

**1-800-GRAINGER (472-4643)**

Finish - Machining	No. of Flutes	Corner Radius	Helix Angle	Item No.
<b>Ball</b>				
AlTiN Finish	3	—	30°	45XV08
	4	—	30°	45XW26
Bright (Uncoated)	2	—	30°	45XU24
Finish	3	—	30°	45XV07
TiCN Finish	4	—	30°	45XW25
	2	—	30°	45XU25
<b>Corner Radius</b>				
Bright (Uncoated)	2	0.005 to 0.010"	42°	52ZT35
Finish	3	1/64"	42°	52ZU91
ZrN Finish	2	1/64"	42°	52ZT36
	3	1/64"	42°	52ZU92

Finish - Machining	No. of Flutes	Corner Radius	Helix Angle	Item No.
<b>Drill Mill</b>				
AlTiN Finish	2	—	30°	45XM45
	4	—	30°	45XM47
Bright (Uncoated)	2	—	30°	45XM44
Finish	4	—	30°	45XM46
<b>Square</b>				
AlTiCrN Finish	4	—	Variable	45XY16
	3	—	30°	45XJ81
AlTiN Finish	4	—	30°	45XM43
	3	—	42°	52ZL40
Bright (Uncoated)	3	—	30°	45XJ80
Finish	4	—	30°	45XM42
	4	—	Variable	45XY15
TiCN Finish	2	—	30°	45XH96
ZrN Finish	3	—	42°	52ZL41

**Ball End Mill**  
45XW26



## Carbide End Mill Sets

- 1/8 in, 3/16 in, 1/4 in, 3/8 in, 1/2 in sizes included
- Center cutting

Sets contain five end mills in a range of sizes and are ideal for job sites that frequently use various sizes of end mills in machining tasks.

## Square End Mills

Square end mills have a square nose and create a flat-bottomed groove with 90° inside corners in milling tasks. Also called square-nose end mills, they are used for counterboring, side and face milling, and milling square shoulders.

**General purpose** end mills are intended for milling a wide variety of common materials.

**High-performance** end mills are used in production milling.

**Roughing** end mills remove large amounts of material from a workpiece more quickly than roughing/finishing and finishing end mills.

**Roughing/finishing** end mills remove large amounts of material and create a smooth finish on the workpiece at the same time.

**Finishing** end mills create a finer finish on the workpiece than roughing and roughing/finishing end mills.



Milling Dia.	Length of Cut	Overall Length	Shank Dia.	Helix Angle	Brand	Item No.
<b>AlTiN Finish</b>						
<b>4 Flutes</b>						
0.5000 in	0.6250 in	2.500 in	0.5000 in	30°	Widia Hanita	785UR1
0.1875 in	0.6250 in	2.250 in	0.1875 in	30°	Widia Hanita	785UK2
0.3750 in	0.5000 in	2.000 in	0.3750 in	30°	Widia Hanita	785UP8
0.2500 in	0.7500 in	2.500 in	0.2500 in	30°	Widia Hanita	785UK5
0.3750 in	0.8750 in	2.500 in	0.3750 in	30°	Widia Hanita	785UL1
0.1250 in	0.5000 in	2.000 in	0.1250 in	30°	Widia Hanita	785UJ9
0.5000 in	1.0000 in	3.000 in	0.5000 in	30°	Widia Hanita	785UL3
0.6250 in	1.2500 in	3.500 in	0.6250 in	30°	Widia Hanita	785UM0
0.7500 in	1.5000 in	4.000 in	0.7500 in	30°	Widia Hanita	785UM3
1/8 in	1 1/4 in	2 1/4 in	3/8 in	30°	YG-1 Tool Company	33TR07
1/2 in	1 1/4 in	3 in	1/2 in	38°	Widia Hanita	287RN4
3/4 in	3 in	6 in	3/4 in	38°	Widia Hanita	287RN9
1.0000 in	1.5000 in	4.500 in	1.0000 in	30°	Widia Hanita	785UM6
<b>5 Flutes</b>						
3/8 in	1 1/4 in	3 in	3/8 in	38°	Widia Hanita	287RD7
3/4 in	2 1/4 in	5 in	3/4 in	38°	Widia Hanita	287RG6
3/4 in	3 1/4 in	6 in	3/4 in	38°	Widia Hanita	287RH0
1 in	2 1/4 in	5 in	1 in	38°	Widia Hanita	287RH4
<b>7 Flutes</b>						
1/2 in	1 1/4 in	3 in	1/2 in	38°	Widia Hanita	287RY9
3/4 in	1 3/4 in	4 in	3/4 in	38°	Widia Hanita	287RZ4
<b>Bright (Uncoated) Finish</b>						
<b>2 Flutes</b>						
1/8 in	3/8 in	1 1/2 in	1/8 in	30°	OSG	2TWC5
1/8 in	3/4 in	2 1/4 in	1/8 in	30°	YG-1 Tool Company	35U950
3/16 in	3/8 in	2 in	3/16 in	30°	OSG	2TWD5
1/4 in	3/4 in	2 1/2 in	1/4 in	30°	YG-1 Tool Company	35U755
1/4 in	3/4 in	2 1/2 in	1/4 in	30°	OSG	2TWD6
1/4 in	1 1/4 in	3 in	1/4 in	45°	Cleveland	32ZY92
5/16 in	1 1/4 in	3 1/2 in	5/16 in	45°	Cleveland	32ZY95
3/8 in	1 in	2 1/2 in	3/8 in	30°	YG-1 Tool Company	35U757
1/2 in	1 in	3 in	1/2 in	30°	YG-1 Tool Company	35U759
3/4 in	1 in	4 in	3/4 in	45°	Cleveland	32ZT13
<b>3 Flutes</b>						
1/4 in	3/8 in	2 in	1/4 in	35°	Cleveland	33FX17
1/4 in	3/4 in	2 1/2 in	1/4 in	35°	Cleveland	33FX18
1/4 in	3/4 in	2 1/2 in	1/4 in	Variable	—	36PM28
5/16 in	1 1/4 in	3 3/4 in	5/16 in	35°	Cleveland	33FX22
3/8 in	1 in	2 1/2 in	3/8 in	35°	Cleveland	33FX25
3/8 in	1 in	2 1/2 in	3/8 in	Variable	—	36PM59
3/8 in	1 1/2 in	3 1/2 in	3/8 in	35°	Cleveland	33FX26
1/2 in	1 1/4 in	3 in	1/2 in	35°	Cleveland	33FX32
1/2 in	1 1/4 in	3 in	1/2 in	Variable	—	36PM14
1/2 in	2 in	4 in	1/2 in	35°	Cleveland	33FX33
1/2 in	2 in	4 in	1/2 in	Variable	—	36PM16
1/2 in	3 1/2 in	6 in	1/2 in	35°	Cleveland	33FX34
3/8 in	2 in	4 in	3/8 in	Variable	—	36PM79
<b>4 Flutes</b>						
1/8 in	1/2 in	1 1/2 in	1/8 in	30°	YG-1 Tool Company	35U812
1/8 in	3/4 in	2 1/4 in	1/8 in	30°	YG-1 Tool Company	35U980
3/16 in	3/8 in	2 in	3/16 in	30°	YG-1 Tool Company	35U816
3/16 in	3/4 in	2 1/2 in	3/16 in	30°	YG-1 Tool Company	35U981
1/4 in	3/4 in	2 1/2 in	1/4 in	30°	YG-1 Tool Company	35U820
1/4 in	1 1/4 in	3 in	1/4 in	30°	YG-1 Tool Company	35U982
5/16 in	1 1/4 in	3 1/2 in	5/16 in	30°	YG-1 Tool Company	35U822
5/16 in	1 1/4 in	3 in	5/16 in	30°	YG-1 Tool Company	35U983
3/8 in	1 in	2 1/2 in	3/8 in	30°	YG-1 Tool Company	35U823
3/8 in	1 1/8 in	3 in	3/8 in	30°	YG-1 Tool Company	35U984
1/2 in	1 in	2 3/4 in	1/2 in	30°	YG-1 Tool Company	35U824
1/2 in	5/8 in	2 1/2 in	1/2 in	30°	YG-1 Tool Company	35U921
1/2 in	1 in	3 in	1/2 in	30°	YG-1 Tool Company	35U825
1/2 in	2 in	4 in	1/2 in	30°	YG-1 Tool Company	35U986
3/8 in	1 1/4 in	3 1/2 in	3/8 in	30°	YG-1 Tool Company	35U826
3/8 in	2 1/4 in	5 in	3/8 in	30°	YG-1 Tool Company	35U987
3/4 in	1 in	3 in	3/4 in	30°	YG-1 Tool Company	35U923
3/4 in	1 1/2 in	4 in	3/4 in	30°	YG-1 Tool Company	35U827
3/4 in	2 1/4 in	5 in	3/4 in	30°	YG-1 Tool Company	35U988
1 in	1 1/2 in	4 in	1 in	30°	YG-1 Tool Company	35U828
<b>Diamond Finish</b>						
1/8 in	1/2 in	1 3/4 in	1/8 in	30°	OSG	2WDL9
3/16 in	3/4 in	2 in	3/16 in	30°	OSG	30LS53

WIDIA HANITA     

## High-Performance Finishing Carbide Square End Mills

Milling Dia.	Length of Cut	Overall Length	Shank Dia.	Helix Angle	Brand	Item No.
<b>DLC Finish</b>						
<b>3 Flutes</b>						
20.00 mm	50.00 mm	110.00 mm	20.00 mm	35°	OSG	54LD22
<b>EXO Finish</b>						
<b>4 Flutes</b>						
1/2 in	1 1/4 in	3 in	1/2 in	Variable	OSG	33PA58
<b>5 Flutes</b>						
3/8 in	1 1/8 in	2 1/4 in	3/8 in	40°	OSG	61LE26
1/4 in	1 in	3 in	1/4 in	40°	OSG	61LE51
5/16 in	1 1/2 in	3 in	5/16 in	40°	OSG	61LE81
1/2 in	1 1/4 in	3 in	1/2 in	40°	OSG	61LF28
1/2 in	1 1/2 in	4 in	1/2 in	40°	OSG	61LF37
3/4 in	1 1/8 in	3 in	3/4 in	40°	OSG	61LF90
2 in	2 in	5 1/2 in	1 in	Variable	OSG	55FG19
<b>6 Flutes</b>						
3/8 in	1 1/4 in	3 in	3/8 in	37°	OSG	61LL28
1/2 in	1 1/4 in	3 in	1/2 in	37°	OSG	61LL64
1/2 in	1 in	3 in	1/2 in	37°	OSG	61LL58
1 in	2 in	5 in	1 in	37°	OSG	61LM65
<b>GMS Finish</b>						
<b>5 Flutes</b>						
1/2 in	3/8 in	2 1/2 in	1/2 in	Variable	—	36PN80
<b>7 Flutes</b>						
1/2 in	3/8 in	2 1/2 in	1/2 in	Variable	—	36PN81
<b>GMX-35 Finish</b>						
<b>4 Flutes</b>						
1/4 in	3 in	6 in	1/4 in	Variable	—	36PJ61
5/16 in	1 1/2 in	4 in	5/16 in	Variable	—	36PL18
3/8 in	1 1/2 in	2 1/2 in	3/8 in	Variable	—	36PK82
1/2 in	1 in	3 in	1/2 in	Variable	—	36PJ01
1/2 in	1 1/4 in	3 in	1/2 in	Variable	—	36PH97
1/2 in	1 1/2 in	4 in	1/2 in	Variable	—	36PJ04
3/4 in	1 in	4 in	3/4 in	Variable	—	36PK36
3/4 in	1 1/2 in	4 in	3/4 in	Variable	—	36PK30
3/4 in	2 1/4 in	5 in	3/4 in	Variable	—	36PK34
<b>5 Flutes</b>						
3/8 in	3/4 in	3 1/2 in	3/8 in	Variable	—	36PL48
<b>TAZ</b>						
<b>3 Flutes</b>						
1/4 in	1 1/2 in	3 in	3/8 in	45°	Walter Prototyp	32PL48
<b>TAIIN Finish</b>						
<b>4 Flutes</b>						
1/8 in	1/2 in	1 1/2 in	1/8 in	30°	YG-1 Tool Company	35U854
3/16 in	1 in	2 1/2 in	3/16 in	30°	YG-1 Tool Company	35U865
1/2 in	1 in	3 in	1/2 in	30°	YG-1 Tool Company	35U867
3/4 in	1 1/2 in	4 in	3/4 in	30°	YG-1 Tool Company	35U869
<b>WXS Finish</b>						
<b>6 Flutes</b>						
6.00 mm	13.00 mm	60.00 mm	6.00 mm	45°	OSG	2WDJ4
<b>ZrN Finish</b>						
<b>2 Flutes</b>						
1/2 in	3/8 in	3 in	1/2 in	45°	Cleveland	60YD55
<b>3 Flutes</b>						
1/8 in	3/8 in	1 1/2 in	1/8 in	35°	Cleveland	407H92
3/16 in	5/8 in	2 in	3/16 in	35°	Cleveland	407H93
1/4 in	3/8 in	2 in	1/4 in	35°	Cleveland	407H95
5/16 in	3/8 in	2 1/2 in	5/16 in	35°	Cleveland	407H99
3/8 in	1 in	2 1/2 in	3/8 in	35°	Cleveland	407J04
1/2 in	1 1/4 in	3 in	1/2 in	35°	Cleveland	407J11
1/2 in	2 in	4 in	1/2 in	35°	Cleveland	407J12
1/2 in	3 1/8 in	6 in	1/2 in	35°	Cleveland	407J13
5/8 in	1 1/4 in	4 in	5/8 in	35°	Cleveland	407J15
5/8 in	2 1/2 in	5 in	5/8 in	35°	Cleveland	407J16
3/4 in	1 1/4 in	4 in	3/4 in	35°	Cleveland	407J19
1 in	1 1/2 in	4 in	1 in	35°	Cleveland	407J21