Tyson infoTECH™

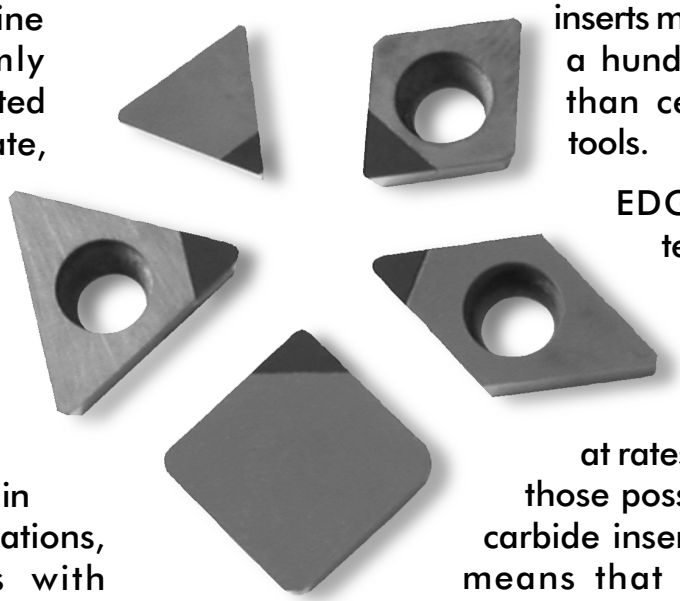
Issue 11

EDGE PCD

Indexable Inserts

EDGE PCD inserts are widely used to machine practically all non-ferrous metals, ranging from soft aluminum through cemented tungsten carbide. They are also used to machine plastics, including plastics filled or reinforced with difficult-to-machine materials. Ceramic materials and graphite are other materials being machined with EDGE PCD inserts.

The polycrystalline diamond layer resists wear far better than many ordinary tool materials, and resists chipping and cracking. In addition, the polycrystalline diamond layer is firmly supported by the cemented tungsten carbide substrate, which gives the blank added toughness and shock resistance.

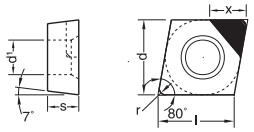


Because of their high resistance to shock and vibration, EDGE PCD inserts are being successfully applied in tough machining applications, such as work-pieces with interrupted cuts, that often cause ordinary tools to break down. EDGE PCD inserts can handle workpieces that have hard inclusions which cause excessive edge wear on ordinary tools. In certain applications, even when machining abrasive silicon-aluminum alloys, EDGE PCD inserts may have useful lives a hundred times greater than cemented carbide tools.

EDGE PCD inserts tend to keep their sharp edges, even when removing material at rates far above those possible with carbide inserts. This means that close dimensional and surface finish tolerances can be held through long production runs.

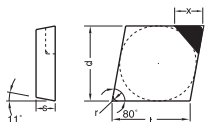
EDGE PCD indexable inserts for turning & boring

CCGW- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	CCGW-21.50.5	.254	3/32	.008	1/4	.110	.115	●	
	CCGW-21.51			1/64			.115	●	
	CCGW-32.51	.380	5/32	1/64	3/8	.173	.185	●	
	CCGW-32.52			1/32			.182	●	❍

"❍" denotes available upon request

CPG- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	CPG-421	.508	1/8	1/64	1/2	---	.185	●	
	CPG-422			1/32			.182	●	❍

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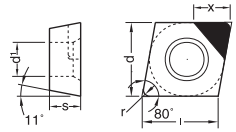
CPGW- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	CPGW-21.51	.254	3/32	1/64	1/4	.110	.115	●	
	CPGW-32.51	.380	5/32	1/64	3/8	.173	.185	●	
	CPGW-32.52			1/32			.182	●	❍

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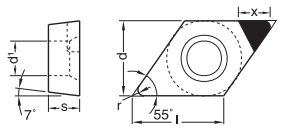
EDGE PCD indexable inserts for turning & boring

DCGW- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	DCGW-21.50.5	.305	3/32	.008	1/4	.110	.103	●	
	DCGW-21.51			1/64			.103	●	
	DCGW-32.51	.457	5/32	1/64	3/8	.173	.174	●	
	DCGW-32.52			1/32			.159	●	❍

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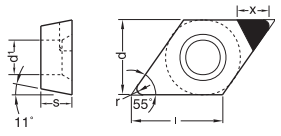
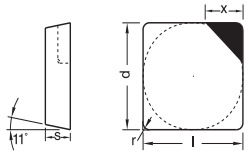
DPGW- ...

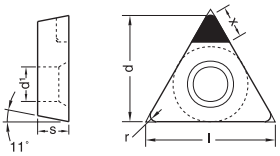
Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	DPGW-21.51	.305	3/32	1/64	1/4	.110	.102	●	
	DPGW-32.51	.457	5/32	1/64	3/8	.173	.174	●	
	DPGW-32.52			1/32			.158	●	●

SPG- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	SPG-321	.375	1/8	1/64	3/8	---	.173	●	
	SPG-322			1/32			.157	●	
	SPG-421	.500	1/8	1/64	1/2	---	.173	●	
	SPG-422			1/32			.157	●	●

EDGE PCD indexable inserts for turning & boring

TCGW- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	TCGW-1.21.20.5	.270	5/64	.008	5/32	.087	.112	●	
	TCGW-1.81.50.5	.379	3/32	.008	7/32	.098	.112	●	
	TCGW-1.81.51			1/64			.106	●	
	TCGW-21.51	.433	3/32	1/64	1/4	.110	.106	●	
	TCGW-21.52			1/32			.095	●	
	TCGW-32.51	.650	5/32	1/64	3/8	.173	.177	●	
	TCGW-32.52			1/32			.166	●	❍

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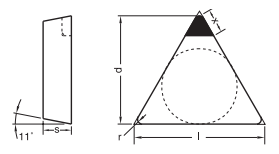
TPG- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	TPG-221	.433	1/8	1/64	1/4	---	.106	●	
	TPG-222			1/32			.095	●	
	TPG-321	.650	1/8	1/64	3/8	---	.177	●	
	TPG-322			1/32			.166	●	❍
	TPG-431	.866	3/16	1/64	1/2	---	.177	●	
	TPG-432			1/32			.166	●	❍

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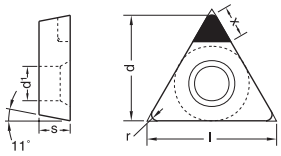
EDGE PCD indexable inserts for turning & boring

TPGW- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	TPGW-1.81.51	.379	3/32	1/64	7/32	.102	.106	●	
	TPGW-21.51	.433	3/32	1/64	1/4	.110	.106	●	
	TPGW-21.52			1/32			.095	●	
	TPGW-32.51	.650	5/32	1/64	3/8	.173	.177	●	
	TPGW-32.52			1/32			.166	●	❍

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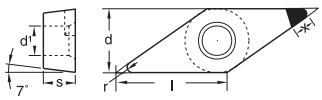
VCGW- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	VCGW-221	.437	1/8	1/64	1/4	.110	.084	●	
	VCGW-331	.654	3/16	1/64	3/8	.173	.152	●	
	VCGW-332			1/32			.121	●	❍

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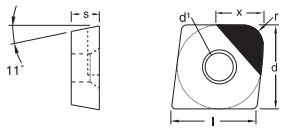
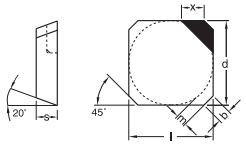
EDGE PCD indexable inserts for milling

FPCW- ... R

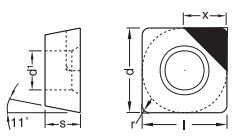
Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	FPCW-432R	.5003	.188	1/32	1/2	.195	.237	●	●
	FPCW-436R			3/32			.237	●	●

SEK- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	SEK-42 AFN-1	.500	3/16	---	1/2	---	.134		❍

"❍" denotes available upon request

SPHW- ...

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	SPHW-32.52	.375	5/32	1/32	3/8	---	.157	●	❍

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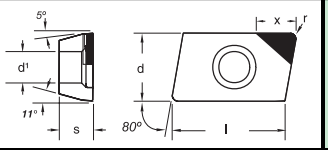
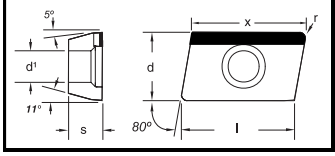
EDGE PCD indexable inserts & cartridges for milling

XPHW- ... F..

Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	**XPHW-160408F20** (Depth of cut .200")	.630	3/16	1/32	3/8	.173	.250	❍	●
	**XPHW-160408F50** (Depth of cut .500")	.630	3/16	1/32	3/8	.173	.600	❍	●

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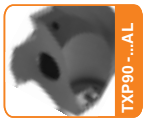
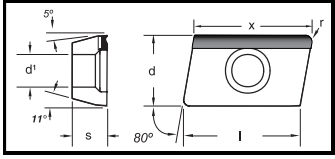
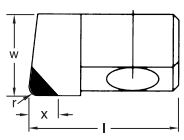
XPHT- ... W..



Insert	Designation	Dimensions						PCD Grade	
		l	s	r	d	d_1	x	E20	E30
	**XPHT-160408W50** (Depth of Cut .500")	.630	3/16	1/32	3/8	.173	.600	●	

CEB90PR-...

Cartridge	Designation	Dimensions				PCD Grade	
		l	w	r	x	E20	E30
	**CEB90PR-8CA4-031**	1.25	.625	1/32	.188	●	❍
	CEB90PR-8CA4-093			3/32	.185	●	❍

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EDGE PCD Grade Characteristics

PCD E20

- PCD Grade used to finish machine abrasive materials, non-ferrous metals and non-metallic materials
- High wear resistance with very good abrasion resistant qualities
- Ground to a very fine sharp edge, thereby providing very good surface finishes
- Achieves excellent tool life

PCD E30

- PCD Grade used for general turning and milling highly abrasive materials, non-ferrous metals and non-metallic materials
- Combined edge toughness and good wear resistance, with excellent abrasion resistant qualities
- The insert has a good edge providing for good surface finishes
- Achieves excellent tool life

EDGE PCD Application Guidelines*

for Aluminum, Aluminum Alloys & Non-metals

Material		Operation	Grade	Cutting Speed (in SFPM)	Depth of Cut a_p in inches	Feed Rate (Turning - i.p.r. Milling - f.p.t.)
Aluminum & Aluminum Alloys	4%-8% Si	Rough Turning	E20, E30	4,200 - 6,500	.004 - .125	.004 - .025
	9% -14% Si		E20, E30	3,300 - 5,200	.004 - .125	.004 - .020
	16% - 18% Si		E30	1,000 - 2,300	.004 - .125	.004 - .015
	4%-8% Si	Finish Turning	E20	4,200 - 6,500	.004 - .040	.004 - .012
	9% -14% Si		E20	3,300 - 5,200	.004 - .040	.004 - .010
	16% - 18% Si		E20	1,000 - 2,300	.004 - .040	.004 - .008
	4%-8% Si	Milling	E30	2,000 - 12,000	.004 - .125	.004 - .012
	9% -14% Si		E30	750 - 9,000	.004 - .125	.004 - .012
	16% - 18% Si		E30	1,000 - 3,000	.004 - .125	.004 - .012
Copper, Zinc & Brass		Rough Turning	E20	2,000 - 3,000	.020 - .080	.004 - .012
		Finish Turning	E20	2,250 - 4,000	.004 - .020	.002 - .012
		Milling	E30	2,250 - 4,000	.004 - .125	.004 - .012
Reinforced Plastics		Rough Turning	E20	500 - 2,500	.040 - .080	.004 - .015
		Finish Turning	E20	1,000 - 5,000	.004 - .040	.004 - .015
		Milling	E30	1,000 - 5,000	.004 - .125	.004 - .015
Sintered Tungsten Carbide		Rough Turning	E30	65 - 130	.004 - .020	.004 - .012
		Finish Turning	E30	65 - 130	.004 - .008	.004 - .012
Carbon/Graphite Composite		Finishing	E30	1,000 - 4,000	.005 - .030	.005 - .015
		Roughing	E30	1,000 - 4,000	.030 - .236	.010 - .050

Turning - i.p.r. (inches per revolution) Milling - f.p.t. (feed per tooth) *Guidelines to establish a nominal starting point

WARNING: Cutting tools are susceptible to chipping and/or fragmenting while in use. Machine guards and personal protective clothing/equipment should be utilized at all times to prevent bodily injury from flying particles or chips. Adequate ventilation and body protection should be provided when grinding tools. Hazardous dust and mist are produced during grinding; avoid breathing of and prolonged skin contact. Workers should be provided with adequate ventilation and body protection.

TYSON TOOL™

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