

# Cutter Bodies & Diamond Tipped Cartridges



### Benefits of the Decatur Diamond Ultra-Mill®

- Original patented design made very popular due to ease of set-up and industry leading flatness and finish
- Adjustable height can be set to less than .005mm total TIR
- Large pocket for ease of chip evacuation
- Ability to run as a roughing mill, or with wipers at intervals to achieve close tolerance finish & flatness
- Symmetrical cutter body allows you to use as a RH or LH mill with only a change of cartridges
- Geometry in the cartridge, instead of design, allows it to apply the best solution to your process and needs with variable radial & axial rake
- Standard in multiple ranges from 50mm–250mm metric, 2.0”–14.0” imperial diameter sizes, or custom to your specific needs
- Ideal for milling Aluminum, Cast Iron, MMC, Copper Alloys, Plastics, & Composites
- Available for PCD & PcBN Applications
- Capable to run with flood coolant, thru spindle coolant, or dry as needed

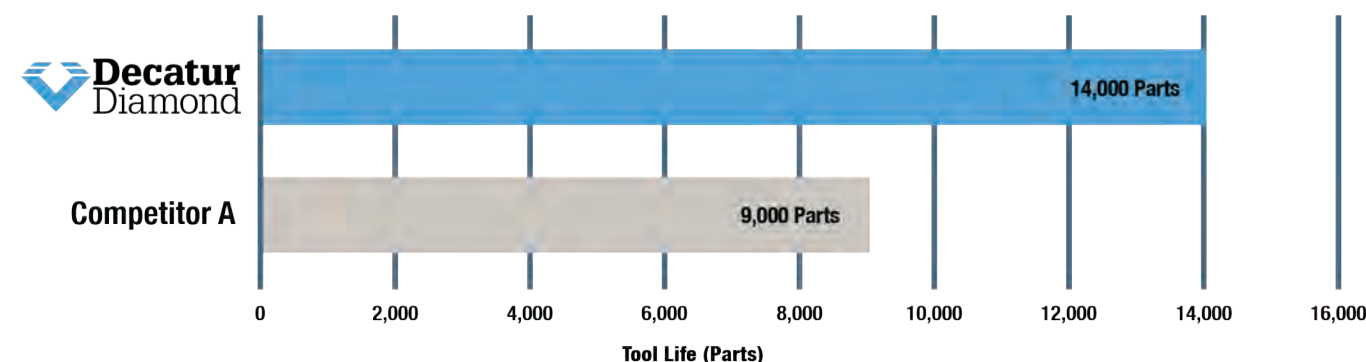


### Case Study

3.0” Face Mill with Steel Body, 10 Station, PCD Tipped Adjustable Cartridge, .080mm/tooth feed  
Material 365 — T6 Cast Aluminum Face Milling Test — Cylinder Head Deck Face Cubing Application

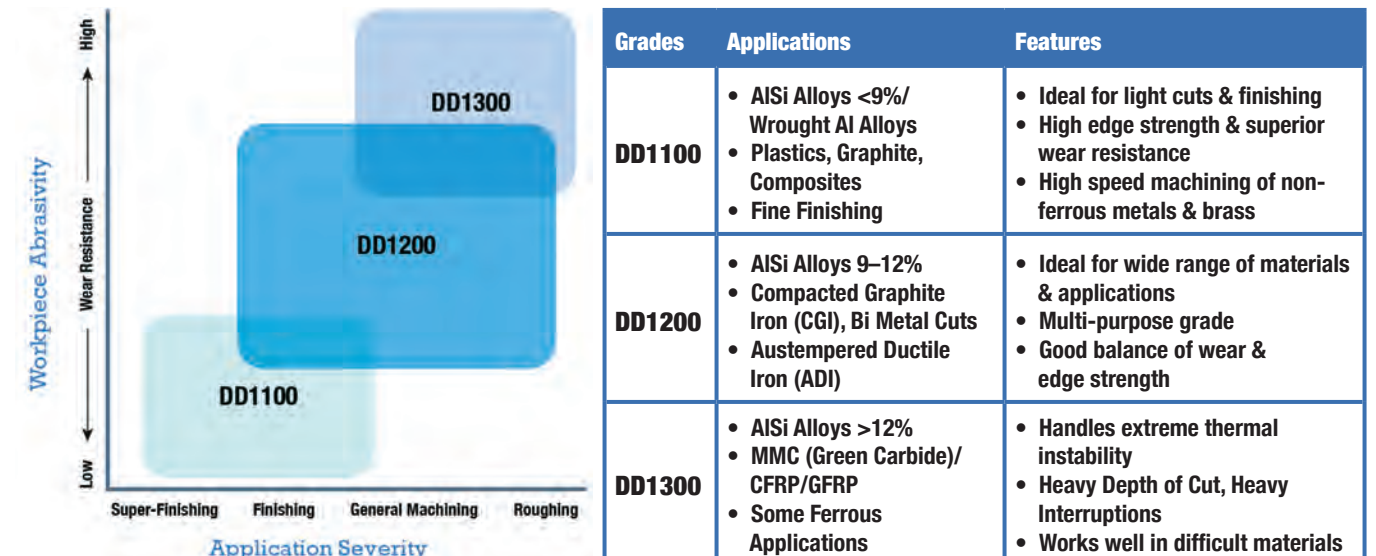
PCD Grade	Tool Life (Parts)	Failure	RPM	Cutting Speed	Feed Rate	Depth of Cut
Competitor A	9,000	Flatness	11642	2250 m/min	9314 mm/min	2 passes, total up to 5mm
DD1200	14,000	Worn/Finish	11642	2250 m/min	9314 mm/min	1 pass, up to 5mm

\*Both tools run wet with flood & thru coolant

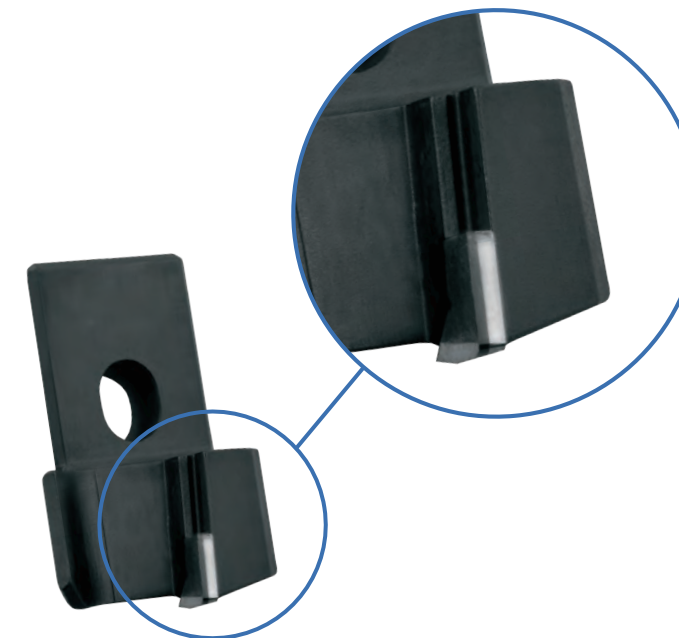


The Decatur Diamond Ultra-Mill® was tested to reduce cycle time. Results eliminated one machining pass at same cutting conditions, while increasing tool life by 55.5%.

DD1200 is the standard grade PCD for the Ultra-Mill®  
Chart below shows how optional PCD grades can be applied



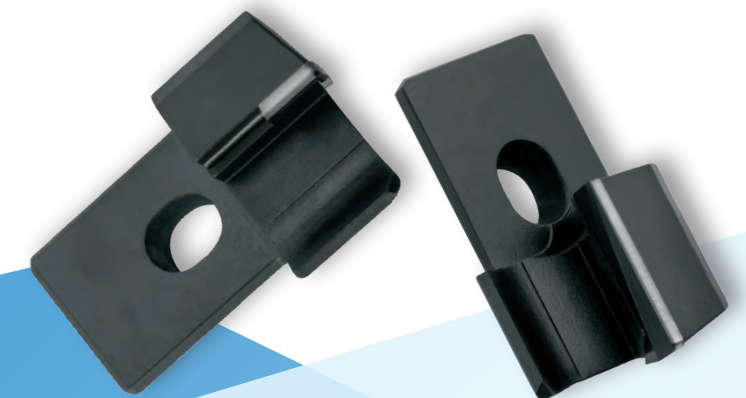
- Grades for all applications
- Increase productivity
- Lower output costs per unit



### Cartridge Options:

- RH or LH cartridge options
- Multiple wiper or radius combinations
- Multiple positive & negative axial rake options
- Multiple positive & negative radial rake options
- Available in PCD & PcBN tips

Contact us for help with your cartridges:  
[salesddi@heritagecutter.com](mailto:salesddi@heritagecutter.com)  
888.547.4156



# Ultra-Mill®

## Speeds & Feeds Recommendations

### Material Cutting Condition Recommendations (Metric)

Material Machined		Operation	SFM (m/min)	Feed Rate (mm/rev)	Ap (mm)
Aluminum Alloy	4–8% Si	Rough/Interrupted	1000–4000	0.1–0.4	0.1–4.0
		Finishing/Light/Continuous	2000–5000	0.1–0.3	0.1–0.5
	9–12% Si	Rough/Vary DOC/Interrupted Finishing/Light/Continuous	700–2000 1000–3000	0.1–0.4 0.1–0.3	0.1–4.0 0.1–0.5
	>12% Si	Rough/Vary DOC/Interrupted Finishing/Light/Continuous	300–1000 500–1500	0.1–0.4 0.1–0.3	0.1–4.0 0.1–0.5
Cast Iron	CGI/NCI	Rough/Vary DOC/Interrupted	50–300	0.2–0.5	0.5–3.0
		Finishing/Light/Continuous	50–400	0.1–0.3	<0.5
MMC	20% SiC/Al	General Milling	300–700	0.1–0.4	0.2–1.5
Copper Alloys	Copper, Zinc, Brass	General Milling	400–1300	0.03–0.3	0.05–2.0
Plastics/ Composites	Carbon/Graphite Fiberglass/Plastics	General Milling	300–2500	0.05–0.3	0.1–3.0
		General Milling	200–1000	0.05–0.5	0.1–3.0

### Material Cutting Condition Recommendations (Imperial)

Material Machined		Operation	SFM (feet/min)	Feed Rate (inch/rev)	Ap (inch)
Aluminum Alloy	4–8% Si	Rough/Interrupted	3300–13000	0.004–0.016	0.004–0.150
		Finishing/Light/Continuous	6500–16500	0.004–0.012	0.004–0.020
	9–12% Si	Rough/Vary DOC/Interrupted Finishing/Light/Continuous	2300–6500 3300–10000	0.004–0.016 0.004–0.012	0.004–0.150 0.004–0.020
	>12% Si	Rough/Vary DOC/Interrupted Finishing/Light/Continuous	1000–3300 1600–4900	0.004–0.016 0.004–0.012	0.004–0.150 0.004–0.020
Cast Iron	CGI/NCI	Rough/Vary DOC/Interrupted	150–1000	0.008–0.020	0.020–0.120
		Finishing/Light/Continuous	150–1300	0.004–0.012	<0.020
MMC	20% SiC/Al	General Milling	1000–2300	0.004–0.016	0.008–0.060
Copper Alloys	Copper, Zinc, Brass	General Milling	1300–4300	0.001–0.012	0.002–0.080
Plastics/ Composites	Carbon/Graphite Fiberglass/Plastics	General Milling	1000–8200	0.002–0.012	0.004–0.120
		General Milling	650–3300	0.002–0.020	0.004–0.120

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