

DATA SHEET



**LATROBE SPECIALTY
STEEL COMPANY**

Latrobe, PA 15650-0031 USA

LESCALLOY[®] JETHETE M-152 ESR HIGH STRENGTH STAINLESS STEEL

Typical Composition	C	Mn	Si	Cr	Ni	Mo	V	N
	0.14	0.70	0.15	12.00	2.75	1.75	0.30	0.035

GENERAL CHARACTERISTICS

LESCALLOY JETHETE M-152 ESR steel is a nitrogen bearing, hardenable 12% chromium stainless steel intended for various structural components requiring high strength and good oxidation resistance up to 800°F (427°C). Electrode slag remelting is employed to assure preferred ingot solidification and superior cleanliness for critical applications.

PHYSICAL PROPERTIES

Specific Gravity: 7.76

Density: 0.28 lb/in³ (7.75 g/cm³)

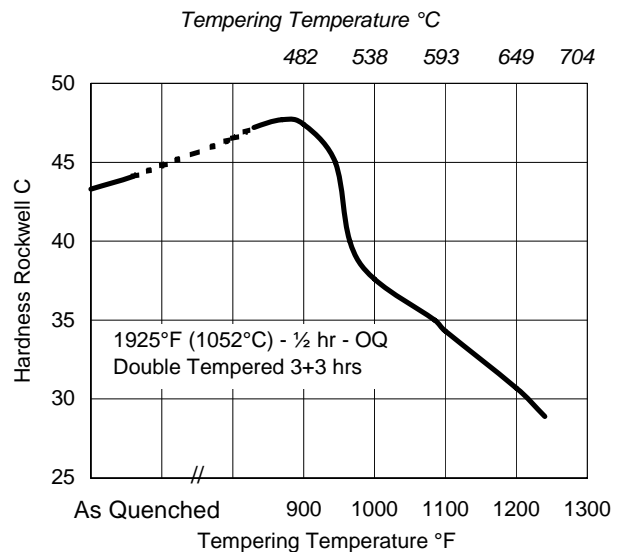
COEFFICIENT OF THERMAL EXPANSION

Temp Range °F	Temp Range °C	in / in / °F (x 10 ⁻⁶)	mm / mm / °C (x 10 ⁻⁶)
68 - 500	20 - 260	6.2	11.2
68 - 750	20 - 399	6.4	11.5
68 - 1000	20 - 538	6.7	12.1

MODULUS OF ELASTICITY

Temperature °F	Temperature °C	psi x 10 ⁶	GPa
68	20	30.9	213
500	260	28.8	199
750	399	27.1	187
1000	538	24.6	170

TEMPERING CURVE



HEAT TREATMENT

Annealing: Heat uniformly to 1600-1650°F (871-899°C) and furnace cool. For subcritical annealing, temper for 6 hours at 1275-1300°F (691-704°C).

Hardening: Heat uniformly to 1850-1950°F (1010-1066°C), oil quench and temper to desired hardness. Refer to specific tempering data.

Stress Relief: Heat uniformly to 1100-1150°F (593-621°C). Air or furnace cool.

WORKABILITY

Forging: Heat uniformly to 2000-2025°F (1093-1107°C), do not forge below 1700°F (927°C). After working, slow cool in a suitable insulating compound.

Welding: This steel can be welded by all processes. Standard precautions used for martensitic alloys are recommended.

LESCALLOY[®] JETHETE M-152 ESR

MECHANICAL PROPERTIES

ROOM TEMPERATURE TENSILE PROPERTIES (Actual Data)

Billet Size in	Billet mm	Billet Shape	Specimen Orientation	U.T.S.		0.2% Y.S.		El. in 4D %	R.A. %	Notched T.S.*		Notched T.S. / Unnotched T.S.
				ksi	MPa	ksi	MPa			ksi	MPa	
8	203	RCS	Transverse	198	1365	159	1096	21	71	317	2186	1.60
			Transverse	200	1379	156	1076	20	70	318	2193	1.59
			Transverse	185	1276	140	965	18	66	294	2027	1.59
			Transverse	184	1269	146	1007	17	65	294	2027	1.60
			Transverse	187	1289	153	1055	19	64	303	2089	1.62
			Transverse	188	1296	147	1014	18	64	311	2144	1.65
6	152	RCS	Transverse	183	1262	154	1062	20	72	294	2027	1.61
			Transverse	189	1303	154	1062	21	65	301	2075	1.59
			Transverse	183	1262	154	1062	20	67	301	2075	1.64
			Transverse	182	1255	151	1041	19	68	302	2082	1.66
3	76	RD	Longitudinal	190	1310	154	1062	21	71	300	2068	1.58
			Longitudinal	190	1310	159	1096	20	71	323	2227	1.70
			Longitudinal	197	1358	154	1062	21	71	313	2158	1.59
			Longitudinal	199	1372	157	1082	21	72	317	2186	1.59
2¼	57	RD	Longitudinal	195	1344	155	1069	20	72	316	2179	1.62
			Longitudinal	196	1351	154	1062	19	74	320	2206	1.63
1½	38	RD	Longitudinal	188	1296	158	1089	21	72	300	2068	1.59
1¼	32	RD	Longitudinal	189	1303	152	1048	18	60	309	2130	1.63
			Longitudinal	188	1296	151	1041	19	63	307	2117	1.63

All samples 1925°F (1052°C) - ½ hr - OQ / 1020°F (549°C) - 3 hrs - AC / 1000°F (538°C) - 3 hrs - AC *K_t = 3.0

A limited investigation of lower strength level properties has shown the following typical values.

U.T.S.		0.2% Y.S.		El. %	R.A. %	Hardness HBW
ksi	MPa	ksi	MPa			
150	1034	120	827	20	50	311

SPECIFICATIONS

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

AMS 5719

C50TF68 (General Electric)

FORMS AVAILABLE

Billet, hot rolled bar and centerless ground bar.

APPLICATIONS

Gas turbine engine compressor wheels and structural members.



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