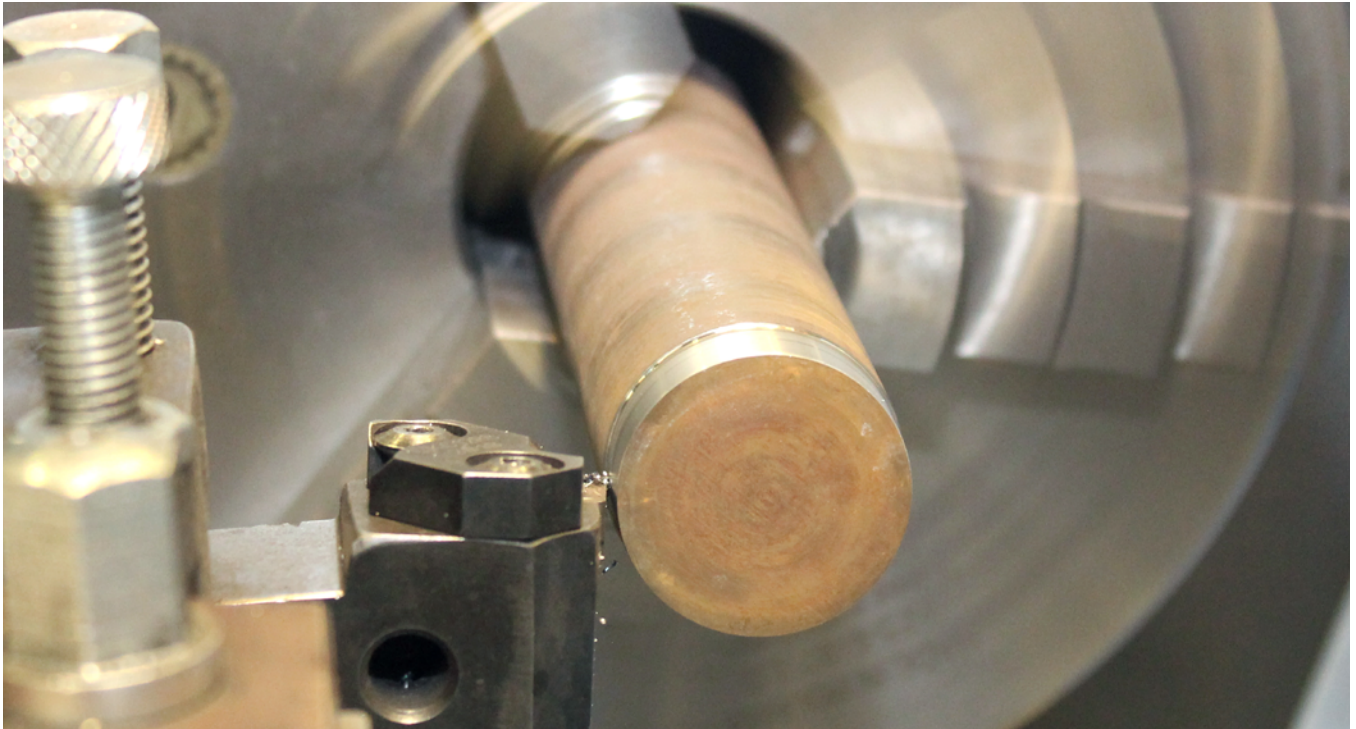


Hardox® 400 Round Bars – Turning Recommendations



Typical Properties

Hardness in Brinell (HBW)	Hardness in Rockwell (HRC)	Tensile Strength, Rm (N/mm ²)
~ 400	~ 40	~ 1250

For more specific information see data sheet for Hardox® 400 Round Bar.

Cutting data Turning	Cemented Carbide	
	Roughing	Finishing
Cutting speed, V_c (m/min)	70 – 90	70 – 130
Feed per revolution, f_n (mm/r)	0.2 – 0.6	0.05 – 0.3
Cutting depth, a_p (mm)	2 – 4	0.5 – 2
Suitable grades	P20 – P35* K20 – K30*	K01 – K20*

* If possible, use a CVD coated cemented carbide.

Note

These cutting data should be seen as a starting values. It is up to each workshop to optimize cutting data for each machine.

Remarks

- ▶ It is recommended to use cutting fluid when turning. Insert holder with internal cooling channels can be used.
- ▶ Use a tougher carbide grade with interrupted cut or face turning of large workpieces.
- ▶ At higher Feed rate, lower the cutting speed.

Formulas and definitions

$$V_c = \pi \times d \times n / 1000$$

$$n = V_c \times 1000 / \pi \times d$$

$$v_f = n \times f_n$$

$$\pi = 3,14$$

$$V_c = \text{cutting speed (m/min)}$$

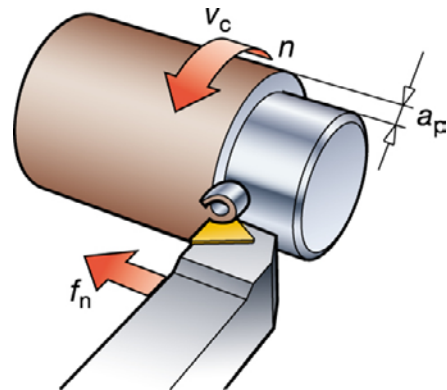
$$n = \text{speed (rpm)}$$

$$f_n = \text{feed rate (mm/rev)}$$

$$v_f = \text{feed rate (mm/min)}$$

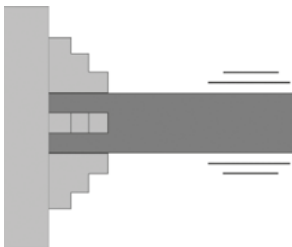
$$d = \text{workpiece } \varnothing$$

$$a_p = \text{cutting depth (mm)}$$



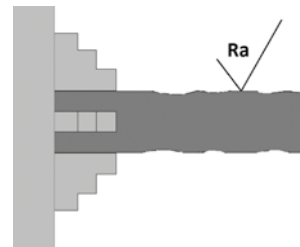
Troubleshooting

Vibrations



- Improve the tool and workpiece stability.
- Change cutting speed.
- Increasing feed.
- Reduce the depth of cut.
- Choose a more easy-cutting chipbreaker.
- Select an insert with less nose radius.

Bad surface finish



- Reduce feedrate.
- Increase cutting speed.
- Use coolant.
- Improve the tool and workpiece stability.
- Choose a more easy-cutting chipbreaker.
- Select inserts with larger nose radius.