



evo-lu-tion

*Dinosaurs belong in museums...not
in your production line.*

Machinability Test #2

Purpose:

To evaluate the machinability of
DC53 vs. D2

Test Parameters

- Date: 5/26/06
- Location: Niagara Cutter, Reynoldsville, PA
- Conditions: Mazak FJV-20VMC 40 Taper with Techniks TG Collet
- Coolant: Wallover WS8065 6%, Std pressure delivery
- Materials Tested: D2 & DC-53 in the fully annealed condition

Test Tools Used



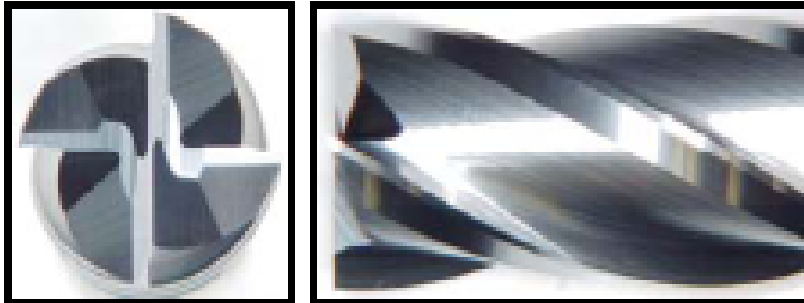
Niagara Cutter

Niagara End Mills

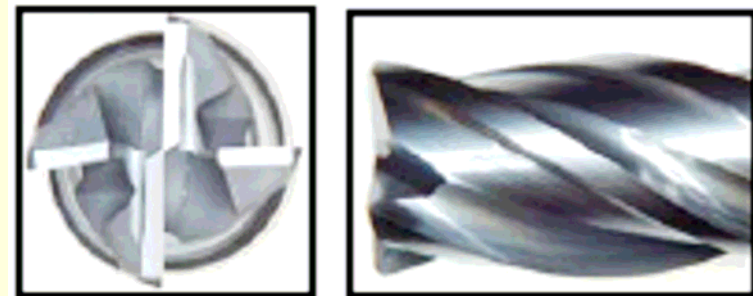
1/2" x 1/2" x 5/8" x 2-1/2" Solid
Carbide C430
TiAlN Coated
General Purpose

1/2" x 1/2" x 1/2" x 2-1/2" Solid
Carbide Stabilizer-GP TiAlN
Coated
High Performance

C430



Stabilizer-GP



Test Results

- Niagara C430 End Mill
General Purpose
- D2 and DC-53

SFM	250
RPM	1910
CPT	0.001
IPM	7.64
RDOC	0.1
ADOC	0.5
MRR	0.38
Lineal Inches Removed	60.0
Cubic Inches Removed	3.0

Measured Wear Lands

D2 - C430

	Wear Tooth #1	Wear Tooth #2	Wear Tooth #3	Wear Tooth #4	Avg.	Spindle Load
30 Linear Inches	0.0019	0.0021	0.0021	0.0019	0.0020	8%
60 Lineal Inches	0.0030	0.0032	0.0034	0.0029	0.0031	9%

DC53 - C430

	Wear Tooth #1	Wear Tooth #2	Wear Tooth #3	Wear Tooth #4	Avg.	Spindle Load
30 Linear Inches	0.0014	0.0013	0.0013	0.0014	0.0014	7%
60 Lineal Inches	0.0020	0.0022	0.0021	0.0021	0.0021	8%

Realize The Advantage



Test Results

- Niagara Stabilizer GP End Mill
High Performance
- Run in DC-53

SFM	350
RPM	2674
CPT	0.0015
IPM	16.04
RDOC	0.1
ADOC	0.5
MRR	0.80
Lineal Inches Removed	60.0
Cubic Inches Removed	3.0

Measured Wear Lands

DC53 - Stabilizer

	Wear Tooth #1	Wear Tooth #2	Wear Tooth #3	Wear Tooth #4	Avg.	Spindle Load
30 Linear Inches	0.0024	0.0025	0.0023	0.0025	0.0024	12%
60 Lineal Inches	0.0031	0.0032	0.0032	0.0032	0.0032	13%

Realize The Advantage



Conclusions

- ❑ The DC-53 shows increased machinability compared to D-2
 - Flank wear is 30% to 50% less
 - Tool life is increased up to double
 - Tooling costs will be cut nearly in half

- ❑ Metal removal rates can increase 100% using High Performance Tooling
 - Doubling feed rates will increase throughput in your shops

- ❑ Flank wear from tooth to tooth is very consistent using Niagara end mills.



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