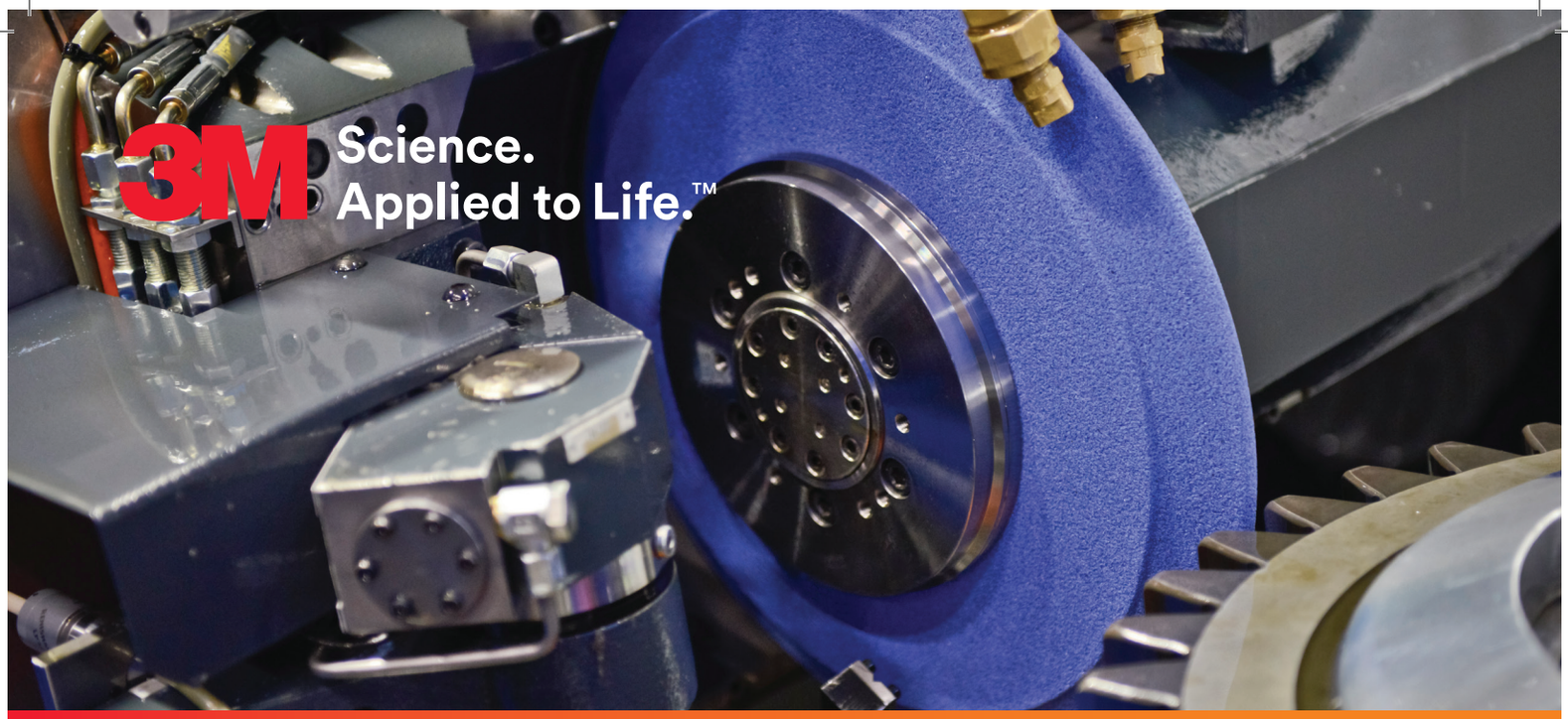

3M™ Cubitron™ II Vitrified wheels for gear profile grinding

Gear profile grinding makes high demands on dimensional and contouring accuracy as well as the peripheral zone properties of the component. Despite the high contact areas, no thermal load (risk of abrasive burning) arises between the workpiece and the component.

Application examples:

- Planetary gears
- Spur gears
- Hollow gears
- Pinion shafts

The advantages at a glance:

- Risk of abrasive burning is practically zero
- Up to 50 % shorter grinding cycles
- Four times less truing
- Grinding disc service lives are four times as long
- Continuously consistent grinding performance

CUBITRON™ II

Recommended operating parameters

3M™ Cubitron™ II is available in two standard concentrations:

		3M™ Cubitron™ II 93VE	3M™ Cubitron™ II 92VC
Circumferential speed (v_c)	Case-hardened steel	30 m/s	30 m/s
	Tempered steel	35 m/s	35 m/s
Feed rate (v_d)	Standard machines	3,500 mm/min	3,500 mm/min
	Höfler Rapid	9,000 – 12,000 mm/min	9,000 – 12,000 mm/min
Material removal rate (Q'_w)	Case-hardened steel	24 – 30 mm^3/mm/sec	24 – 26 (30) mm^3/mm/sec
	Tempered steel	20 – 23 (30*) mm^3/mm/sec	16 – 20 (24) mm^3/mm/sec
Chip flow (V'_w)	Roughing	4,000 – 6,000 mm^3/min	3,000 – 5,000 mm^3/min
	Finishing	300 – 700 mm^3/min	300 – 500 mm^3/min

* If the tooth base is not ground

Economic efficiency plan: Single-profile tooth flank grinding of a planetary gear

Gearing Data		
Grinding disc specifications	Standard sintered corundum disc	3M™ Cubitron™ II 93VE
Grinding disc dimensions	400 × 60 × 127	400 × 60 × 127
Planetary gear normal module (m_n)	16 mm	16 mm
Number of planetary gear teeth (z)	31	31
Planetary gear tooth width (Z_b)	371.20 mm	371.20 mm
Grinding disc price	€ 300.00	€ 1,050.00
Machine hourly rate	€ 140.00	€ 140.00

Operating Parameters		
Total flank delivery ($a_{e\ ges.}$)	0.56 mm	0.56 mm
Number of truing processes	24	12
Total cycle time (t_U)	123 min	65 min
Grinding disc wear	2.40 mm	1.20 mm
Grinding disc cost element	€ 7.58	€ 3.79
Number of workpieces machined (planetary gears) per grinding disc	40	79
Machine costs	€ 287.00	€ 151.67
Total costs (grinding disc + machine)	€ 294.58	€ 155.46

Comparison of Total Costs	Standard Sintered Corundum Disc	3M™ Cubitron™ II 93VE
Total removal	1.65 mm	1.65 mm
Total running time	02:03:00 h:m:s	01:05:00 h:m:s
Total wear SLS	2.40 mm	1.20 mm
Grinding disc cost element	7.58 €/workpiece	3.79 €/workpiece
Number of workpieces per grinding disc	40	79
Total costs of machine hourly	287.00 €/workpiece	151.67 €/workpiece
Total costs	294.58 €/workpiece	155.46 €/workpiece

For more information, or to make an appointment, please contact us at the address or telephone number below.

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