



# High Alloy Steel ASTM A351 Gr. CN7M

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-nickel, copper-bearing austenitic casting alloy is uniquely formulated to resist both strongly oxidizing and reducing corrosive media, setting it apart from conventional stainless steel grades. With nickel content between 27.5–30.5% and copper additions of 3–4%, it delivers exceptional performance in sulfuric acid, phosphoric acid, and other aggressive chemical environments where standard grades fail. The combined molybdenum and copper alloying makes it the preferred casting material for critical chemical processing, fertilizer, and acid handling equipment requiring uncompromising corrosion resistance.



### CHEMICAL COMPOSITION

ELEMENT	SYMBOL	COMPOSITION
Carbon	C %	0.07 max.
Silicon	Si %	1.500 max.
Manganese	Mn %	1.500 max.
Phosphorus	P %	0.040 max.
Sulphur	S %	0.040 max.
Chromium	Cr %	19.000 - 22.000
Nickel	Ni %	27.500 - 30.500
Molybdenum	Mo %	2.000 - 3.000
Copper	Cu %	3.000 - 4.000
Iron	Fe %	Balance



### MECHANICAL PROPERTIES

#### PERFORMANCE SPECIFICATIONS

**Tensile Strength** **425**  
Minimum Value MPa**Yield Strength** **170**  
Minimum Value MPa**Elongation** **35**  
Minimum Value %**HEAT TREATMENT**  
**Solution Annealing**

### INDUSTRY APPLICATIONS

**Sulfuric acid plants****Fertilizer industry****Acid transfer pumps****Chemical reactors****Corrosive processing lines**

**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.

**Tamboli Castings Limited**

Bhavnagar, Gujarat, India

**Phone:** +91 278 2541000**Email:** info@tambolicastingslimited.com