



FIGURE 3.7
Summary of S-N Diagrams for Unnotched and Notched Rotating-Bending Tests for LA-LED®, Heats A, B, and C. Data Normalized by Representing Fatigue Stress as Fraction of Tensile Strength.

TABLE 3.6
Summary of Unnotched and Notched Rotating-Bending Fatigue Tests for LA-LED® Heats A, B, and C.

	Heat A 1 in. Dia. (25.4 mm)		Heat B 1 in. Dia. (25.4 mm)		Heat C 2 in. Dia. (50.8 mm)	
	English	Metric	English	Metric	English	Metric
Ultimate Tensile Strength	77.0 ksi	530.9 MPa	74.9 ksi	516.4 MPa	71.5 ksi	493.0 MPa
Unnotched Fatigue Limit	40.4 ksi	278.6 MPa	41.4 ksi	285.5 MPa	39.4 ksi	271.7 MPa
Unnotched Std. Deviation	1.42 ksi	9.8 MPa	3.20 ksi	22.1 MPa	1.26 ksi	8.7 MPa
Unnotched Fatigue Ratio	0.525	—	0.553	—	0.551	—
Notched Fatigue Limit	11.9 ksi	82.1 MPa	19.8 ksi	136.5 MPa	15.0 ksi	103.4 MPa
Notched Std. Deviation	0.89 ksi	6.1 MPa	1.52 ksi	10.5 MPa	4.40 ksi	30.3 MPa
Notched Fatigue Ratio	0.155	—	0.264	—	0.210	—
Fatigue Stress Conc. Factor, K_f	3.34	—	2.09	—	2.63	—
Theo. Stress Conc. Factor, K_t	2.79	—	2.79	—	2.79	—
Notch Sensitivity Factor, q	1.34	—	0.61	—	0.91	—