

TOOLOX[®]
ENGINEERING & TOOL STEEL

Toolox[®] 33 Superior P20 level steel



SSAB

Toolox® 33 from the Swedish special steel producer SSAB gives totally new possibilities in the production of mould and dies. Having a similar mechanical strength as P20, the homogenous structure and low carbon content make it possible to improve the machining in an extraordinary way. Having a cleanliness similar to ESR steels makes it also possible to reach very high surface quality. The possibility for surface hardening such as nitriding and PVD makes Toolox® 33 the perfect steel for most applications.

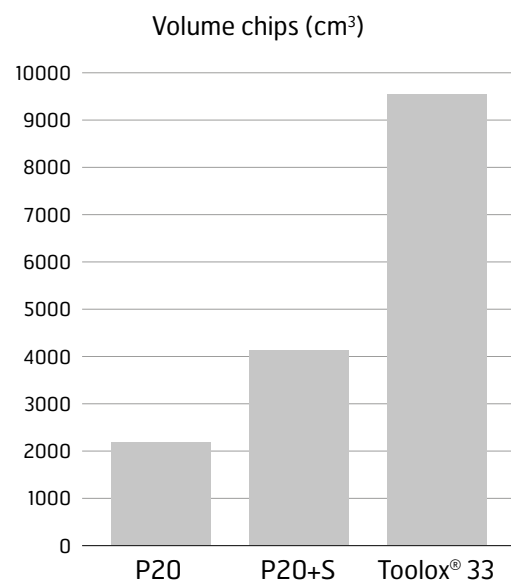
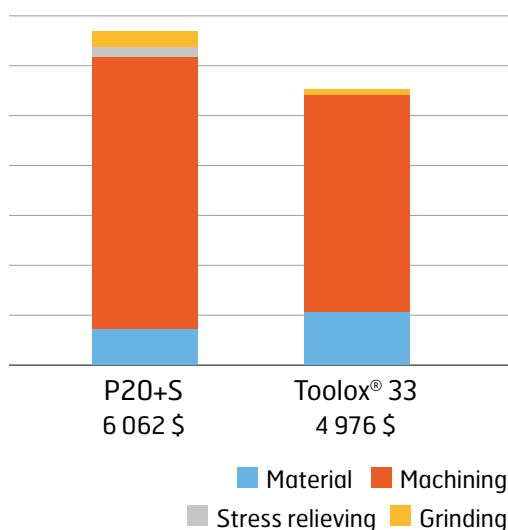
Superior machining

Despite having a similar strength as P20, Toolox® 33 machines much faster. Parameters similar to 1045 can be achieved. This gives the possibility to make serious savings in mould production. German base mould producer Hasco produced a piece both in Toolox® 33 and P20+S. Thanks to the higher speed, lower insert wear and other benefits such as no stress relieving, a cost saving of more than 15 % was obtained.

In another test with carbide tool milling, the volume of chips produced before final failure of

the tooling was measured. Toolox® 33 gave also in this respect huge improvements compared to P20 and P20+S.

Toolox® 33 also improves machining since thanks to a high temperature stress relieving, it is virtually stress free. Meaning that very close dimensional tolerances can be achieved even when heavy machining is carried out. Stress relieving during the manufacture process is not needed.



Superior material properties

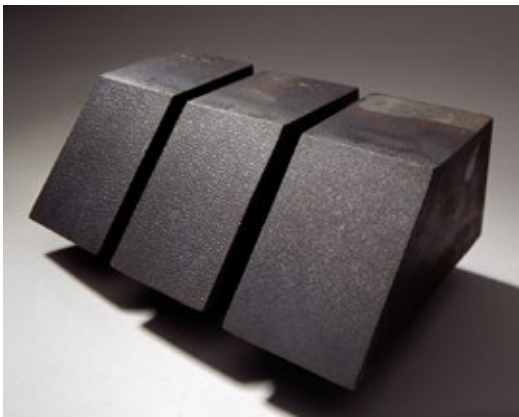
Toolox® 33 has excellent toughness and fatigue properties. Giving a guaranteed long term durability. The low inclusion content makes excellent results possible both in applications and in the workshop. The low carbon and alloy content gives superior welding and gascutting properties.

Typical material properties

	Hardness (HB)	Toughness (J at +20° C)	Inclusion area fraction (%)	CEIIW
Toolox® 33	300	100	0.015	0.65
P20	300	30	0.08	0.86

Superior quality

All Toolox® 33 plates are made at the SSAB production unit in Sweden. Each plate is tested with ultrasonic testing to higher demands than commonly used standards. Mechanical testing is carried out plate for plate. Values can be found at the for each plate unique SSAB material certificate. Giving a possibility to control the quality and optimize the production that with P20 is simply not the case.



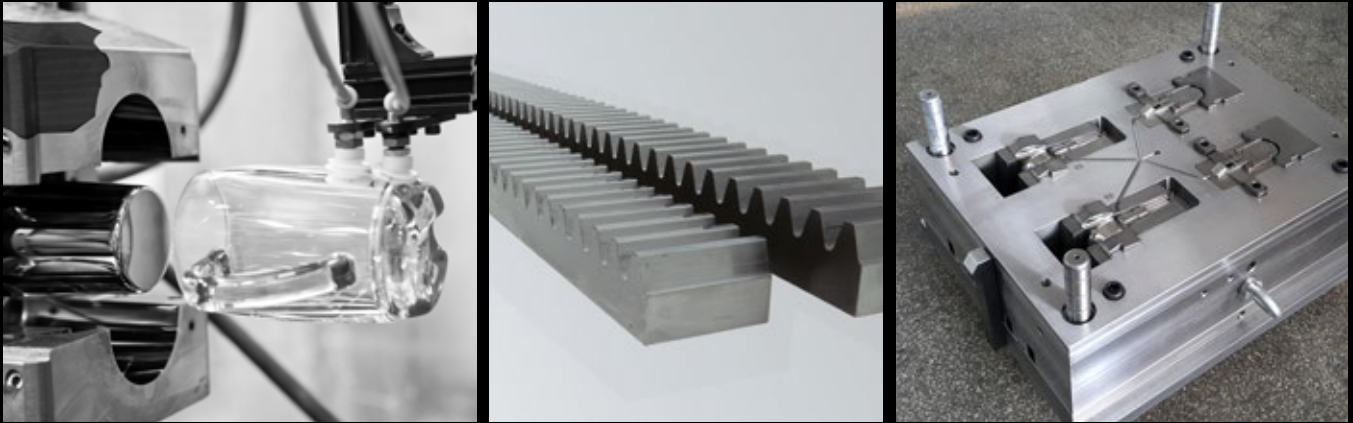
The cleanliness make it possible to do polishing and texturing to very high quality levels.

Availability

Toolox® is available from SSAB stock. In plate from 1/4 to 5 1/8 inch. In round bar from 3/8 to 14 inch. Cut pieces of Toolox® 33 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



SSAB is a Nordic and US-based steel company. SSAB offers value added products and services developed in close cooperation with its customers to create a stronger, lighter and more sustainable world. SSAB has employees in over 50 countries. SSAB has production facilities in Sweden, Finland and the US. SSAB is listed on the Nasdaq OMX Nordic Exchange in Stockholm and has a secondary listing on the Nasdaq OMX in Helsinki.

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