

Typical Analysis

C	0.32	Si	0.60-1.10
Mn	0.80	Cr	1.35
Mo	0.80	V	0.14

Colour Codes



Characteristics

TOOLOX 44 is a pre-hardened, relatively free machining steel with very high impact toughness and exceptional cleanliness. Because of the very low levels of internal stress, large sections may be machined without movement and stress relieving is neither necessary nor recommended. This steel may be polished and etch grained with excellent results.

Typical Applications

TOOLOX 44 is especially suited for plastic moulds having excellent polishing and photo-etching properties which are guaranteed to NADCA207-97. Other applications include press tools and general engineering where high toughness, high impact strength and great stability are important.

Please see overleaf for case studies

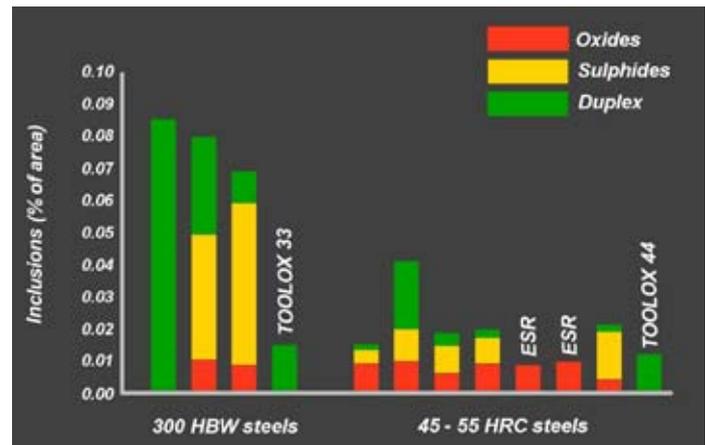
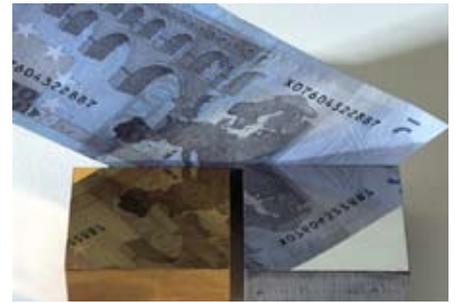
Machining

For best results, it is important to select the appropriate high quality cutting tools and the correct speeds and feed rates. A considerable amount of information is available on request.

Physical Properties (Guaranteed and Typical)

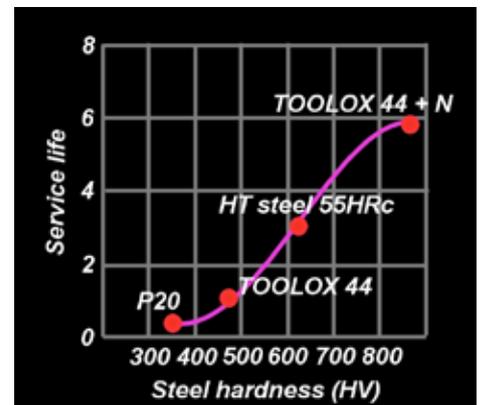
Hardness		HBW	410-475	450
		HRC	-	45
Impact Values (longitudinal)	=<130mm thick	J	18min	30
Tensile Strength	at 20°C	R _m [Mpa]	-	1,450
	at 200°C	R _m [Mpa]	-	1,380
Yield Strength	at 20°C	R _{p02} [Mpa]	-	1,300
	at 200°C	R _{p02} [Mpa]	-	1,200
Coefficient of thermal expansion at:	20°C to 200°C	10 ⁶ /K		13.5

The exceptional cleanliness of Toolox (see chart below) provides high quality polished finishes and etch-grain effects with very low risk.



Surface Treatment

Due to its high hardness and excellent toughness, TOOLOX 44 provides an ideal substrate for surface treatments such as nitriding and PVD. Treated in this way TOOLOX 44 may be employed in an additional range of applications where high surface pressures are involved and where high wear strength is needed.

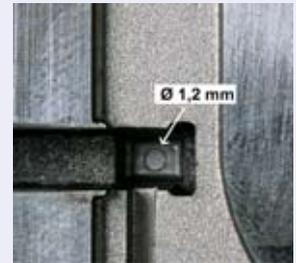


CASE STUDIES

Plastic Mould Tools

Thorsman Lexcel produced this plastic mould tool in Toolox 44.

The product is an electrical box moulded in Nylon 6 with no filler material. The toolmaker commented particularly on the time saved by avoiding heat treatment and the relative ease of machining for a hardened steel.



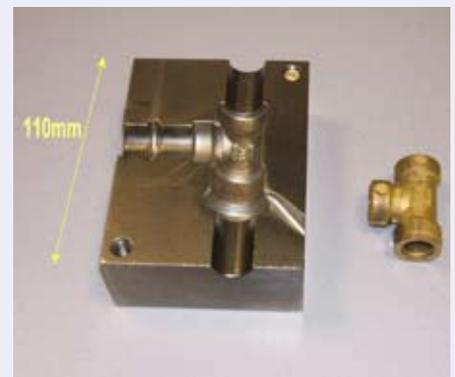
Press Tools

Toolmaker Flextronics customers include Electrolux who use press tools in Toolox 44 to form the base plates in all their refrigerators. The very high stability of Toolox 44 means that the tool does not warp or move and no remedial finishing is required. In use the tool showing no sign of adhesive wear.



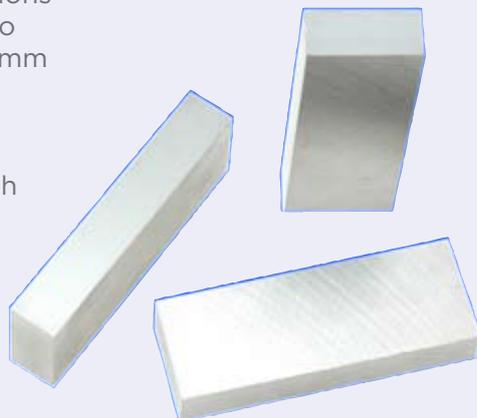
Hot Work

Toolox 44 has shown good results in hot work applications including diecasting. It is now in routine use for hot steel forging in the nitrided condition where its strength and the avoidance of heat treatment are important considerations.



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Rectangular sections from 25mm³ up to 430 X 430 X 150mm can be delivered fine milled on all six faces to -0+0.1mm and with squareness guaranteed to 0.1mm/m.



Stock

TOOLOX 44 is stocked in plate and cut to individual customers requirements.