GRAVITY CAST PVT. LTD.
GRAVITY GROUP OF COMPANIES

# Material - ASTM A213 T92

## Standard Specification for Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes

**Group - Ferrous Stainless Steel Alloys**

**Sub Group - ASTM A213 T92 Seamless Ferritic and Austenitic Alloy-Steel Boiler, Superheater, and Heat-Exchanger Tubes**

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

**Grade Belongs to the Industry - Steel Tubes**

| Chemical Composition | | |
|---|---|---|
| Carbon | C % | 0.070 - 0.130 |
| Manganese | Mn % | 0.300 - 0.600 |
| Phosphorus | P % | 0.020 max. |
| Sulphur | S % | 0.010 max. |
| Silicon | Si % | 0.500 max. |
| Nickel | Ni % | 0.400 max. |
| Chromium | Cr % | 8.500 - 9.500 |
| Molybdenum | Mo % | 0.300 - 0.600 |
| Vanadium | V % | 0.150 - 0.250 |
| Boron | B % | 0.001 - 0.006 |
| Niobium | Nb % | 0.040 - 0.090 |
| Nitrogen | N % | 0.030 - 0.070 |
| Aluminium | Al % | 0.040 max. |
| Tungsten | W % | 1.500 - 2.000 |
| Iron | Fe % | Balance |

| Heat Treatment |
|---|
| Normalizing or Tempering |

| Mechanical Properties | |
|---|---|
| Tensile Strength in Mpa | 620 min. |
| Yield Strength in Mpa | 440 min. |
| Elongation in % | 20 min. |
| Reduction of Area in % | - |
| Hardness in HBW | 250 max. |
| Impact in Joule | - |

| Cross Reference Table | | | |
|---|---|---|---|
| **Material** | **Standard** | **Country** | **Grade Belong to the Industry** |
| K92460 | UNS | USA | Steel |
| SA-335 Grade P92 | ASME | USA | Steel and Tubing |
| SA-213 Grade T92 | ASME | USA | Steel and Tubing |
| X10CrWMoVNb9-2 1.4901 | EN | European Union | Steel |
| A 369 Grade FP92 | ASTM | USA | Pipe and Forging |
| A 182 F 92 | ASTM | USA | Forging and Pipe |
| A 335 Grade P911 | ASTM | USA | Steel |

**Further any inquiry to discuss with Gravity Cast Pvt. Ltd. – Gravity Group of Companies team member Call on +918469160029, or email marketing@gravitycastindia.com**

All information in our data sheets and website is indicative only and is not intended to be a substitute for the full specification from which it is extracted. It is intended to provide typical values to allow comparison between metal alloy option rather than a definitive statement of mechanical performance or suitability for a particular application as these will vary with temperature, product type and product application. It is presented apart from contractual obligations and does not constitute any guarantee of properties or of processing or application possibilities in individual cases. Our warranties and liabilities are stated exclusively in our terms of business.