

# Low Alloy Steel AISI 4140



## Metal Alloys

for Additive  
Manufacturing

### ALTERNATIVE NAMES:

1.7225  
42CrMo4  
F.1252

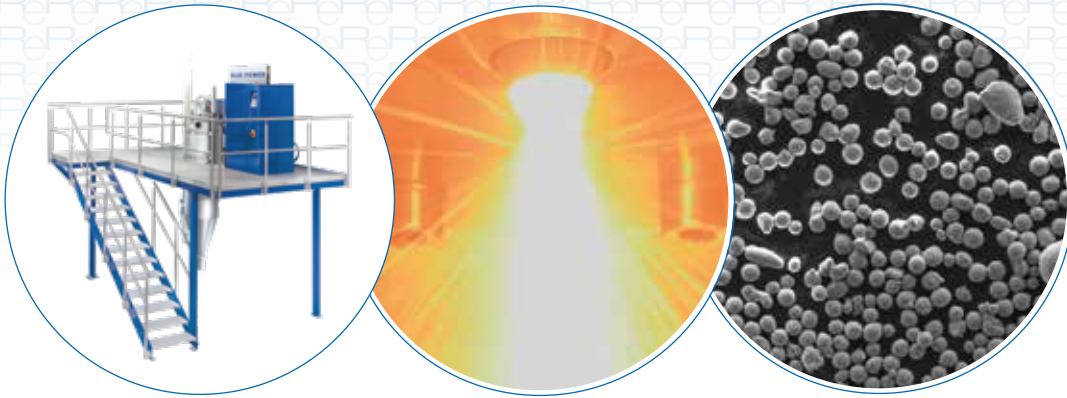
Properties	Unit	As built <sup>1)</sup>
Tensile Strength $R_m$	MPa	1420 ± 20
Yield Strength $R_{p0,2}$	MPa	1280 ± 20
Elongation at Break $A_5$	%	15 ± 1
Contraction at Break Z	%	50 ± 2
Hardness	HRC	455 ± 15

Rosswag Engineering offers a holistic and fully integrated process chain for Additive Manufacturing services. Our portfolio ranges from manufacturing of your prototypes, tools and small serial products to an individual consulting and engineering process for the choice of material, parameters and process chain.



ALL PROCESSES BY ONE COMPANY





## Material characteristics

The Q&T steel AISI 4140 has a high tensile strength and toughness, which makes it frequently used for highly stressed components in machinery and plant engineering. The mechanical properties of the material can be adapted very flexibly to the occurring loads by subsequent heat treatment processes. When it comes to additive manufacturing specific alloy compositions and optimized process parameters must be used for defect-free processing due to the limited weldability.

### CHEMICAL COMPOSITION

Element	Mass Fraction [%]
C	0.38 - 0.45
Si	≤ 0.40
Mo	0.15 - 0.30
Mn	0.60 - 0.90
P	≤ 0.025
S	≤ 0.35
Cr	0.90 - 1.20
Fe	Balance

### MICROSECTION



- 1) The specified material properties were determined at room temperature. They are multi-dimensionally dependent on many different machine and process parameters. Without further investigation, the material properties do not constitute a sufficient basis for component dimensioning.
- 2) Specific heat treatment processes lead to optimized mechanical-technological properties to meet the component requirements.