FLN2-4405

Density: 7.11 g/cm^3

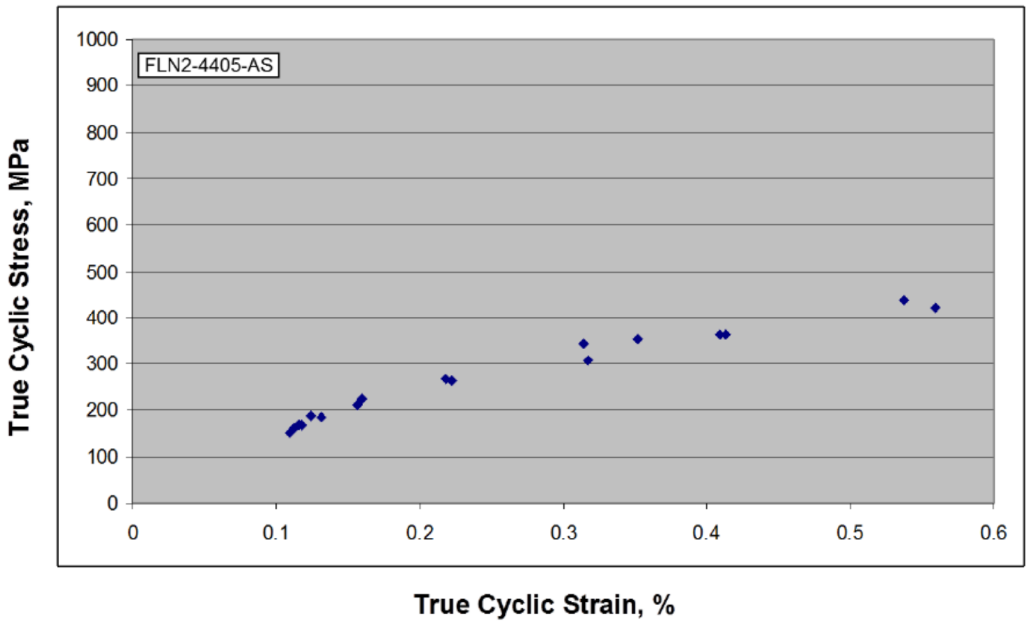
Material: Prealloyed Steel (0.85% Mo, 0.20% Mn, balance Fe) + mixed additions of 2% Regular Ni, 0.33%Graphite and 0.75% lubricant.

Treatment: Die Compact, Sinter at 1120°C

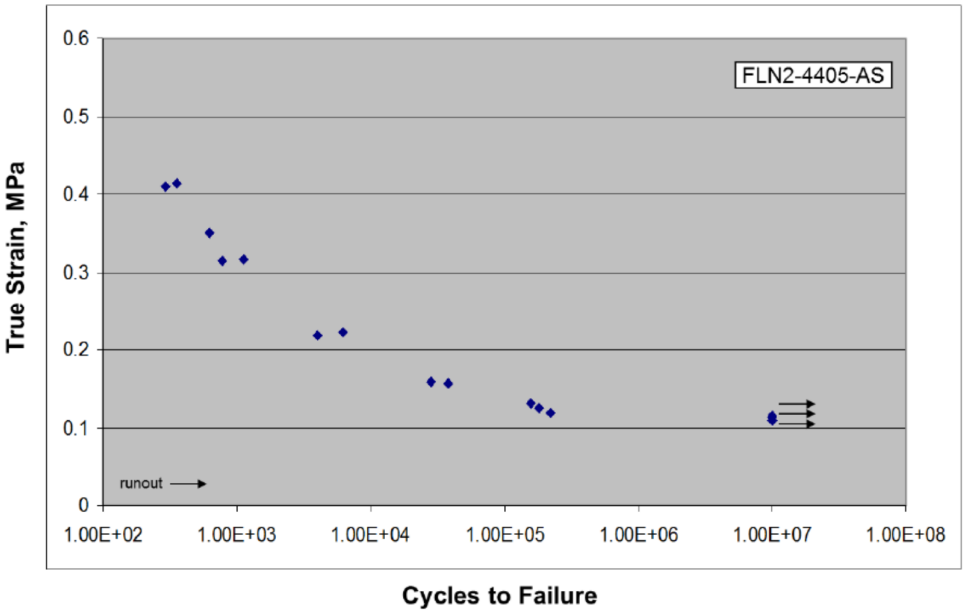
Table – Strain and Stress Amplitudes vs. Reversals to Failure

Test # ID	Stress (MPa)	TRUE Stress(MPa)	Strain (%)	TRUE Strain (%)	Plastic Strain (%)	Elastic Strain (%)	Reversals to Failure
13	422	424	0.5607	0.5591	0.262	0.2971	140
14	435	438	0.5383	0.5369	0.2304	0.3065	174
9	362	364	0.4142	0.4133	0.1587	0.2546	706
10	360	362	0.4102	0.4094	0.1559	0.2535	580
12	351	353	0.3518	0.3512	0.1042	0.247	1,260
11	307	308	0.3174	0.3169	0.1013	0.2155	2,244
18	342	343	0.315	0.3145	0.0744	0.2401	1,572
1	262	263	0.2221	0.2218	0.0377	0.1841	12,318
3	268	268	0.2185	0.2183	0.0304	0.1879	8,000
2	223	224	0.1594	0.1592	0.0025	0.1567	57,288
4	211	212	0.1571	0.1569	0.0088	0.1482	75,682
5	185	185	0.1316	0.1315	0.0018	0.1296	316,000
17	188	188	0.1241	0.124	0.0104	0.118	364,272
7	168	168	0.1183	0.1182	0	0.1182	444,000
16	167	167	0.1155	0.1155	0.0007	0.1175	20,000,000
8	161	161	0.1128	0.1127	0	0.1127	20,000,000
6	152	152	0.1092	0.1092	0.0001	0.1126	20,000,000

True Cyclic Stress-Strain Curve



Constant amplitude Strain-Life Curve



Cyclic Properties (see relevant column)

Cyclic Properties	FL-4405AS	FL-4405HT	FLN2-4405AS	FL-5305SH
Cyclic Yield Strength, (0.2% offset) $K'(0.002)^{n'}$	407.8	NPD	395	NPD
Cyclic Strength Coefficient, K' (MPa)	1071	NPD	2961	NPD
Cyclic Strain Hardening Exponent, n'	0.1573	NPD	0.3395	NPD
Fatigue Strength Coefficient, s'_f (MPa)	834	1727	727.7	3265
Fatigue Strength Exponent, b	-0.102	-0.141	-0.114	-0.177
Fatigue Ductility Coefficient, e'_f	0.106	NPD	0.017	NPD
Fatigue Ductility Exponent, c	-0.5	NPD	-0.3	NPD

Constant amplitude fatigue life curve: $\Delta\varepsilon/2 = \sigma'f/E\ (2Nf)b + \varepsilon'f\ (2Nf)c$

Cyclic stress-strain curve: $\Delta\varepsilon/2 = \sigma/2E + (\Delta\sigma/2K')^{1/n'}$

NPD = No Plastic Deformation