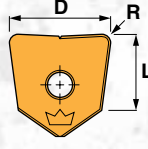
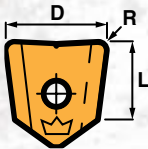
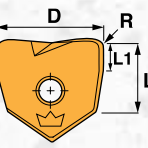
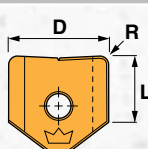
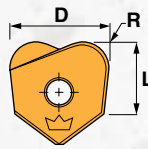
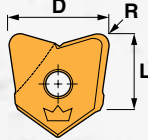


# Copy Milling Inserts

## Flat Bottom, Back Draft, Toroid

BD-N	Tool Ordering Number	Dimensions			Grade			Description	
		D	L	R	XRN	TLN	HSN		
	BD-0375-N	0.375	0.357	1/32,1/16	•	•	•	Precision ground with 7° back taper. Used for milling of cores, cavities, fillets with straight or very steep walls of harder materials.	
	BD-0500-N	0.500	0.380	1/32,1/16	•	•	•		
	BD-0625-N	0.625	0.457	1/32,1/16	•	•	•		
	BD-0750-N	0.750	0.540	1/32,1/16,1/8	•	•	•		
	BD-1000-N	1.000	0.740	1/32,1/16,1/8	•	•	•		
	BD-1250-N	1.250	0.919	1/32,1/16,1/8	•	•	•		
BD-R	Number	D	L	R	XRN	TLN	HSN	Description	
	BD-0375-R	0.375	0.340	1/32	•	•	•	Precision ground with positive ground chip-breaker and 7° back taper. Used for milling of cores, cavities, fillets with straight or very steep walls of softer materials.	
	BD-0500-R	0.500	0.380	1/32,1/16,1/8	•	•	•		
	BD-0625-R	0.625	0.457	1/32,1/16	•	•	•		
	BD-0750-R	0.750	0.540	1/32,1/16,1/8	•	•	•		
	BD-1000-R	1.000	0.740	1/32,1/16,1/8	•	•	•		
	BD-1250-R	1.250	0.919	1/32,1/16,1/8	•	•	•		
BDS	Number	D	L	R	L1	XRN	TLN	HSN	Description
	BDS-0375-N	0.375	0.340	1/32,1/16	0.125	•	•	•	Precision ground with unique crossover design between flat bottom FB and back draft DB inserts. Allows straight walls with a larger step down than BD. Allows higher cutting speeds and feeds.
	BDS-0500-N	0.500	0.380	015,1/32,1/16	0.125	•	•	•	
	BDS-0625-N	0.625	0.457	1/32,1/16	0.125	•	•	•	
	BDS-0750-N	0.750	0.540	1/32,1/16,1/8	0.125	•	•	•	
	BDS-1000-N	1.000	0.740	1/32,1/16,1/8	0.125	•	•	•	
	BDS-1250-N	1.250	0.919	1/16	0.125	•	•	•	
FB-R	Number	D	L	R	XRN	TLN	HSN	Description	
	FB-0375-R	0.375	0.341	1/32	•	•	•	Precision ground with positive ground chip-breaker. Flat bottom inserts for shoulder milling, fillet finishing and long reach angular wall finishing of softer materials.	
	FB-0500-R	0.500	0.350	1/32,1/16,1/8	•	•	•		
	FB-0625-R	0.625	0.421	1/32,1/16	•	•	•		
	FB-0750-R	0.750	0.496	1/32,1/16,1/8	•	•	•		
	FB-1000-R	1.000	0.679	1/32,1/16,1/8	•	•	•		
	FB-1250-R	1.250	0.843	1/32,1/16,1/8	•	•	•		
TO	Number	D	L	R	XRN	TLN	HSN	Description	
	TO-0375	0.375	0.349	0.125	•	•	•	Precision ground large corner radius & back taper for spiral and pocket milling. Milling of pre-hard and hardened flat surfaces at higher speeds than tools with smaller corner radii. Good choice for HS milling of Aluminum.	
	TO-0500	0.500	0.377	0.125	•	•	•		
	TO-0625	0.625	0.433	0.156	•	•	•		
	TO-0750	0.750	0.518	0.187	•	•	•		
	TO-1000	1.000	0.716	0.250	•	•	•		
	TO-1250	1.250	0.865	0.312	•	•	•		
TOBD-NF	Number	D	L	R	XRN	TLN	HSN	Description	
	TOBD-0500-NF	0.500	0.377	0.125				Millstar inserts designed for high speed high feed roughing of Aluminum, but also has the versatility to be used for fine finishing as well.	
	TOBD-0625-NF	0.625	0.433	0.125					
	TOBD-0750-NF	0.750	0.518	0.125					
	TOBD-1000-NF	1.000	0.716	0.125					

### Radius Ordering Numbers:

For .015 use ordering # .015 • For 1/32" use ordering # 02 1/16" use ordering # 04

For 1/8" use ordering # 08

Example: 1/2" BDS-0500N-04-HSN

### NA

Non-coated grade.

### HSN

Millstar's new coating is a multi-layer hybrid Nano coating. This new coating has very good heat resistance and high hardness. The HSN coating is designed for use in HSM of Heat Treated materials up to 72 HRC.

### ALTiN-EXALON (TLN)

Titanium Aluminum Nitride advanced PVD coating. A special, improved ALTiN coating approaching surface hardness of CBN on a tough substrate. Recommended for tough and hard metal machining applications.

### DMD

Diamond coating. Custom coating for cutting non-ferrous, non-metallic and very abrasive materials at highly elevated speeds. Use on copper, bronze, brass, aluminum-silicon alloys, carbon graphite, solid and fiber-reinforced plastics, ceramics and composite materials.

Custom tool coatings for specific applications are available by request.

## Copy Milling Inserts

### NA

Non-coated grade.

### HSN

Millstar's new coating is a multi-layer hybrid Nano coating. This new coating has very good heat resistance and high hardness. The HSN coating is designed for use in HSM of Heat Treated materials up to 72 HRC.

### ALTiN-EXALON (TLN)

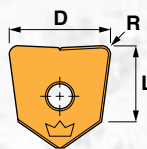
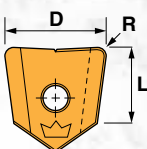
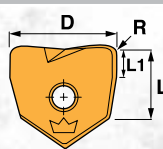
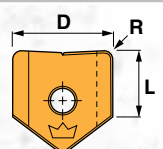
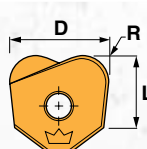
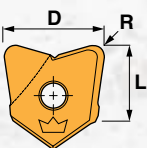
Titanium Aluminum Nitride advanced PVD coating. A special, improved ALTiN coating approaching surface hardness of CBN on a tough substrate. Recommended for tough and hard metal machining applications.

### DMD

Diamond coating. Custom coating for cutting non-ferrous, non-metallic and very abrasive materials at highly elevated speeds. Use on copper, bronze, brass, aluminum-silicon alloys, carbon graphite, solid and fiber-reinforced plastics, ceramics and composite materials.

Custom tool coatings for specific applications are available by request.

### Flat Bottom, Back Draft, Toroid

BD-N	Tool Ordering Number	Dimensions			Grade			Description	
		D	L	R	XRN	TLN	HSN		
	BD-10-N	10	8,5	0,5/0,8/1,0	•	•	•	Precision ground with 7° back taper. Used for milling of cores, cavities, fillets with straight or very steep walls of harder materials.	
	BD-12-N	12	9,95	0,5/1,0/2,0	•	•	•		
	BD-16-N	16	11,55	0,5/1,0/1,3/2,0/3,0	•	•	•		
	BD-20-N	20	13,35	0,5/1,0/1,6/2,0/3,0	•	•	•		
	BD-25-N	25	19,95	1,0/2,0	•	•	•		
	BD-32-N	32	8,5	1,0/2,6	•	•	•		
BD-R	Number	D	L	R	XRN	TLN	HSN	Description	
	BD-10-R	10	8,5	0,5/0,8/1,0	•	•	•	Precision ground with positive ground chip-breaker and 7° back taper. Used for milling of cores, cavities, fillets with straight or very steep walls of softer materials.	
	BD-12-R	12	9,95	0,5/1,0	•	•	•		
	BD-16-R	16	11,55	0,5/1,0/1,3	•	•	•		
	BD-20-R	20	13,35	0,5/1,0/1,6	•	•	•		
	BD-25-R	25	19,95	1,0/2,0	•	•	•		
	BD-32-R	32	23,35	2,6	•	•	•		
BDS	Number	D	L	R	L1	XRN	TLN	HSN	Description
	BDS-10-N	10	8,5	0,1/0,8/1,0	3	•	•	•	Precision ground with unique crossover design between flat bottom FB and back draft DB inserts. Allows straight walls with a larger step down than BD. Allows higher cutting speeds and feeds.
	BDS-12-N	12	9,95	0,1/1,0	3	•	•	•	
	BDS-16-N	16	11,55	0,1/1,0/1,3	3	•	•	•	
	BDS-20-N	20	13,35	0,1/1,0/1,6	3	•	•	•	
	BDS-25-N	25	19,95	1,0/2,0	3	•	•	•	
	BDS-32-N	32	23,35	1,0/2,0	3	•	•	•	
FB-R	Number	D	L	R	XRN	TLN	HSN	Description	
	FB-10-R	10	8,5	0,8	•	•	•	Precision ground with positive ground chip-breaker. Flat bottom inserts for shoulder milling, fillet finishing and long reach angular wall finishing of softer materials.	
	FB-12-R	12	9,15	1,0	•	•	•		
	FB-16-R	16	10,65	0,5/1,3	•	•	•		
	FB-20-R	20	12,25	1,6	•	•	•		
	FB-25-R	25	16,35	2,0	•	•	•		
	FB-32-R	32	21,3	2,6	•	•	•		
TO	Number	D	L	R	XRN	TLN	HSN	Description	
	TO-10	10	8,65	3,0	•	•	•	Precision ground large corner radius & back taper for spiral and pocket milling. Milling of pre-hard and hardened flat surfaces at higher speeds than tools with smaller corner radii. Good choice for HS milling of Aluminum.	
	TO-12	12	9,20	3,0	•	•	•		
	TO-16	16	11,25	4,0	•	•	•		
	TO-20	20	13,15	5,0	•	•	•		
	TO-25	25	18,25	6,0	•	•	•		
	TO-30	30	22,15	7,5	•	•	•		
	TO-32	32	21,95	8,0	•	•	•		
TOBD-NF	Number	D	L	R	XRN	TLN	HSN	Description	
	TOBD-12-NF	12	9,2	3,0	•	•	•	Millstar inserts designed for high speed high feed roughing of Aluminum, but also has the versatility to be used for fine finishing as well.	
	TOBD-16-NF	16	11,25	3,0	•	•	•		
	TOBD-20-NF	20	13,15	3,0	•	•	•		
	TOBD-25-NF	25	18,25	3,0	•	•	•		