

Super Alloy Inconel 686™ (UNS N06686)

Chemical Composition

The following table shows the chemical composition of Inconel 686™.

Element	Content (%)
Nickel, Ni	59
Chromium, Cr	19-23
Molybdenum, Mo	15-17
Iron, Fe	≤ 5
Tungsten, W	3.0-4.40
Manganese, Mn	≤ 0.75
Phosphorous, P	≤ 0.040
Sulfur, S	≤ 0.020
Titanium, Ti	0.020-0.25
Carbon, C	≤ 0.010

Physical Properties

The physical properties of Inconel 686™ are outlined in the following table.

Properties	Metric	Imperial
Density	8.72 g/cm ³	0.315 lb/in ³
Melting point	1338-1380 °C	2440-2520 °F

RELIABLE PIPES & TUBES LTD.

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Mechanical Properties

The mechanical properties of Inconel 686™ are provided below.

Properties	Metric	Imperial
Tensile strength	721.9 MPa	104700 psi
Yield strength (@strain 0.200%)	364 MPa	52800 psi
Elastic modulus	207 GPa	30000 ksi
Shear modulus	77 GPa	11200 ksi
Poisson's ratio	0.34	0.34
Elongation at break	71%	71%

Thermal Properties

The thermal properties of Inconel 686™ are given below.

Properties	Metric	Imperial
Thermal expansion co-efficient (@21-100°C/69.8-212°F)	11.97 $\mu\text{m}/\text{m}^\circ\text{C}$	6.650 $\mu\text{in}/\text{in}^\circ\text{F}$