DATA SHEET

LATROBE SPECIALTY STEEL COMPANY
Latrobe, PA 15650-0031 USA

LESCALLOY® UT-18 VAC-ARC®

HIGH STRENGTH ALLOY STEEL

Typical Composition	C	Mn	Si	Cr	Mo	V
	0.40	0.60	0.25	3.25	1.00	0.20

GENERAL CHARACTERISTICS

LESCALLOY UT-18 VAC-ARC is a medium carbon, low alloy, heat resistant steel having high strength to 1000°F (538°C). It is used primarily for turbine and compressor rotor shafts. Vacuum consumable electrode melting is employed to provide a preferred ingot solidification and superior microcleanliness.

UT-18 steel was developed in England and is now a popular alloy in the U.S.A. as well.

FORGING

Optimal mechanical properties after heat treatment will be obtained by forging from 1750-1900°F (954-1038°C). After forging, bury in an insulating compound or furnace cool from 1400°F (760°C) to retard the cooling rate. Finished forgings should be fully annealed.

Forging to intermediate sizes may be done from higher temperatures up to 2100°F (1149°C)

HEAT TREATMENT

Anneal: Heat uniformly to 1500-1600°F (816-871°C) and furnace cool. Hardness: 341 HBW maximum.

Harden: For an optimum balance in properties, heat to 1695°F (924°C), hold at temperature one hour and oil quench.

Temper: Double Temper; use an oil quench after the first temper to assure a good austenite-to-martensite transformation. The following is recommended for a hardness of 42-46 HRC.

1070°F (577°C), 4 hours, oil quench
1080°F (582°C), 4 hours, air cool

LESCALLOY® UT-18 VAC-ARC®

MECHANICAL PROPERTIES

TYPICAL LONGITUDINAL PROPERTIES AT ROOM TEMPERATURE

Bar/Billet Size			Tensile Strength		Yield Strength 0.1% Offset		Yield Strength 0.2% Offset		Elong.	R.A.	Izod V-Notch Impact Value*	
inch	cm	Shape	ksi	MPa	ksi	MPa	ksi	MPa	%	%	ft-lbs.	Joule
1¼	3.2	Round	202	1393	161	1110	168	1158	17.5	64.5	38	51.5
			203	1400	160	1103	168	1158	17.0	63.5	35	47.5
1¾	4.5	Round	206	1420	165	1138	172	1186	17.5	62.0	30	40.7
			204	1407	163	1124	170	1172	17.5	63.0	31	42.0
2⅛	5.4	Round	208	1434	166	1145	173	1193	16.5	61.0	27	36.6
			203	1400	163	1124	170	1172	16.0	60.0	26	35.3
3¼	8.3	Round	206	1420	163	1124	170	1172	16.0	61.5	30	40.7
			205	1413	163	1124	171	1179	17.0	61.0	28	38.0
3¾	9.5	Round	203	1400	162	1117	170	1172	16.5	62.0	29	39.3
			204	1407	163	1124	169	1165	17.0	61.5	28	38.0
4	10.2	RCS	204	1407	159	1096	166	1145	17.0	62.0	41	55.6
			206	1420	163	1124	170	1172	17.0	64.0	43	58.3
6	15.2	RCS	205	1413	164	1131	172	1186	16.0	60.0	25	33.9
			205	1413	163	1124	170	1172	16.0	59.0	28	38.0

Heat treatment of oversize tensile coupons:
1695°F (924°C) - 1 hour - oil quench
1070°F (577°C) - 4 hours - oil quench
1080°F (582°C) - 4 hours - air cool
Hardness: 42-46 HRC

*For impact samples only an additional treatment of 970°F (521°C) - 48 hrs - air cool was preformed to simulate a nitriding cycle.

SPECIFICATIONS

The following specifications are offered for general reference and should not be considered a complete listing.

EMS 64500 (Rolls-Royce)

LATROBE SPECIALTY STEEL COMPANY

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