

CUTTING DATA

CNC Inserts

Starting data for turning, milling, grooving/parting, threading and U-drill inserts, plus PCD/CBN references.

Turning	Milling	Grooving	Threading / U-Drill
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How to use this guide

Always match ISO material group, insert grade, coating and chipbreaker to the operation. Insert shape alone (CNMG, TNMG, WNMG, etc.) does not determine cutting data.

General turning inserts

Material	Starting Vc (m/min)	Feed f (mm/rev)	ap (mm)
Steel	160-300 finish / 120-240 rough	0.08-0.35 / 0.20-0.60	0.4-2.0 / 1.5-6.0
Stainless steel	80-180	0.06-0.25	0.3-2.5
Cast iron	160-280	0.08-0.35	0.3-4.0
Aluminum (carbide)	300-800	0.08-0.35	0.2-4.0
Titanium / nickel	25-70	0.05-0.18	0.2-2.0
Hardened steel / CBN	80-180	0.05-0.20	0.05-0.50

MILLING & GROOVING

Indexable milling inserts

Material	Vc (m/min)	fz (mm/tooth)
Steel	120-250	0.08-0.25
Stainless	80-180	0.05-0.18
Cast iron	150-300	0.08-0.30
Aluminum	300-800	0.10-0.35
Titanium / nickel	25-60	0.04-0.12
Hardened steel	60-160	0.04-0.12

Grooving & parting inserts

Material	Vc (m/min)	f (mm/rev)
Steel	80-180	0.03-0.18
Stainless	50-120	0.03-0.12
Cast iron	100-200	0.04-0.18
Aluminum	150-400	0.05-0.20
Titanium / nickel	20-50	0.02-0.08

THREADING / U-DRILL / PCD / CBN

Threading and U-drill reference

Operation / material	Starting value
Threading - steel	Vc 80-160 m/min; feed = pitch
Threading - stainless	Vc 50-100 m/min; feed = pitch
Threading - titanium/nickel	Vc 20-50 m/min; feed = pitch
U-drill - steel	Vc 80-160 m/min
U-drill - stainless	Vc 60-120 m/min
U-drill - cast iron	Vc 100-180 m/min
U-drill - aluminum	Vc 180-350 m/min
PCD turning - aluminum	Vc 500-2,000 m/min; f 0.08-0.30
CBN hard turning 55-65 HRC	Vc 80-180 m/min; f 0.05-0.20; ap 0.05-0.50

U-drill starting fn by diameter

D	fn (mm/rev)
10-20 mm	0.05-0.15
20-30 mm	0.08-0.20
30-50 mm	0.12-0.28
50-80 mm	0.18-0.35