

# CUTTING

Vol. 3, Issue 1

# Times

with better tools from

**Dapra Corporation**  
66 Granby Street, Bloomfield, CT 06002  
1-800-243-3344 • 860-242-8539  
Fax 860-242-3017  
Email info@dapra.com  
www.dapra.com

# DAPRA®

## APET & XPET Inserts High-Performance Square Shoulder Milling

Can you obtain high-performance Square Shoulder milling and save money, too?

*Dapra's NEW APET and XPET CNC Pressed Inserts make it possible!*

Dapra is very pleased to introduce the newest addition to our Square Shoulder milling line: APET and XPET CNC pressed-to-size inserts. These inserts are designed to provide the same high-performance capabilities as our current precision-ground APHT inserts, but at a 30% lower price! This combination provides

our customers with the immediate benefit of reduced tooling costs, with no reduction in performance. Additionally, Dapra has simplified the grade structures, making this an easy product from which to select the right geometry and grade. Following are some recommendations to help determine the right choice for your application.

### Geometry Selection

Dapra's new inserts are available in two geometries: APET and XPET. These cover virtually every possible material being machined today.

The **APET** insert is designed with optimum strength in mind. It has a high-positive radial rake to keep cutting forces and torque demand low, but it has a reinforced cutting edge with a T-land edge preparation. The T-land is enhanced with a very light hone, providing a good combination of strength and sharpness. This edge is suggested where high strength or wear resistance is needed. Example applications would be: most carbon steels (except free machining gummy, low-carbon steels); alloyed steels; gray and ductile irons; and some 400 series stainless steels. Keep in mind that this insert will provide a stronger edge but, due to its strength, create slightly more cutting force and burr.

The **XPET** insert is designed for higher-shear applications. It has a high-positive radial grind, like the APET, but provides only a light hone for an edge preparation. This edge will optimize performance in applications where cutting edge sharpness is critical. Example applications would be: free machining low-carbon steels; stainless steels (300 series and PH stainless);

copper alloys; and aluminum. The XPET insert will not have as much strength as the APET, but it will provide excellent shear and minimal burr creation.

### Grade Selection

Both geometries are available in the same grades, making the selection process much easier. The two base (uncoated) grades are DMP35 and DMK25.

The **DMP35** is a very tough, shock-resistant carbide grade. Constructed with a medium/coarse grain carbide with a high cobalt content, this grade will be most applicable where edge chipping and vibration are possible. Ideal applications include those involving tough materials, long reach tools, cast steels containing hard spots, and any situation where chipping out of carbide inserts is typical. This grade is also excellent for tough materials such as stainless steels, high-temperature alloys, and harder steels where cutting edge toughness is important. There are two coated versions of this grade. The TiCN coated version, referred to as **DMP353**, has properties of high wear resistance and toughness where heat generation is low-to-medium. In other

words, if the application is not creating a high level of heat or is running with coolant, this should be the grade of choice. The AlTiN coated version, referred to as **DMP357**, has properties of high heat resistance and coating hardness. This combination is required when machining at high speeds or in high-temperature materials. This coating should be chosen for applications where high levels of heat are expected, for dry machining, or if the TiCN shows premature wear due to high heat.



## From the President

### More Wisdom from Harry Gray

Here is the second in our series of quotations from Harry Gray, Chairman of United Technologies. It will certainly give anyone involved in a competitive field something to ponder.

#### "The Slim Margin of Success"

The difference between winning and losing is sometimes very slight. There were eight finalists in the men's 100-meter dash at the 1976 Olympics. The Gold Medal winner beat the eighth man by less than half a second.

There are five million people engaged in selling in America. Can you imagine what our Gross National Product would be if each of them had made just *one more sale* last year?

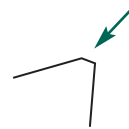
In sports, in business, in politics, in romance, winning isn't everything. But it sure beats losing. Go get 'em, *Tiger!*

*(Used by permission of Harry Gray.)*

Sincerely,

Tom Watson, President

**APET Cutting Edge  
(T-Land Edge)  
High Strength**



**XPET Cutting Edge  
(Honed Edge)  
High Shear**



Continued on page 2...

## Test Applications with the New XPET Inserts Yield Great Results!

Dapra recently ran two test applications with our newly-introduced XPET pressed inserts.

The results, when compared with other inserts previously used, were outstanding.

### Application 1 – Increased inches per minute by 200% and doubled tool life!

**Material:** 316 Stainless Steel  
**Application:** Profile Milling  
**Cutting Tool:** CC-SSER1250-4000R55-3C  
(1.250" diameter 4" reach)  
**Depth of Cut:** .250"  
**Width of Cut:** .750"

**Before:** Competitor #1  
690 (1.250" End Mill)  
600 SFM, .004" IPT  
1830 RPM feed rate, 23 IPM  
Number of pieces before indexing: 21 pcs.

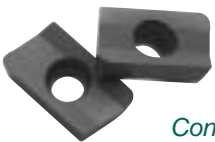
**After:** Dapra  
New XPET160408, DMP357 grade  
700 SFM, .011" IPT  
2139 RPM feed rate, 70 IPM  
Number of pieces before indexing: 48 pcs.

### Application 2 – Increased tool life by 33% with 50% increased feed rate!

**Material:** 10% Silicon Brass Castings  
**Application:** Face Milling  
**Cutting Tool:** SSSM3000-1000-R55-6  
(3" face mill)  
**Depth of Cut:** .150"  
**Width of Cut:** 2.750"

**Before:** Competitor #2  
1570 SFM, .005" IPT  
2000 RPM feed rate, 60 IPM  
Number of parts per index: 144 pcs.

**After:** Dapra  
New XPET160408, DMK257 grade  
1570 SFM, .007" IPT  
2000 RPM feed rate, 84 IPM  
Number of parts per index: 215 pcs.



### APET and XPET Inserts

Continued from page 1...

The **DMK25** grade is a much harder, more wear-resistant grade. Comprised of a micro-grain carbide with a low cobalt content, this grade provides the ultimate in wear resistance. DMK25 thrives in high-wear applications such as cast iron, copper alloys, and aluminum. This grade will also provide good wear resistance in some stainless steels and high-temperature alloys where the cutting operation is smooth and chatter-free. Note that, due to the higher hardness, this grade will be more apt to chip if the cutting parameters are too harsh, or vibration is high. Coated versions are the same as the DMP35, with both TiCN and AlTiN (**DMK253** and **DMK257** respectively) available. Use the DMK253 where heat generation is lower or more toughness is desired; use the DMK257 where temperatures will run higher or for dry machining.

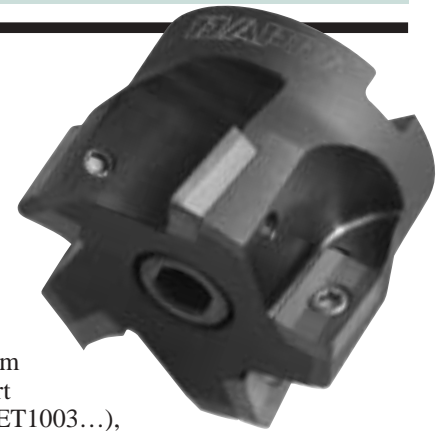
#### General Operating Tips:

The general rules of thumb are these: the APET is stronger, and the XPET is sharper; and the DMP35 substrate is tougher, and the DMK25 substrate is harder. Most applications will be successfully run with the APET geometry and the DMP35 substrate, but the results may not be the best, as far as wear resistance and burr creation are concerned. The failure mechanism for this combination will almost always be wear. If the DMP35 substrate is not hard enough for the material being machined, then the wear will just occur more quickly. Conversely, if the DMK25 substrate is used for a tough application in which the DMP35 should have been used, failure may be in the form of insert chipping, which can lead to catastrophic tool failure.

It is safer, therefore, to start with the tougher grade if you are not sure which to use.

The extreme toughness characteristics of the DMP35 substrate make it more conducive to lower-speed/higher-feed operation. The higher hardness of the DMK25 grade makes it more conducive to higher-speed/lower-feed operation. For example, in a typical alloy steel (4140), the DMP357 grade should most often be run at approximately 600-800 SFM and a feed per tooth of .008"-.015". For the same material, the grade DMK257 insert should be run at 750-950 SFM and a feed per tooth of .004"-.008". Notice that the overall material removal rates slightly favor the DMP357, which should be used when the situation, such as heavy roughing, dictates. However, if the application calls for many parts to be machined over a long period of time, then tool wear becomes a more important issue. The use of the harder DMK257 grade may be justified, providing the application is stable enough to allow its use (smooth cut, little or no vibration).

Feed rates for the two geometries differ, as well. The APET insert, with the T-land cutting edge, allows higher feeds but also dictates a higher minimum feed. For the



10mm insert (APET1003...), a minimum feed of .004" should be maintained, while for the 16mm insert (APET1604..), a minimum feed of .006" should be maintained. This will allow the cutting edge (with prep) to get underneath the material and avoid the rubbing that increases heat and tool wear. The XPET insert, however, with only the light hone on the cutting edge, will allow lighter feeds when necessary. For both the 10mm and 16mm inserts, a minimum feed of .0025" should be maintained. It is important to remember that the lighter the feed, the lower your output. Always run the highest feed possible without chipping the insert. This will provide maximum performance and tool economy. In other words, you will be removing as much material per edge as possible for your money.

## Don't Miss These Two Opportunities to Meet Our People and See Our Products

### South-Tec and IMTS Shows Scheduled for 2004

Dapra will be participating in two trade shows during 2004. The first, **South-Tec**, will be held March 2-4 at the Charlotte Convention Center, Charlotte, North Carolina. Our booth, #1703, will feature our complete line of cutting tools and workholding equipment.

The **IMTS Show**, scheduled for September 8-15, will be located at McCormick Place in Chicago. Our booth there will be #E-2807. Please stop by to see the latest in cutting tool technology.

## Question? Comment? Suggestion? Here's who to contact:

### Dapra Corporation – Bloomfield, CT Main Office:

Dapra Corporation, 66 Granby Street, Bloomfield, CT 06002 / 860-242-8539 / 800-243-3344 / Fax 860-242-3017 / [www.dapra.com](http://www.dapra.com)

President/CEO	Tom Watson	x243	twatson@dapra.com
CFO	Linda Pilvelis	x225	lpilvelis@dapra.com
Product Manager	Mike Bitner	x227	mbitner@dapra.com
Customer Service Manager	Beverly Lonero	x247	blonero@dapra.com
Customer Service Rep.	Matt Milhomens	x245	mmilhomens@dapra.com
Customer Service Rep.	Dave Breton	x240	dbreton@dapra.com
Purchasing Manager	Claudia Lawrence	x231	clawrence@dapra.com
Marketing Coordinator	Debra MacDonald	x222	dmacdonald@dapra.com
Accounting Manager	Susan Girouard	x246	sgirouard@dapra.com
Accounting	Lillian Arce	x233	larce@dapra.com
Service/Repair	Richard Tatem	x226	rtatem@dapra.com
Warehouse	Bob Felber	x250	bfelber@dapra.com

### See Dapra Cutting Tools in Action!

Add the Dapra CD to your collection... our application demonstration CD, that is.

Dapra's free CD is sure to be a hit with everyone who uses cutting tools. It features a variety of our products and provides the opportunity to see Dapra cutting tools in action. The CD can be ordered through our Web site at [www.dapra.com](http://www.dapra.com).



**Just a reminder... We service all of our vises, spindles, BIAx scrapers, air tools and tables in our on-site repair department. Call 1-800-243-3344 for more information.**

### Dapra Corporation – National Sales Force:

Territory	Manufacturer's Representative	Regional Application Manager	Phone
New England (CT, MA, RI, VT, NH, ME, NY)	F&L Technical Sales 413-564-0733	Bill Schmidt	860-857-7473
Atlantic North (NJ, MD, DE, Eastern PA)	_____	Mike Bitner	815-509-6395
Mid-Atlantic Southeast (WV, VA, GA, NC, SC, Eastern TN)	Jones Marketing 803-366-2720	Bill Schmidt	860-857-7473
Southeast (AL, MS, Western TN)	Jones Marketing 770-921-1711	Bill Schmidt	860-857-7473
Florida	_____	Mike Bitner	815-509-6395
Ohio (OH, Western PA)	_____	Phil Woodworth Jeff Clear	231-578-4509 734-777-0357
Ohio Valley (IN, KY)	_____	Jim Olson	630-715-3580
Michigan (Excludes Upper Peninsula)	_____	Phil Woodworth Jeff Clear	231-578-4509 734-777-0357
Illinois	_____	Jim Olson	630-715-3580
North Plains (WI, MN, ND, SD, MI Upper Peninsula)	_____	Jay Swenson	414-788-1854
Central Plains (NE, IA, MO, KS)	Abbott-Warden Assoc. 913-432-8266	Jim Olson	630-715-3580
South Central (TX, OK)	Ken Jendel & Assoc. 817-284-0318	Phil Woodworth Jeff Clear	231-578-4509 734-777-0357
Louisiana/Arkansas	Ken Jendel & Assoc. 817-284-0318	Mike Bitner	815-509-6395
Mountain (MT, WY, CO, UT, NM, ID)	_____	Mike Bitner	815-509-6395
Pacific Central (CA, AZ, NV)	Schenk Intertech 949-360-1512	Phil Woodworth Jeff Clear	231-578-4509 734-777-0357
Pacific Northwest (WA, OR, AK, HI)	Industrial Marketing 360-387-8648	Mike Bitner	815-509-6395