

# DATA SHEET



**LATROBE SPECIALTY  
STEEL COMPANY**

Latrobe, PA 15650-0031 USA

## LESCALLOY<sup>®</sup> HY-TUF\* VAC-ARC<sup>®</sup> HIGH STRENGTH ALLOY STEEL

Typical Composition	C	Mn	Si	Ni	Cr	Mo
	0.25	1.35	1.50	1.80	0.30	0.40

### GENERAL CHARACTERISTICS

LESCALLOY HY-TUF VAC-ARC steel is a high strength low alloy steel. It is typically used in the 220/240 ksi (1517/1655 MPa) tensile strength range. At this strength level, the alloy has good ductility, fracture toughness and impact strength. It is vacuum arc remelted to provide optimum cleanliness and preferred ingot structure for superior mechanical properties. This alloy is most frequently used for aircraft landing gear, flap tracks and other structural applications.

### PHYSICAL PROPERTIES

Density: 0.281 lb/in<sup>3</sup> (7.77 g/cm<sup>3</sup>)

Thermal Conductivity: 260.0 BTU·in/h·ft<sup>2</sup>·°F  
(37.49 W/m·K)

Coefficient of Thermal Expansion:

Temp Range °F	Temp Range °C	in/in/°F (x 10 <sup>-6</sup> )	mm/mm/°C (x 10 <sup>-6</sup> )
0-200	-18-93	6.3	11.3

### HEAT TREATMENT

**Normalize:** 1700°F (927°C), one hour, air cool.

**Austenitize:** 1600°F (871°C), one hour, oil quench

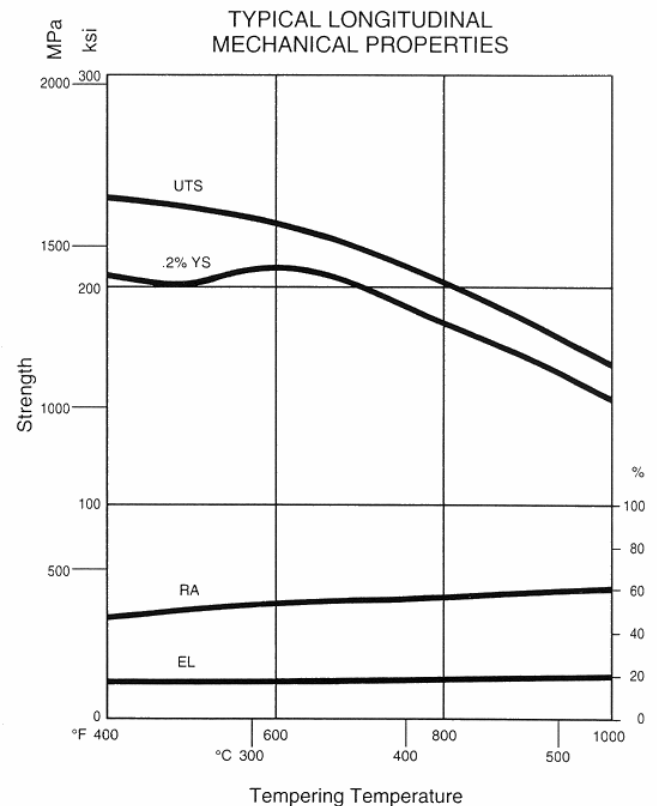
**Temper:** 400-600°F (204-316°C), four hours, air cool.

**Anneal:** Heat to 1370°F (743°C) and equalize, cool 50°F (27°C) per hour to 1100°F (593°C), air cool. Reheat to 1200°F (649°C), hold for 15-20 hours, air cool. Typical resulting hardness is 230 HBW.

### WORKABILITY

**Forging:** Forge at 1950-2250°F (1066-1232°C) using a minimum forging temperature of approximately 1700°F (927°C).

**Machining:** For optimum machinability, Lescalloy HY-TUF VAC-ARC steel should be normalized and tempered. A 1200°F (649°C) tempering temperature is recommended. Maximum resulting hardness should be 285 HBW. As an alternative, a conventional anneal may be used.



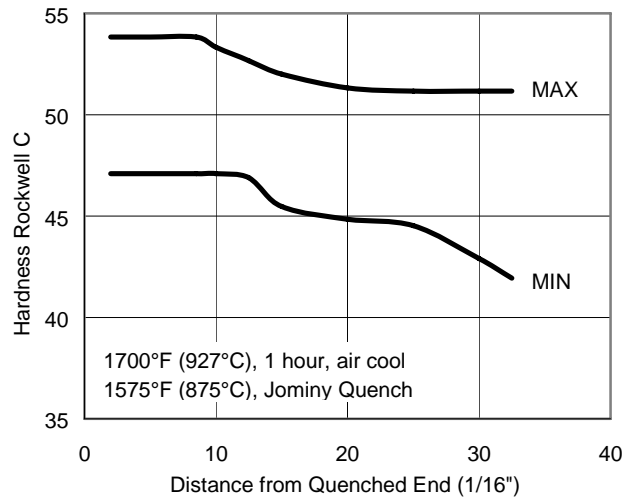
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## TYPICAL TRANSVERSE SPECIFICATION LIMITS\*

UTS		0.2% YS		El	RA	Fracture Toughness	
min		min		min	Min	min K <sub>IC</sub>	
ksi	MPa	ksi	MPa	%	%	ksi √in	MPa √m
220	1517	185	1276	5	30	100	110

\* After the following heat treatment  
1725°F (940°C), one hour, air cool.  
1600°F (871°C), one hour, oil quench.  
550°F (288°C), two hours, air cool.

## JOMINY END QUENCH HARDENABILITY



## SPECIFICATIONS

The following popular industry specifications are offered for general familiarization and cross-reference purposes. This should not be considered a complete listing.

AMS 6425  
MIL-S-7108 (Air Melt)  
EMS 126 (Bendix)  
DMS 1841 Grade A (McDonnell-Douglas)  
NAI 1275 (Northrop)  
UNS Designation K32550



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Latrobe, Pennsylvania 15650-0031 U.S.A.  
Phone: (724) 537-7711 Fax: (724) 532-6316  
[www.latrobesteel.com](http://www.latrobesteel.com)