

## Material: ASTM A1001 Grade 3

### Standard Specification for High Strength Steel Castings in Heavy Sections

**Group:** Ferrous Mild Steel Alloys

**Sub Group:** ASTM A1001 High Strength Steel Castings in Heavy Sections

**Application:** Intended for Valve, Pump, General Engineering, Automotive and Other Industries Grade

**Belongs to the Industry:** Casting

| Chemical Composition |      |               | Heat Treatment                                                                                                                                                                                                   |  |
|----------------------|------|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Carbon               | C %  | 0.200 - 0.280 | Normalising or Annealing or Hardening + Tempering                                                                                                                                                                |  |
| Silicon              | Si % | 0.300 - 0.600 |                                                                                                                                                                                                                  |  |
| Manganese            | Mn % | 1.000 - 1.400 |                                                                                                                                                                                                                  |  |
| Phosphorus           | P %  | 0.030 max.    |                                                                                                                                                                                                                  |  |
| Sulphur              | S %  | 0.025 max.    |                                                                                                                                                                                                                  |  |
| Chromium             | Cr % | 0.800 - 1.200 |                                                                                                                                                                                                                  |  |
| Nickel               | Ni % | 1.000 - 1.300 |                                                                                                                                                                                                                  |  |
| Molybdenum           | Mo % | 0.600 - 0.850 |                                                                                                                                                                                                                  |  |
| Aluminium            | Al % | 0.070 max.    |                                                                                                                                                                                                                  |  |
| Other                | %    | 0.600 max.    |                                                                                                                                                                                                                  |  |
| Iron                 | Fe % | Balance       | <b>Mechanical Properties</b><br>Tensile Strength in Mpa 550 min.<br>Yield Strength in Mpa 435 min.<br>Elongation in % 13 min<br>Reduction of Area in % -<br>Hardness in BHN -<br>Impact in Joule 20 min. @ -40°C |  |
| -                    | -    | -             |                                                                                                                                                                                                                  |  |
| -                    | -    | -             |                                                                                                                                                                                                                  |  |
| -                    | -    | -             |                                                                                                                                                                                                                  |  |
| -                    | -    | -             |                                                                                                                                                                                                                  |  |
| -                    | -    | -             |                                                                                                                                                                                                                  |  |

| Cross Reference Table |          |                |                                     |
|-----------------------|----------|----------------|-------------------------------------|
| Material              | Standard | Country        | Grade Belong to the Industry        |
| A1001 Grade 2         | ASTM     | USA            | Casting                             |
| A757 A1Q              | ASTM     | USA            | Casting                             |
| J03002                | UNS      | USA            | Casting                             |
| 1.0619                | DIN      | Germany        | Casting                             |
| 1.0619                | EN       | European Union | Casting                             |
| A660 WCB              | ASTM     | USA            | Fusion Welding, Bending and Forming |
| SA 660 WCB            | ASME     | USA            | Centrifugal Casting                 |

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