



# High Alloy Steel ASTM A351 Gr. CK20

Standard Specification for Castings, Austenitic, for Pressure-Containing Parts

## MATERIAL DATASHEET

**GROUP**  
Ferrous Stainless Steel Alloys**SUB GROUP**  
ASTM A351 / 351M Castings**INDUSTRY**  
Investment Casting

This high-chromium, high-nickel austenitic casting grade is specifically engineered for elevated temperature service, offering outstanding oxidation and corrosion resistance in extreme thermal environments. With chromium levels reaching 27% and nickel up to 22%, it maintains structural integrity under prolonged exposure to high-temperature oxidizing atmospheres encountered in heat treatment, petrochemical, and power generation industries. Solution annealing optimizes its austenitic structure, delivering exceptional creep resistance and thermal stability for the most thermally demanding casting applications.



### CHEMICAL COMPOSITION

ELEMENT	SYMBOL	COMPOSITION
Carbon	C %	0.04 - 0.20
Silicon	Si %	1.75% Max
Manganese	Mn %	1.500 max.
Phosphorus	P %	0.040 max.
Sulphur	S %	0.040 max.
Chromium	Cr %	23.000 - 27.000
Nickel	Ni %	19.000 - 22.000
Molybdenum	Mo %	0.50 Max
Iron	Fe %	Balance



### MECHANICAL PROPERTIES

#### PERFORMANCE SPECIFICATIONS

**Tensile Strength** **450**  
Minimum Value MPa**Yield Strength** **195**  
Minimum Value MPa**Elongation** **30**  
Minimum Value %**HEAT TREATMENT**  
Solution Annealing

### INDUSTRY APPLICATIONS

Furnace fixtures



Heat treatment trays



Burner assemblies



High-temperature process equipment



**DISCLAIMER:** All information in this datasheet is indicative only and is not intended to be a substitute for the full specification. It provides typical values for comparison between metal alloy options rather than a definitive statement of mechanical performance. Values may vary with temperature, product type, and application. This data does not constitute any guarantee of properties.

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