



Pro-Flute® and Pro-Flute 2® CNC Tool Grinding Wheels for Carbide and HSS Tools

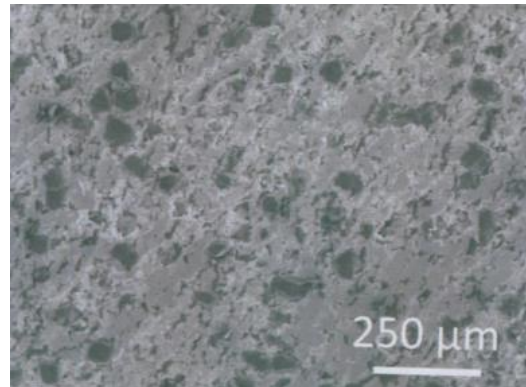
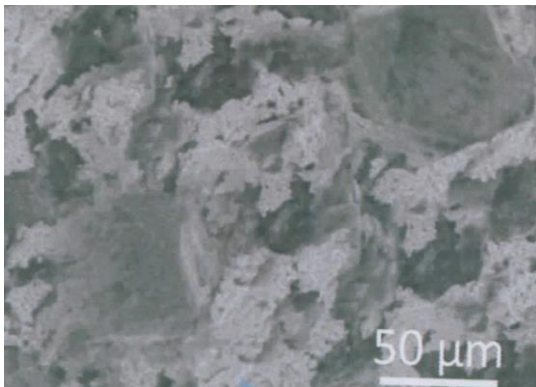
Eagles Pro-Flute® and Pro-Flute 2® Hybrid Bond Systems offer benefits to professional tool grinders, ensuring production of higher quality tools, faster, more accurately and more economically.

Properties:

- Up to 20x greater performance than Polyamide resin bond wheels
- Self-sharpening and wear-resistant bond
- High material removal rate
- Excellent heat dissipation
- Greatly enhanced profile stability
- No thermal damage to tools
- Low grinding forces
- Perfect surface quality
- High truing intervals



Actual SEM photos of our Pro-Flute® Bond System





Recommended Grinding Feeds, Speeds and Material Removal Rates

Q'_w - Material removal rate ($\text{mm}^3/\text{mm}\cdot\text{s}$)

V_{ft} - Feed Speed (mm / min)

$A_{e_}$ - Depth of cut

$$Q'_w = \frac{(A_{e_} \times V_{ft})}{60}$$

To increase Q'_w , follow the table for “high performance grinding with Pro-Flute”

		Ae(mm) Depth of Cut										
		1.5	2.0	2.5	3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.5
Vft (mm/min) Feed Rate	40						2.7	3.0	3.3	3.7	4.0	4.3
	50					2.9	3.3	3.8	4.2	4.6	5.0	5.4
	60				3.0	3.5	4.0	4.5	5.0	5.5	6.0	6.0
	80			3.0	4.0	4.7	5.3	6.0	6.7	7.3	8.0	8.7
	90		3.0	3.8	4.5	5.3	6.0	6.8	7.5	8.3	9.0	9.8
	100	2.5	3.3	4.2	5.0	5.8	6.7	7.5	8.3	9.2	10.0	10.8
	120	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.1	11.0	NR	NR
	140	3.5	4.7	5.8	7.0	8.2	9.3	10.5	11.7	NR	NR	
	160	4.0	5.3	6.7	8.0	9.3	10.7	12.0	NR	NR		
	180	4.5	6.0	7.5	9.0	10.5	12.0	NR	NR			
	200	5.0	6.7	8.3	10.0	11.7	NR	NR				

Resin Bond
 Poly Bond
 Pro-Flute 2
 Pro-Flute
 Not Recommended

Pro-Flute 2® Grinding Range

Pro-Flute® Grinding Range



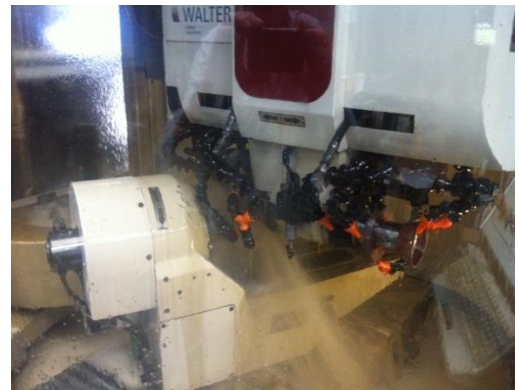
Pro-Flute® and Pro-Flute 2® Operating Parameters

Fluting: 1A1, 1V1 etc.	Wheel rim speeds
Roughing:	16-18m/s or 3150-3543 sf/m
Finishing:	30-35 m/s or 5906-6890 sf/m
Gashing: 1V1 / 12V9 etc.	20-30 m/s or 3937-5906 sf/m



End / Face / OD: 11V9 /12V9 etc.

Primary clearance:	25-35 m/s or 4921- 6890 sf/m
Secondary clearance:	20-30 m/s or 3937-5906 sf/m
Polishing: 1A1, 1V1	30-35 m/s or 5906-6890 sf/m
Stock removal D25	0.01-0.02mm





Pro-Flute® or Pro-Flute 2® Wheel

Which bond is Right for Me?

Pro-Flute® Wheel :

The Pro-Flute wheel is the ultimate high performance hybrid bond fluting and gashing wheel designed for machines with 16 hp spindles and above.

Coolant pressure should be 100psi or greater.

A coolant chiller is preferred and filtration to 1 micron or finer is a plus.

The Pro-Flute wheel should be used in “ lights out “ operations and long tool runs where maximum edge retention, minimal dressing and maximum tool accuracy is required.

This wheel is perfectly capable of grinding in excess of 300 tools between re-truing, and some customers are reporting in excess of 400 tools produced before truing is required, while doing so at industry leading feeds and speeds.

Easy to true and dress on conventional wheel truing equipment.

Massive stock removal, low spindle load and best in industry edge retention are hallmarks of this wheel.

Pro-Flute 2® Wheel:

The Pro-Flute 2 wheel is more of a universal hybrid bond system that is suitable for use on all spindle power machines either low or high.

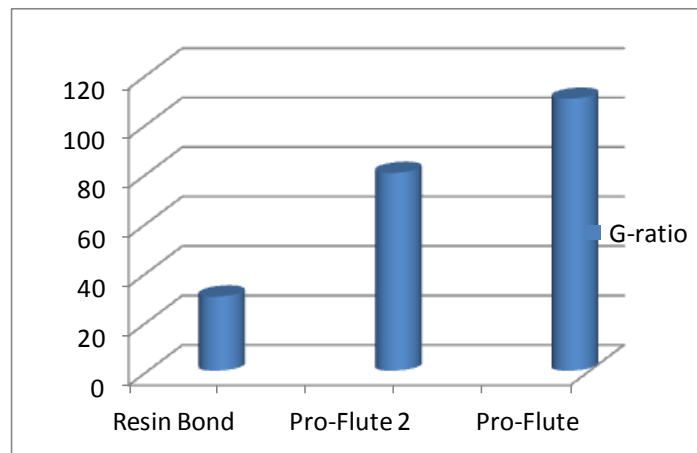
While it is not so sensitive to coolant requirements, it still offers performance in excess of any Polyamide bond system at a very similar price point.

Perfect for the smaller to mid-size shops with a variety of machines, giving the customer more flexibility from his wheel inventory.

Easy to true and dress on conventional wheel truing equipment.

A truly great universal wheel for a great price to performance ratio.

Grinding Efficiency Chart – Relative G-ratio



Flute grinding of carbide end mill

Workpiece: 3/4" diameter carbide rod. Grade: 6% Cobalt Nano-grain. 125mm long rod. 70mm Flute length. 4.5mm Flute depth. Three flute tool.

Machine: Walter Helitronic® with 35HP spindle.

Wheel: 1A1 5" x 1/2" x 1-1/4" D220 C100 Pro-Flute® bond.

Grinding Parameters: Rpm $V_c = 18\text{m/s}$, Depth of cut, $a_e = 4\text{mm}$, Feed speed, $V_{fa} = 190\text{mm}$. $Q = 12.6\text{mm}^3$

Coolant: Oil at 200p.s.i. pressure. Transor® filtration system. Chiller.

Tools Produced: 349pcs, soft dressed at 80pcs and re-trued at 349 pcs