GRAVITY CAST PVT. LTD.
GRAVITY GROUP OF COMPANIES

# Material - ASME SA-336 Grade F92

## Standard Specification for Alloy Steel Forgings for Pressure and High-Temperature Parts

**Group - Ferrous Stainless Steel Alloys**
**Sub Group - ASME SA-336 Grade F92 Alloy Steel Forgings for Pressure and High-Temperature Parts**
**Application - Intended for Valve, Pump, General Engineering, Automotive and other Industries**
**Grade Belongs to the Industry - Forgings**

| 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 |
| Niobium | Nb % | 0.040 - 0.090 |
| Nitrogen | N % | 0.030 - 0.070 |
| Aluminium | Al % | 0.020 max. |
| Tungsten | W % | 1.500 - 2.000 |
| Boron | B % | 0.0001 - 0.0060 |
| Titanium | Ti % | 0.010 max. |

| Chemical Composition | | |
|---|---|---|
| Zirconium | Zr % | 0.010 max. |
| Iron | Fe % | Balance |
| - | - | - |
| - | - | - |
| - | - | - |
| **Heat Treatment** | | |
| Annealing or Normalising & Tempering or Quenching & Tempering | | |
| **Mechanical Properties** | | |
| Tensile Strength in Mpa | 620 - 830 | |
| Yield Strength in Mpa | 440 min. | |
| Elongation in % | 20 min. | |
| Reduction of Area in % | 45 min. | |
| Hardness in HB | - | |
| Impact in Joule | - | |

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