

**Grade: AISI 4330 (UNS G43300, ASTM A29)**

**Type: A nickel, chromium, molybdenum and vanadium high strength alloy steel**

Nominal Composition	
Element	Weight %
Carbon	0.30 – 0.34
Silicon	0.15 – 0.35
Manganese	0.60 - 1.00
Phosphorus	0.035 max
Sulphur	0.035 max
Chromium	0.80 – 1.00
Nickel	1.65 – 2.00
Molybdenum	0.30 – 0.65
Aluminium	0.015 – 0.050
Copper	0.35 max
Vanadium	0.05 – 0.10

### Mechanical Properties Condition:

Forgings of LF2 shall be furnished in the normalized, or in the normalized and tempered, or in the quenched and tempered condition.

Property	Values
Ultimate Tensile Strength	160 min Ksi (1103 Mpa)
0.2 % Yield Strength	150 min Ksi (1034 Mpa)
Elongation	14 % min
Reduction of Area	45 % min
Hardness**	321-388HBW**





## Notes

Hardness condition is outside of NACE.

Low alloy steel typically containing 0.3% Carbon and alloyed with 0.9% Chromium, 1.8% Nickel and 0.5% Molybdenum to give enhanced mechanical properties and higher strength.

Often used in place of 4140/4145 due to its higher strength levels and improved impact properties at high strength.

Impact toughness is generally good to temperatures as low as -46 Deg C with typically 27J average and 20J single achieved, this is limited though dependent on a number of factors such as ruling section, chemical composition and heat treatment condition, with impact toughness achieved decreasing with higher strength, increased ruling section and at lower test temperatures due to the materials Ductile / Brittle transition temperature.

The grade has limited through hardenability which must be taken into account when designing and selecting it for specific equipment.

Shock loading or stress concentration applications are suitable for this grade. It is widely used in the oil and gas industry for applications such as oil tools, crossovers, drill jars, drill shoes, tool holders, and reamers.

Applications within the aerospace industry include bolting and air frames.