Material Specification for Alloy Steel ASTM A182 Grade F-5 for Ring Joint Gasket (Forging) as per API 6A.

Rev	Reason of change	Date	Made By	Reviewed By	Approved By	Status
0	---	19.01.2016	SA	ND	KKD	Released

SARA-SAE PVT. LTD. DIV.-I DEHRADUN

1.0 SCOPE

This specification covers material requirements for Alloy Steel ASTM A182 Grade F5 at a 0° F to 250° F of operating temperature. This material meets the requirements of API 6A.

2.0 REFRENCES.

2.1 API Spec. 6A - 20th Edition, February 1, 1996.
2.2 ASTM E 10 - Standard test method for Brinell hardness of metallic materials.
2.3 ASTM E 29 - Standard practice for using significant digits in test data to determine conformance with specification.
2.4 ASTM A 182 - Standard specification for forged or rolled Alloy Steel pipe Flanges, Forged Fittings and Valves and parts for high temperature service.

3.0 MATERIAL AND MANUFACTURE.

3.1 CHEMISTRY.

Chemical composition shall be limited to the following grade with the accompanying ranges:

ASTM-A182 F5	C %	Mn %	P %	S %	Si %	Ni %	Cr %	Mo %
Grade 4 to 6 % Chromium (Cr)	0.15 Max.	0.3 to 0.6	0.03 Max.	0.03 Max.	0.5 Max.	0.5 Max	4.0 to 6.0	0.44 to 0.65

3.2 HOT WORKING PRACTICES.

Forging shall be mechanically hot worked by a press or hammer of sufficient capacity to work the metal throughout its section above the re-crystallization temperature. Forging shall be free from cracks, flakes, bursts, laps, seams, piping, tears or other injurious imperfections.

4.0 HEAT TREATMENT.

Ring Joint Gasket forging shall be either annealed or normalized as the last stage of material processing prior to final machining; to meet the hardness requirement of Sec.5.1.

5.0 MECHANICAL PROPERTIES.

5.1 All material supplied under this specification shall meet following properties.

Material with grade	Tensile Strength	Hardness Max
		HRB (100 Kg. load and 1/16" ball dia.)
ASTM A182 F5 (4 To 6 % Chromium	--	72

5.2 Hardness of heat treated material shall be (maximum) 55 HRB or 100 BHN when tested in accordance with ASTM E-10 and SARA instruction SWI 27-2J.

6.0 CERTIFICATE.

6.1 Certificate for chemical analysis with Heat No. as per Section 3.1

6.2 Certificate of Heat treatment and hardness as per Section 4.0

SARA-SAE PVT. LTD. DIV.-I DEHRADUN

— ** —