



**GRAVITY CAST PVT. LTD.**  
**GRAVITY GROUP OF COMPANIES**

## Material - ASME SA-182 Grade F 21

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

Group - Ferrous Mild Steel Alloys

Sub Group - ASME SA-182 Grade F 21 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 %	0.050 - 0.150
Manganese	Mn %	0.300 - 0.600
Phosphorus	P %	0.040 max.
Sulphur	S %	0.040 max.
Silicon	Si %	0.500 max.
Chromium	Cr %	2.700 - 3.300
Molybdenum	Mo %	0.800 - 1.060
Iron	Fe %	Balance
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-
-	-	-

Heat Treatment	
	Annealing

Mechanical Properties	
Tensile Strength in Mpa	515 min.
Yield Strength in Mpa	310 min.
Elongation in %	20 min.
Reduction of Area in %	30 min.
Hardness in BHN	156 - 207
Impact in Joule	-

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Cross Reference Table			
Material	Standard	Country	Grade Belong to the Industry
K31545	UNS	USA	Steel
A 182 F 21	ASTM	USA	Steel and Pipe
A 988 K31545	ASTM	USA	Steel
A 369 Grade FP21	ASTM	USA	Steel and Pipe
A 335 Grade P21	ASTM	USA	Steel and Pipe
A 213 Grade T21	ASTM	USA	Steel and Tubing
A 387 Grade 21	ASTM	USA	Steel and Plates

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

**ONE STOP SOLUTION FOR METAL PARTS**