



Atlas AL-unite Alloy Description

Description

AL-unite™ is a high performance aluminum alloy based on 6000 series chemistry. AL-unite™ chemical properties match those of 6000 series aluminum alloys. AL-unite™ offers a high level of vacuum properties while keeping machinability similar to conventional aluminum alloys. Vacuum flanges can be assembled by welding with this alloy.

Vacuum Properties

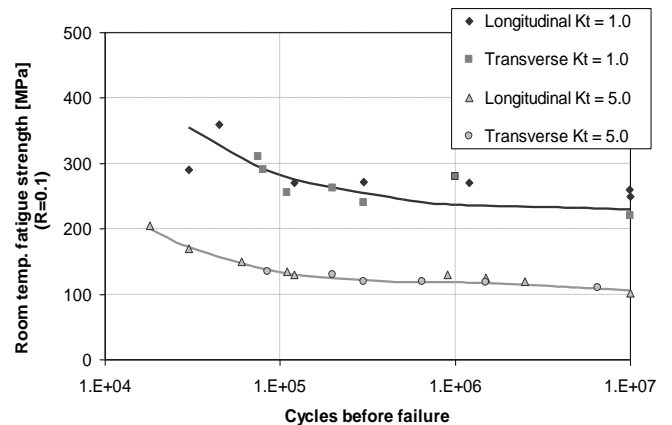
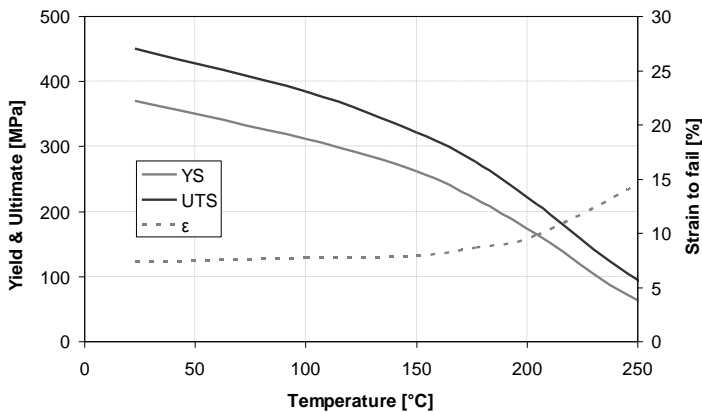
Leak < 1x10⁻¹³
Operating temperature -200C to 250C

Physical Properties (at 20C)

▪ Density:	2.87 [g/cc]
▪ Young's Modulus:	88.5 [GPa]
▪ Poisson's ratio:	0.3
▪ Thermal conductivity:	153 [W/mK]
▪ Thermal expansion (from 20°C to 100°C):	20 [ppm/°C]

Mechanical properties

	20C	150C	200C
0.2% Yield Strength [MPa]	370	320	165
Ultimate Tensile Strength [MPa]	450	346	193
Fatigue Strength [MPa at 1E+07]	230		
Strain to fail [%]	7.3	11	13.5
Hardness [HRB]	78		



Alloy matrix chemical composition [wt%] :

Si	Fe	Cu	Mg	Zn	Oxygen	Others Each	Others total
0.40 - 0.8	< 0.3	0.7 - 1.0	0.8 - 1.2	< 0.25	0.05 - 1.2	< 0.05	< 0.15

All information in this data sheet is based on discrete testing and is stated to the best of our knowledge and belief.