ACE Hardware Zimbabwe

Brazed Carbide Tool Selection Chart

Brazed carbide lathe tool styles by ISO and DIN number, carbide grades, shank sizes and resharpening tips.

Workshop Reference Charts
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Tool styles

Brazed carbide lathe tool styles

ISO 243/514	DIN	Name	What it does
ISO 1	DIN 4971	Straight turning tool	General roughing along the bar; the tip is set at an angle so it can also chamfer
ISO 2	DIN 4972	Bent turning tool	Turning and facing with the same tool; 45° approach, good for chamfers
ISO 3	DIN 4978	Offset corner turning tool	Turning up to a square shoulder and facing out from it
ISO 4	DIN 4976	Wide (broad-nose) finishing tool	Fine finishing with a wide, flat edge and high feed
-	DIN 4975	Pointed turning tool	Light turning and getting into narrow corners and undercuts
ISO 5	DIN 4977	Offset face turning tool	Facing ends and large faces, working out from the centre
ISO 6	DIN 4980	Offset side (knife) tool	Turning to a 90° shoulder close to the chuck
ISO 7	DIN 4981	Parting / grooving tool	Grooving and parting off; tip brazed on its back face
ISO 8	DIN 4973	Boring tool	Opening up through-holes
ISO 9	DIN 4974	Corner boring tool	Boring blind holes and facing the bottom of a bore

Right (R) or left (L) hand? On a normal lathe a right-hand tool cuts while feeding from right to left, towards the chuck. Left-hand tools feed away from the chuck, for facing a shoulder from the other side or working near the tailstock.

Choosing a grade

Carbide grades (ISO 513) - lower number = harder and more wear-resistant, higher = tougher

Grade	Group	Use for	Cutting conditions
P10	Steel	Finishing steel and cast steel	Higher speed, light feed
P20 / P25	Steel	General turning of steel	Medium speed and feed
P30 / P40	Steel	Roughing steel, interrupted cuts	Lower speed, heavier feed, tougher tip
M10 / M20	Stainless	Stainless steel, cast steel, manganese steel	Medium speed; all-round grade
K10	Cast iron & non-ferrous	Cast iron, aluminium, brass, plastics, hardened steel (light cuts)	Hard, wear-resistant
K20	Cast iron & non-ferrous	General cast iron and non-ferrous work	Tougher than K10

Sizes and use

Square shank sizes (common)

Shank h × b mm	Overall length mm	Typical lathe centre height
8 × 8	90	Mini lathes
10 × 10	90	Small bench lathes
12 × 12	100	Bench lathes
16 × 16	110	Medium lathes
20 × 20	125	Medium to large lathes
25 × 25	140	Large lathes
32 × 32	170	Heavy lathes
40 × 40	200	Heavy lathes

Using and resharpening

- Set the cutting edge exactly on centre height. Use packing under the shank if needed.
- Keep the overhang short: no more than about 1.5 × shank height.
- Brazed tools are blunt-honed when new. A light touch on a diamond lap improves finish on soft materials.
- Grind carbide on a green silicon-carbide wheel and finish on a diamond wheel. Grind the steel shank clear first on an ordinary wheel.
- Never quench hot carbide in water: it cracks the tip and the braze joint.
- Typical angles for steel: clearance 6 – 8°, top rake 6 – 10°. Use less rake for cast iron and brass.
- Use the cutting speeds for carbide in the cutting speeds chart, but start at the low end: brazed tips are less rigid than inserts.

Guide values for general workshop use. Always follow the equipment or fastener maker's figure where one is given, and check critical work against the relevant standard.

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