


26-739

	SARA SAE ENGINEERING SPECIFICATION	
	SECTION SES - 26 - 739	
	ISSUE "A"	Rev "1"
	EFF. DATE 20.10.2011	Page 1 of 3

GENERAL SPECIFICATION FOR STEEL FORGING

1.0 PURPOSE

- 1.1 It is the purpose of this specification to list in a concise form the forging requirements for steel forgings for use in manufacture of Hammer Union and Ring Joint Gaskets used oil field services.
- 1.2 This material specification is intended to aid the purchasing department in procuring and the vendor in supplying a material which meets the needs of its intended use, and the quality control department in the inspection and release of incoming material.

2.0 SCOPE

- 2.1 This specification covers requirements of die-forgings and ring rolling in the annealed or normalized or tempered condition and to meet other requirements as specified.

3.0 APPLICABLE DOCUMENTS

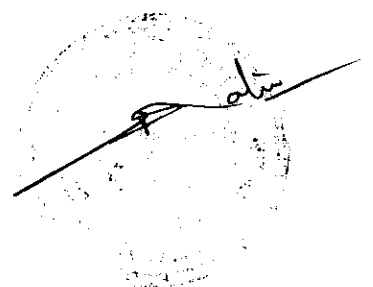
- SARA SAE QA Sampling Plan SARA SAE/DOC/42 Rev'2'
- SES/QAD/MT-1/97 Rev'1' Test Method of MPI
- SES-26-701 Rev'0' Test Method of Liquid Penetrant Test
- ASTM A788 Standard Specification for Steel Forgings, General requirements
- Material Spec as per Purchase Order
- Relevant Forging Drawings


4.0 CONDITION

- 4.1 Forgings shall be supplied clean, free from scale meeting the requirements of this specification, the purchase order and the relevant forging drawing.

5.0 VENDOR APPROVAL

- 5.1 Prior to supplying the first article forging, prospective vendors shall submit a representative sample from the finish- die-set / ring rolling for evaluation and approval. The representative sample can be out of specified / non-specified material.
- 5.2 Prior to supply of bulk the prospective vendor shall submit first off samples of forgings / ring rolling out of the approved specified material for evaluation & approval.
- 5.3 After approval vendor shall make no changes in process without the written permission of SARA SAE and re-approval of first article sample, if desired by SARA SAE.



	SARA SAE ENGINEERING SPECIFICATION	
	SECTION SES - 26 - 739	
	ISSUE "A"	Rev "1"
	EFF. DATE 20.10.2011	Page 2 of 3

6.0 PROCESS REQUIREMENTS

- 6.1 Forgings / ring rollings shall be produced only from the material heats approved by SARA SAE
- 6.2 Billets for forgings may be heated by induction or electric or oil fired furnace
 - 6.2.1 Heating shall not produce internal oxidation, sigma phase or grain growth exceeding Grain Size of 5 as per ASTM E112.
 - 6.2.2 Billet pre-heat temperature shall depend upon the material used.
 - 6.2.3 Forgings shall be struck/ rolled so that the longitudinal axis of the starting billet coincides with the centerline of the forging / ring.
 - 6.2.4 Finished forgings / rings shall be hot trimmed.
 - 6.2.5 A min forging ratio of 3:1 shall be maintained for all die/free forgings and rings produced from bars/billets with predetermined forging ratio of min 3:1.

7.0 When specified on the PO, forgings shall be supplied in normalized or normalized and tempered condition as required.

8.0 FINISHED FORGING REQUIREMENTS

- 8.1 Forgings shall conform to the dimensions and tolerances specified on the relevant drawing referenced on the purchase order.
- 8.2 Finished forgings shall be clean, scale free, free of laps, seams, cracks, fins, scabs, excessive flash or other surface / injurious defects.
- 8.3 Forging surfaces shall be capable of meeting the requirements of MPT / DPT as applicable.

9.0 ACCEPTANCE

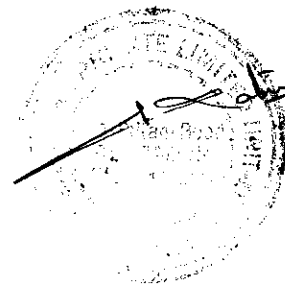
- 9.1 A lot shall consist of one part number forgings produced from one heat of respective material and forged (heat treated, if require) in identical conditions.
- 9.2 SARA SAE may inspect random samples from each lot to verify any or all the above requirements.
- 9.3 An AQL of 4 with an acceptance / rejection number as per SARA SAE QA Plan SARA SAE /DOC/42 Rev'2' shall be used for lot acceptance. Any non-conforming lot shall be rejected.
- 9.4 Individual forgings may also be rejected for non-conformance if any.


10.0 PACKING

- 10.1 Forgings shall be supplied in packages that protect against damages during shipment.

11.0 DOCUMENTATION REQUIRED

- 11.1 Each shipment shall be accompanied by material certifications for each lot of material, the certifications must be positively relatable to the lot of material represented.
 - a) Mill certificate of raw material.
 - b) Chemical certificate for each lot of forging.



	SARA SAE ENGINEERING SPECIFICATION	
	SECTION SES - 26 - 739	
	ISSUE "A"	Rev "1"
	EFF. DATE 20.10.2011	Page 3 of 3

11.2 Mechanical properties certification as per spec

11.3 Impact testing certification

11.4 Certification of heat treatment including cycle time, temperature, cooling media, hardness and graphs.

11.5 Calibration certificate of furnace.

11.6 Ultrasonic test report -- certification of raw material.

12.0 TESTING TO BE CARRIED OUT BY SARA SAE

12.1 At the time of lifting forgings re-verification of chemical properties.

12.2 Recheck of tensile strength, yield strength, elongation, reduction in area, hardness, impact testing and UT testing as per applicable spec.

