GRAVITY CAST PVT. LTD.
GRAVITY GROUP OF COMPANIES

Material - ASME SA-182 Grade F 91 Type 1

Standard Specification for Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings and Valves and Parts for High-Temperature Service

Group - Ferrous Stainless Steel Alloys

Sub Group - ASME SA-182 Grade F 91 Type 1 Forged or Rolled Alloy and Stainless Steel Pipe Flanges, Forged Fittings and Valves and Parts for High-Temperature Service

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

Grade Belongs to the Industry - Pipe and Forging

Chemical Composition		
Carbon	C %	0.080 - 0.120
Manganese	Mn %	0.300 - 0.600
Phosphorus	P %	0.020 max.
Sulphur	S %	0.010 max.
Silicon	Si %	0.200 - 0.500
Nickel	Ni %	0.400 max.
Chromium	Cr %	8.000 - 9.500
Molybdenum	Mo %	0.850 - 1.050
Niobium	Nb %	0.060 - 0.100
Nitrogen	N %	0.030 - 0.070
Aluminium	Al %	0.020 max.
Vanadium	V %	0.180 - 0.250
Titanium	Ti %	0.010 max.
Zirconium	Zr %	0.010 max.
Iron	Fe %	Balance

Heat Treatment
Annealing or Normalising or Quenching & Tempering

Mechanical Properties	
Tensile Strength in Mpa	620 min.
Yield Strength in Mpa	415 min.
Elongation in %	20 min.
Reduction of Area in %	40 min.
Hardness in BHN	190 - 248
Impact in Joule	-

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Cross Reference Table			
Material	**Standard**	**Country**	**Grade Belong to the Industry**
K90901	UNS	USA	Steel
A 182 F 91	ASTM	USA	Steel and Pipe
A 989 K91560	ASTM	USA	Steel
A 369 Grade FP91	ASTM	USA	Steel and Pipe
A 335 Grade P91	ASTM	USA	Steel and Pipe
A 234 Grade WP91	ASTM	USA	Steel
A 336 Grade F91	ASTM	USA	Steel and Forging

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.