

ETD150 Elevated-Temperature-Drawn Steel — Material Data Sheet

Proprietary (Niagara LaSalle e.t.d. 150®) · producer states it meets AMS 6378 · UNS — (proprietary; 4100-series alloy base) · 4100-series (4140-type) alloy with a machinability additive, elevated-temperature drawn
Elevated-temperature drawn medium carbon alloy steel, 150 ksi min

A 4100-series alloy steel drawn at elevated temperature to 150 ksi tensile minimum with no heat treatment — for shafts, studs and hydraulic components machined straight from the bar.

TENSILE, AS DRAWN	150 ksi min	HARDNESS	302 HB (32 HRC) min
YIELD, AS DRAWN	130 ksi min	HEAT TREATMENT NEEDED	None
ELONGATION	5 % min	MAGNETIC	Yes

Nominal composition

■ Fe balance ~ 97.3% ■ Cr ~ 1.00% ■ Mn ~ 0.90% ■ C, Si, Mo trace

Midpoints of the specification ranges, for orientation only. Limits are in the table.

Chemical composition — e.t.d. 150® (producer datasheet)

Element	Symbol	Min %	Max %
Carbon	C	0.40	—
Manganese	Mn	0.70	1.10
Silicon	Si	0.15	0.35
Chromium	Cr	0.80	1.20
Molybdenum	Mo	0.15	0.25

Per Niagara LaSalle's e.t.d. 150® datasheet. The producer adds one machinability agent (tellurium, selenium, sulfur or others) and controls nitrogen; it publishes no carbon maximum and no phosphorus or sulfur limits.

Physical properties (typical)

DENSITY	0.284 lb/in ³ (7.85 g/cm ³)
MODULUS OF ELASTICITY	29.0 × 10 ⁶ psi (200 GPa)
MAGNETIC	Yes

Heat treatment

None. The strength comes from elevated-temperature drawing, so no hardening is needed. The bar is suitable for induction hardening, roll threading, knurling and plating.

Mechanical properties — e.t.d. 150®, as drawn

Condition and size	Tensile strength, min (ksi)	Yield strength 0.2% offset, min (ksi)	Elongation, min (%)	Reduction of area, min (%)	Hardness, min
As drawn, rounds 5/16 to 3-9/16 in.	150	130	5	20	302 HB (32 HRC)

Producer's guaranteed minimums, the same for every size. Where hardness and tensile results disagree, tensile governs. Niagara LaSalle's datasheet covers rounds 5/16 to 3-9/16 in.; its web page lists 7/16 to 3-1/2 in.

Applicable standards

NIAGARA LASALLE E.T.D. 150®	Producer's specification (governing)
AMS 6378	Producer states the bar meets it

Forms we supply in ETD150

- Machined components from certified bar
- Studs, threaded rod and U-bolts
- Hex bolts and cap screws
- Nuts, washers and spacers
- Pins, shafts and bushings

Typical applications

- Shafts and spindles at 4140 strength without heat treatment
- Studs, tie rods and threaded rod in high strength
- Hydraulic cylinder rods and pistons
- Long, straight precision parts that must not distort