MILLING INSERTS · 90° SQUARE SHOULDER

ZNMU

Double-sided triangular insert for square shoulder milling: 6 cutting edges and GM, GL and GR chipbreakers.

KEY DATA	
Product type	Milling Inserts
ISO materials	P steel · M stainless · K cast iron · H hardened
Operation	Semi-finishing · Roughing
INNOT grades	IT530 · IT5110 · **IT5120** ★ · **IT5130** ★ · IT5210 · **IT5220** ★ · **IT6130** ★ · ITC10 ★ recommended
Nose radii	R0.8 · R1.6
Online page	innot-it.com/en/prodotto/znmu

Specifications

Code	IC	S	D1	RE	APMX
ZNMU040308PNR-GM	7	3.65	2.8	0.8	4.2
ZNMU060408PNR-GM	10.16	4.41	4.2	0.8	6.3
ZNMU080608PNR-GM	12	6.35	4.6	0.8	7.3
ZNMU080608PNR-GL	12	6.35	4.6	0.8	7.3
ZNMU080608PNR-GR	12	6.35	4.6	0.8	7.3
ZNMU080616PNR-GR	12	6.35	4.6	1.6	7.3

Dimensions in mm. IC = inscribed circle, S = thickness, D1 = hole, BS = wiper flat, RE = corner radius, AN = clearance angle, APMX = maximum depth of cut.

Technical data

Operation	Milling – 90° square shoulder
Shape	Triangular
ISO material	P (steels), M (stainless steels), K (cast irons), H (hardened steels)
Features	Double-sided triangular insert for 90° shoulders with 6 cutting edges: half the cost per edge compared with positive inserts.
Compatible cutters	Indexable cutters with ZNMU seat: send us your cutter code and we will check compatibility.

Available INNOT grades

Grade	ISO	Coating	Composition	Application
IT6130 ★	**P · K**	**CVD**	TiN + MT-TiCN + Al_2O_3	Semi-finishing and roughing of steels and cast irons. High-strength composite coating that balances wear and toughness; post-coating treatment increases insert toughness.
IT5120 ★	**P · M · K**	**PVD**	TiAlN + CrAlN + TiSiN	Universal grade for steels, stainless steels and cast irons, also ideal on materials of 35–50 HRC. Excellent wear resistance and toughness, high hot hardness.

Grade	ISO	Coating	Composition	Application
IT5220 ★	**P · M · K**	**PVD**	AlTiN + TiSiN	Universal grade for steels, stainless steels and cast irons up to 40–50 HRC. Double-layer coating: strength, toughness and protection against edge chipping.
IT5130 ★	**P · M**	**PVD**	AlTiN	High-efficiency milling of steels and stainless steels below 30 HRC. Specially formulated substrate that reduces the risk of chipping, with a latest-generation nano coating.
IT5110	**P · H**	**PVD**	TiAlN + CrAlN + TiSiN	Milling of hardened steels 45–55 HRC. Nano-composite coating on an ultra-fine grain substrate: smooth surface, low friction, high nano-hardness and excellent oxidation resistance.
IT5210	**P · H**	**PVD**	AlTiN + TiSiN	Milling of hardened steels 50–65 HRC. Coating with high thermal stability and oxidation resistance: withstands the most severe cutting temperatures.
IT530	**P · M**	**PVD**	AlTiN / AlCrN	Specific for mild steel and stainless steel. Nano-multilayer coating and high-toughness substrate: higher speeds and feeds with lower risk of breakage.
ITC10	**P**	**Cermet**	Uncoated	New-generation, very stable cermet: ideal for finishing low-carbon steels and wherever high surface quality is needed. Hard, compact surface, excellent chemical stability, wear and chipping resistance.

★ Recommended grade. Other grades are available on request.

Recommended cutting data

Milling – cutting speed and feed per tooth

Material	Hardness HB	Grade	Vc (m/min)	fz (mm/tooth)
P Low-carbon / mild steel	≤ 180	IT5120 IT5130 IT530	280 (220–340) 180 (120–250) 180 (120–250)	0.2 (0.1–0.3)
P High-carbon / alloy steel	180–280	IT5110 IT5120 IT5220 IT5130	240 (180–300) 200 (140–260) 200 (140–260) 160 (100–220)	0.2 (0.1–0.3)
P Alloy tool steel	280–350	IT5110 IT5210 IT5120 IT5220	220 (140–280) 160 (100–220) 160 (100–220) 120 (80–180)	0.15 (0.1–0.25)
M Stainless steel	≤ 270	IT5120 IT5130 IT530	180 (100–260) 140 (80–200) 140 (80–200)	0.2 (0.1–0.3)
K Cast iron	180–250	IT6130 IT5210 IT5220	250 (150–320) 180 (150–250) 180 (150–250)	0.2 (0.1–0.3)
H Hardened steels	45–55 HRC / ≥ 55 HRC	IT5220 IT5210	150 (100–250) 120 (80–200)	0.2 (0.1–0.3)

Guide values: recommended (min–max range). Reduce by 20–30% with long overhangs, weak clamping or dry machining.

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Cutting data are indicative starting values: adjust them to machine, clamping, tool overhang and workpiece material. Data and images may change without notice.