Material Properties: SS316L

Thermophysical Properties

Property	Value	Units	Data Source
Density at 298 K	7955	kg/m^3	[1]
Specific heat capacity (solid)	423.0 + 0.1329 T	$J/(kg\ K)$	[1]
Specific heat capacity (liquid)	770.4	$J/(kg\ K)$	[1]
Thermal conductivity (solid)	4.957 + 0.01571 T	$J/(m\ s\ K)$	[1]
Thermal conductivity (liquid)	11.51 + 0.003279 T	$J/(m\ s\ K)$	[1]
Dynamic viscosity at 1730 K	0.002188	$kg/(m\ s)$	[1]
Thermal expansion, linear, at 1730 K	3.101e-05	$1/K$	[1]
Latent heat of fusion	268000.0	J/kg	[1]
Latent heat of vaporization	7410000.0	J/kg	[1]
Emissivity	0.4	$-$	-
Molecular mass	55.845	g/mol	-
Liquidus temperature	1730	K	[1]
Logarithm of the vapor pressure	6.1127 + -18868.0 T^{-1}	$\log(atm)$	[1]
Laser absorption	0.36	$-$	-
Solidus/eutecic temperature	1670	K	[1]

Notes

This file currently excludes the Surface Tension and Marangoni coefficient due to the need for function representations other than Laurent polynomials. Also, to be consistent with legacy data, currently the temperature dependent quantities have input in C rather than K.

References

[1] C.S. Kim, Thermophysical properties of stainless steels, Argonne National Laboratory, Argonne, Illinois, 1975.