

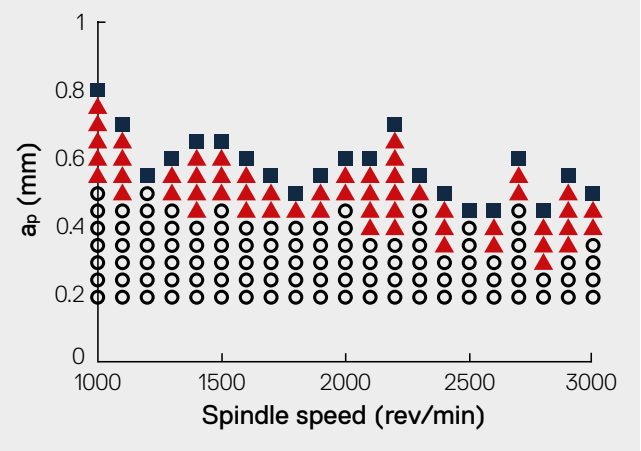
TOOLOX® IN TOOLS FOR METAL CUTTING



Toolox® is a new steel made by Swedish special steel producer SSAB. It is delivered with a unique high mechanical strength and crack resistance. Therefore it is ideal for high performing tooling like U-drills and high speed mills. The high mechanical strength up to 45 HRC takes away the need for heat treatment. Thus shortening lead times and reducing quality problems.

Furthermore Toolox® reduces machining vibrations more than competing tooling materials. Creating possibilities to increase cutting speeds and depths without getting unstable machining conditions. In below test results, Tool A was made in H13 and Tool B in Toolox® 44.

Fig. 3. Machining test results



- Circles represents the cutting parameters at which both tools were machining under stable condition.
- ▲ Triangle represents unstable condition for Tool A and stable process for Tool B.
- Square represents unstable process for both tools.

The lower vibrations created using Toolox® 44 in the tooling also make it possible to increase a much higher life length on both the tool itself and the carbide inserts. Below a real example showing this effect.

Application: End milling - Aluminium Extrusion die production



Max. ap	D _c	z	D _{c1}	Ds	L	Lf	ls	K (deg)	Kg	Air hole
1.0	16.00	2	9.5	16.0	150.0	50.0	100.0	15	0.20	with

Insert Type: Tungaloy LNMU 03

Tool Holder: Toolox® 44 Dia 21 mm

Surface Treatment:

Electroless Nickel plating

Cutting parameters

V_c: 150 m/min

f_z: 0,75

a_p: 0,5 mm



Cutting tool material	Typical hardness	Cutting tool life length	Failure on cutting tool	Insert life length
AISI 4340	42–44 HRc	10 days	Deformation and wear	4 to 5 dies
Toolox® 44	45 HRC	5 months	Wear	9 to 10 dies

General Advantages of Toolox® 44 vs AISI4340

- ▶ Less wear on cutting tool surface
- ▶ Less vibration
- ▶ Less deformation in insert holes
- ▶ No heat treatment
- ▶ Much better end user (tool maker) satisfaction
- ▶ AISI 4340 is generally not delivered in heat treated condition. Cutting tool production of 4340 requires heat treatment in the manufacturing cycle. Toolox® 44 is delivered with its final heat treatment, which gives possibilities to shorten the cutting tool manufacturing time.

Availability

Plates and square blocks from 6–320 mm. Bars between 21 and 405 mm with lengths up to 5000 mm. Toolox® is available from the local SSAB stock. Cut pieces of Toolox® can be obtained through the well-established global network of Approved Toolox® Distributors. Both SSAB and distributors can also provide you with good application support as well as technical guidelines.

Contact and more information

Contact your local sales representative to learn more, visit www.toolox.com or consult Tech Support at: help@ssab.com.