e.t.d 150® Steel Bars

Specifications

e.t.d. 150® is produced from AISI medium carbon 4100 series alloy steel. The heats to be used for e.t.d. 150® are controlled to contain nitrogen in quantities normally associated with steel produced by the electric furnace process. Only one additive, such as tellerium, selenium, or sulfur is also added to improve machinability. Like Fatigue-Proof®, it is another Niagara LaSalle high strength material made by the elevated temperature drawing process. It eliminates heat treating and secondary operations such as straightening, finish grinding, cleaning, and inspections. e.t.d. 150® can be roll threaded, knurled and plated. Suitable for induction hardening, e.t.d 150® is also electromagnetically tested using eddy currents and pretested for machinability through Niagara LaSalle's unique testing procedure.

Chemistry*

Carbon	0.40
Manganese	0.70/1.10
Silicon	0.15/0.35
Chromium	0.80/1.20
Molybdenum	0.15/0..25

*"e.t.d."150 contains additives improving machinability. These may be tellerium, selenium, sulfur, or others.

Mechanical Properties

Tensile Strength	*150,000 psi (Min)
Yield Strength (.2% offset)	130,000 psi (Min)
Elongation	10% (Mean)
Reduction of Area	37% (Mean)
Machinability	75% of 1212
Rockwell C Hardness	*32 Min
Brinell Hardness	*302 Min

*In the event of disagreement between hardness and tensile strength, the tensile strength shall govern.

Size Range

Rounds 7/16" through 3-1/2"

Tolerances*

Rounds	
7/16" to 1-1/2" incl	0.005"
Over 1-1/2 to 2-1/2 incl	0.006"
Over 2-1/2" to 3-1/2" incl	0.007"

*Tolerances provide for undersize variation only.

Finish

1. Standard "as-drawn" finish
2. Ground and polished finish

Example of Use

Parts you are now heat treating from Rc 30 to Rc 36.

Why e.t.d 150®?

e.t.d. 150® was developed to provide manufacturers a machinable steel bar material, with in-the-bar strength, which they can use to design and produce parts that require higher levels of strength (150,000 psi min tensile and Rc 32 min hardness). Normally, to obtain strengths approximating this level, manufacturers have to specify a carbon or alloy steel heat treated in the bar, or purchase steel in the annealed condition and quench and temper the part after machining. Engineers have often found either method a costly, time consuming and unsatisfactory solution. Both methods usually create additional production problems and require extra processing. Poor machinability, rejections from quench cracks and a lack of uniform surface to center hardness are problems that frequently add costs. Also, heat treating involves materials handling, extra parts in process, cleaning, straightening and grinding - all problems that can be avoided when you don't have to heat treat to obtain desired strength.

Machining

The addition of a machining assitive in e.t.d. 150® has greatly improved its machinability. Considering its strength and hardness, the machining success of this material has been better than expected. Drilling, reaming and forming seldom cause trouble. Chips break up well and are disposed of easily. It is suggested you break sharp corners on all tools wherever possible. A lead angle as long as possible is recommended in threading and tapping, and some coarse threads may require two passes, rough and finish threading. When roll threading, keep dwell or idle time to 1 or 2 revolutions and use a rigid setup. Standard high speed tools equivalent to T-15 or M-42 should be used along with a sulfur/chlorinated cutting oil. e.t.d. 150® alloy steels are also pretested for machinability. This pretesting can virtually assure you consistent machining characteristics from lot to lot. For complete machining specifications, please call and request a copy of Niagara LaSalle's Machining Data Book.

NIAGARA LASALLE CORPORATION

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