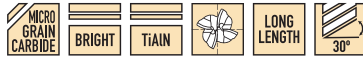


## 4-Flute Ball Nose Long Length

Added flute and overall length combine for greater reach when deep slotting or milling. These end mills have the capability to mill thicker material in one pass, eliminating the interrupted cut that may be present with regular length end mills.



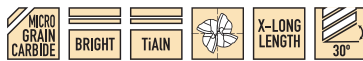
Bright: Speeds & Feeds > P. A32

TiAlN: Speeds & Feeds > P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price \$	TiAlN Code No.	Price \$
<b>Inch</b>							
1/8	1/8	3/4	2-1/4	102991	17.89	102942	20.94
3/16	3/16	3/4	2-1/2	102992	15.23	102944	17.91
1/4	1/4	1-1/8	3	102993	35.25	102946	36.20
5/16	5/16	1-1/8	3	102994	43.54	102948	53.08
3/8	3/8	1-1/8	3	102995	49.00	102950	50.87
7/16	7/16	2	4	102996	74.01	102952	88.06
1/2	1/2	2	4	102997	65.74	102954	89.62
5/8	5/8	2-1/4	5	102998	157.46	102956	180.65
3/4	3/4	2-1/4	5	102999	258.38	102958	285.26
1	1	2-1/4	5	103000	328.21	102960	345.48
<b>Metric</b>							
3	3	19	57	101620	29.06	101764	32.13
4	4	19	57	101621	29.69	101765	34.48
5	5	25	64	101622	32.06	101766	38.40
6	6	28	76	101623	37.11	101767	43.44
8	8	29	76	101624	45.84	101768	48.12
10	10	32	76	101625	52.95	101769	63.78
12	12	51	102	101626	79.67	101770	93.64
14	14	57	127	101627	149.42	-	-
16	16	57	127	101628	157.44	101772	180.65
18	18	57	127	101629	242.19	-	-
20	20	57	127	101630	266.27	101774	301.22
25	25	57	127	101631	422.52	-	-

## 4-Flute Ball Nose Extra Long Length

Extra Long Length End mills combine added flute and overall length for greater reach when deep slotting or milling. These end mills have the capability to mill much thicker material in a single pass, thereby eliminating the interrupted cut that may be present with regular length end mills.



Bright: Speeds & Feeds > P. A32

TiAlN: Speeds & Feeds > P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price \$	TiAlN Code No.	Price \$
<b>Inch</b>							
1/8	1/8	1	3	102480	24.01	102580	31.38
3/16	3/16	1-1/8	3	102482	30.45	102582	35.24
1/4	1/4	1-1/2	4	102484	37.09	102584	44.55
5/16	5/16	1-5/8	4	102486	48.60	102586	52.75
3/8	3/8	1-3/4	4	102488	46.74	102588	65.85
7/16	7/16	3	6	102490	96.21	102590	115.89
1/2	1/2	3	6	102492	107.08	102592	126.74
5/8	5/8	3	6	102494	157.46	102594	161.16
3/4	3/4	3	6	102496	258.38	102596	248.05
1	1	3	6	102498	439.37	102598	474.31

### Tolerances - Inch

Size	Diameter	Shank Diameter
3/32 thru 1"	+0.000"-0.002"	+0.0000"-0.0005"

### Tolerances - Metric

Size	Diameter	Shank Diameter
1mm-25mm	+0.000mm-0.051mm	+0.000mm-0.013mm

Steel

Stainless Steel

Cast Iron/Hardened

Aluminum

## 4-Flute Ball Nose Double End Regular Length

The ball nose 4-flute centre cut design allows for excellent finish while contour milling.



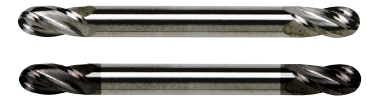
Bright: Speeds & Feeds > P. A32

TiAlN: Speeds & Feeds > P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price \$	TiAlN Code No.	Price \$
<b>Inch</b>							
1/8	3/8	3/8	3-1/16	101360	53.08	101708	67.32
5/32	3/8	7/16	3-1/8	101361	53.08	-	-
3/16	3/8	1/2	3-1/4	101362	53.08	101726	67.32
7/32	3/8	9/16	3-3/8	101363	53.08	-	-
1/4	3/8	5/8	3-3/8	101364	53.08	101728	67.32
9/32	3/8	11/16	3-3/8	101365	53.75	-	-
5/16	3/8	3/4	3-1/2	101366	53.75	101739	79.06
11/32	3/8	3/4	3-1/2	101367	53.75	-	-
3/8	3/8	3/4	3-1/2	101368	53.75	101748	79.06
7/16	1/2	7/8	4	101369	74.01	-	-
1/2	1/2	1	4	101370	74.01	101763	89.62

## 4-Flute Ball Nose Double End Stub Length

These end mills have a shorter flute length which provides greater rigidity with less deflection for shallow milling or slotting. This series is ideal for use on high tensile alloys and heat treated steels.



Bright: Speeds & Feeds > P. A32

TiAlN: Speeds & Feeds > P. A35

Cutting Dia.	Shank Dia.	Flute Length	Overall Length	Bright Code No.	Price \$	TiAlN Code No.	Price \$
<b>Inch</b>							
1/32	1/8	5/64	1-1/2	101355	27.00	101776	31.64
3/64	1/8	3/32	1-1/2	101356	27.00	101777	31.64
1/16	1/8	1/8	1-1/2	101357	27.00	101778	31.64
3/32	1/8	3/16	1-1/2	101358	27.00	101779	31.64
1/8	1/8	1/4	1-1/2	101359	16.74	101802	21.38
5/32	3/16	5/16	2	101371	29.76	101803	29.91
3/16	3/16	3/8	2	101372	24.32	101804	28.95
7/32	1/4	1/2	2-1/2	101373	31.64	101805	42.83
1/4	1/4	1/2	2-1/2	101374	31.64	101806	41.16
5/16	5/16	1/2	2-1/2	101375	48.60	101807	53.62
3/8	3/8	1/2	2-1/2	101376	53.75	101808	56.12
7/16	7/16	9/16	2-3/4	101377	74.01	101809	87.39
1/2	1/2	5/8	3	101378	75.60	101832	87.39