

# Carbon Steel ASTM A105N/ASTM A350 LF2 Dual

## Standard specification

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### 1. Scope and Conditions

This specification extracts or modifies some key points of the material specification. For other requirements not covered in this specification, please refer to the latest version of ASTM A105/A105M/A350 LF2 standard specifications.

### 2. Material Name

Name	Grade	UNS	Condition	Minimum Service Temperature	Maximum Service Temperature
ASTM A105	–	K03504	Normalized	– 46° C	425° C
ASTM A350	LF2	K03011	Normalized	– 46° C	425° C

### 3. Steel Manufacture

Killed, fully deoxidized carbon steel, melted by E.F.V.D.

## 4. Chemical Composition Requirements

Chemical Composition Requirements												
%	C	Mn	P	S	Si	Cu	Ni	Cr	Mo	V	Nb	CE
Min	–	0.6	–	–	0.15	–	–	–	–	–	–	–
Max	0.22	1.05	0.035	0.04	0.3	0.40 (a)	0.40 (a)	0.3 (a) (b)	0.12 (a) (b)	0.08	0.02	0.43

(a) In the heat analysis, the sum of the contents of copper, nickel, chromium, and molybdenum shall not exceed 1.00%, i.e.,  $Cu + Ni + Cr + Mo \leq 1.00\%$ .

(b) In the heat analysis, the sum of the contents of chromium and molybdenum shall not exceed 0.32%, i.e.,  $Cr + Mo \leq 0.32\%$ .

### Additional Requirements:

- Carbon equivalent (CE) is determined by the formula:  $CE = C + Mn/6 + (Cr + Mo + V)/5 + (Ni + Cu)/15$
- The carbon equivalent in the heat analysis shall not exceed 0.43%, i.e.,  $CE \leq 0.43\%$

## 5. Heat Treatment

- Normalizing: Heat to 900°C for 1 hour per inch of thickness, normalize it, hold for sufficient time to make the whole reach a uniform temperature, and cool evenly in still air.

## 6. Mechanical Property Requirements

Material	Tensile Strength [MPa]	Yield Strength [MPa]	Elongation %	Reduction of Area %	Hardness HB
A105/ASTM	MIN: 485	250	22	30	197
A350 LF2	MAX: 655				

## Low - Temperature Impact Performance

Grade	Test Temperature ° C	Average Minimum Value (J)	Single Minimum Value (J)
A105N/ ASTM	– 46	20	16 Min.
A350 LF2			

Mechanical property tests shall be carried out in accordance with ASTM A370.

**Additional Requirements:** Hardness test shall be carried out.

## 7. Welding Repair

Welding repair is not permitted.

## 8. Certificate of Conformity

Type: EN 10204 3.1.

The certificate of conformity must be in English.