc | 28,58 | m/min | Cutting speed |
| n | 758 | U/min | Rotation speed |
| fz | 0,029 | mm | Feed per tooth |
| vf | 87,94 | mm/min | Feed rate |
| Q | 9,49757760 | cm³/min | Material removal rate |
| hm | 0,01846 | mm | Middle chipping thickness |
| K/M | 60 | €/std | Machine hourly cost |
| K/W | 82 | € | Tool cost |
| T | 4 | min | Tool life |
| V | 23,67 | cm³ | Processing volume |
| Tb | 2,49 | min | Process time |
| €/Ws | 53,54 | € | Cost workpiece |

Cutting data and application recommendations

Art.-Nr. 377 / 1 - Example Nimonic / competition

| Roughing | | Caption: | | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 |
|--|--|--------------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| ap: 1,00 ae: 1,00 | | Ideal | | 4,00 | 5,00 | 8,00 | 10,00 | 14,00 | 18,00 | 25,00 | | | | | | |
| | | Good | | | 6,00 | | 12,00 | 16,00 | 20,00 | | | | | | | |
| | | Applicable | | | | | | | | | | | | | | |
| | | Limited applicable | | | | | | | | | | | | | | |
| Material | | vc m/min | φ Grad | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm |
| General steels <500 N/mm² (<150 HB) | | 159 | 55 | 0,017 | 0,029 | 0,038 | 0,063 | 0,084 | 0,101 | 0,109 | | | | | | |
| General steels <700 N/mm² (<205 HB) | | 145 | 50 | 0,017 | 0,029 | 0,038 | 0,063 | 0,084 | 0,101 | 0,109 | | | | | | |
| General steels <850 N/mm² (<25 HRC) | | 120 | 48 | 0,017 | 0,029 | 0,038 | 0,063 | 0,084 | 0,101 | 0,109 | | | | | | |
| Tempering steel <850 N/mm² (<25 HRC) | | 110 | 50 | 0,017 | 0,029 | 0,038 | 0,063 | 0,084 | 0,101 | 0,109 | | | | | | |
| Tempering steel <1000 N/mm² (<32 HRC) | | 95 | 45 | 0,013 | 0,021 | 0,027 | 0,044 | 0,059 | 0,071 | 0,077 | | | | | | |
| Tempering steel <1400 N/mm² (<44 HRC) | | 60 | 40 | 0,013 | 0,021 | 0,027 | 0,044 | 0,059 | 0,071 | 0,077 | | | | | | |
| Tempered steels 45-55 HRC (1400-2000 N/mm²) | | | | | | | | | | | | | | | | |
| Tempered steels 55-60 HRC (>2000 N/mm²) | | | | | | | | | | | | | | | | |
| Tempered steels 60-65 HRC | | | | | | | | | | | | | | | | |
| Cast iron <180HB | | 131 | 50 | 0,017 | 0,029 | 0,038 | 0,063 | 0,084 | 0,101 | 0,109 | | | | | | |
| Malleable cast iron | | 95 | 40 | 0,017 | 0,029 | 0,038 | 0,063 | 0,084 | 0,101 | 0,109 | | | | | | |
| Cast iron with nodular graphite | | 95 | 40 | 0,017 | 0,029 | 0,038 | 0,063 | 0,084 | 0,101 | 0,109 | | | | | | |
| Aluminium long-chipping | | | | | | | | | | | | | | | | |
| Aluminium short-chipping | | | | | | | | | | | | | | | | |
| Aluminium alloyed over >8% S | | | | | | | | | | | | | | | | |
| Copper, brass, bronze, red brass | | | | | | | | | | | | | | | | |
| Plastics - thermoplast | | | | | | | | | | | | | | | | |
| Plastics - duroplast | | | | | | | | | | | | | | | | |
| GFK/CFK (fibreglass/carbon fibre plastics) | | | | | | | | | | | | | | | | |
| Graphite | | | | | | | | | | | | | | | | |
| Rust and acid constant steels <700 N/mm² (<205 HB) | | 64 | 50 | 0,013 | 0,021 | 0,027 | 0,044 | 0,059 | 0,071 | 0,077 | | | | | | |
| Rust and acid constant steels >700 N/mm² (>205 HB) | | 35 | 30 | 0,013 | 0,021 | 0,027 | 0,044 | 0,059 | 0,071 | 0,077 | | | | | | |
| Inconel, Hastelloy, Nimonic, Monel | | 25 | 35 | 0,008 | 0,013 | 0,021 | 0,027 | 0,044 | 0,059 | 0,063 | | | | | | |
| Titanium | | 35 | 35 | 0,008 | 0,013 | 0,021 | 0,027 | 0,044 | 0,059 | 0,063 | | | | | | |

| Finishing | | Caption: | | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 | D1 |
|--|--|--------------------|-----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| ap: 1,00 ae: 0,50 | | Ideal | | 4,00 | 5,00 | 8,00 | 10,00 | 14,00 | 18,00 | 25,00 | | | | | | |
| | | Good | | | 6,00 | | 12,00 | 16,00 | 20,00 | | | | | | | |
| | | Applicable | | | | | | | | | | | | | | |
| | | Limited applicable | | | | | | | | | | | | | | |
| Material | | vc m/min | φ Grad | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm | fz mm |
| General steels <500 N/mm² (<150 HB) | | 225 | 55 | 0,020 | 0,035 | 0,045 | 0,075 | 0,100 | 0,120 | 0,130 | | | | | | |
| General steels <700 N/mm² (<205 HB) | | 205 | 50 | 0,020 | 0,035 | 0,045 | 0,075 | 0,100 | 0,120 | 0,130 | | | | | | |
| General steels <850 N/mm² (<25 HRC) | | 170 | 48 | 0,020 | 0,035 | 0,045 | 0,075 | 0,100 | 0,120 | 0,130 | | | | | | |
| Tempering steel <850 N/mm² (<25 HRC) | | 155 | 50 | 0,020 | 0,035 | 0,045 | 0,075 | 0,100 | 0,120 | 0,130 | | | | | | |
| Tempering steel <1000 N/mm² (<32 HRC) | | 135 | 45 | 0,015 | 0,025 | 0,032 | 0,052 | 0,070 | 0,084 | 0,091 | | | | | | |
| Tempering steel <1400 N/mm² (<44 HRC) | | 85 | 40 | 0,015 | 0,025 | 0,032 | 0,052 | 0,070 | 0,084 | 0,091 | | | | | | |
| Tempered steels 45-55 HRC (1400-2000 N/mm²) | | | | | | | | | | | | | | | | |
| Tempered steels 55-60 HRC (>2000 N/mm²) | | | | | | | | | | | | | | | | |
| Tempered steels 60-65 HRC | | | | | | | | | | | | | | | | |
| Cast iron <180HB | | 185 | 50 | 0,020 | 0,035 | 0,045 | 0,075 | 0,100 | 0,120 | 0,130 | | | | | | |
| Malleable cast iron | | 135 | 40 | 0,020 | 0,035 | 0,045 | 0,075 | 0,100 | 0,120 | 0,130 | | | | | | |
| Cast iron with nodular graphite | | 135 | 40 | 0,020 | 0,035 | 0,045 | 0,075 | 0,100 | 0,120 | 0,130 | | | | | | |
| Aluminium long-chipping | | | | | | | | | | | | | | | | |
| Aluminium short-chipping | | | | | | | | | | | | | | | | |
| Aluminium alloyed over >8% S | | | | | | | | | | | | | | | | |
| Copper, brass, bronze, red brass | | | | | | | | | | | | | | | | |
| Plastics - thermoplast | | | | | | | | | | | | | | | | |
| Plastics - duroplast | | | | | | | | | | | | | | | | |
| GFK/CFK (fibreglass/carbon fibre plastics) | | | | | | | | | | | | | | | | |
| Graphite | | | | | | | | | | | | | | | | |
| Rust and acid constant steels <700 N/mm² (<205 HB) | | 90 | 50 | 0,015 | 0,025 | 0,032 | 0,052 | 0,070 | 0,084 | 0,091 | | | | | | |
| Rust and acid constant steels >700 N/mm² (>205 HB) | | 50 | 30 | 0,015 | 0,025 | 0,032 | 0,052 | 0,070 | 0,084 | 0,091 | | | | | | |
| Inconel, Hastelloy, Nimonic, Monel | | 35 | 35 | 0,009 | 0,015 | 0,025 | 0,032 | 0,052 | 0,070 | 0,075 | | | | | | |
| Titanium | | 50 | 35 | 0,009 | 0,015 | 0,025 | 0,032 | 0,052 | 0,070 | 0,075 | | | | | | |