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TITLE: **TECHNICAL DATA SHEET**

Description: Material Purchase Specification		Date: See Signature Block	
Technical Data Sheet for the supply of: ASME B16.5 and ASME SA-182M, Grade F316L, Flanges as per ASME BPVC Section II, Part A.			
	Name	Signature	Date
Prepared	OL Siko Mechanical Engineer		2025/01/14
Reviewed	GJ van Heerden Mechanical Engineer	<i>G.J. van Heerden</i>	2025/01/14
Reviewed	TP Choou QC Manager		2025/01/15
Reviewed	CIK Corbitt QA Manager		2025/01/15
Approved	MD van Heerden MO Manager	<i>MD van Heerden</i>	2025/01/17
Approved ESKOM Representative			
REVISION HISTORY			
Rev	Date	Description of changes	
1.0	See signature block	First Issue	

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1 SCOPE

1.1. Supplying of ASME B16.5 Flanges that shall conform to all the applicable requirements of:

- 1.1.1. SA-182M, Specification for Forged or Rolled Alloy and Stainless-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High Temperature Service, ref. 3;
- 1.1.2. SA-961M, Specification for Common Requirements for Steel Flanges, Forged Fittings, Valves, and Parts for Piping Applications, ref. 4;
- 1.1.3. ASME B16.5, Pipe Flanges and Flanged Fittings, ref. 5;
- 1.1.4. and this TDS.

2. APPLICABLE DOCUMENTS

- 3. ASME BPV Code Section II, Part A, SA-182M, 2007 Edition with 2009 Addenda;
- 4. ASME BPV Code Section II, Part A, SA-961M, 2007 Edition with 2009 Addenda;
- 5. ASME B16.5, 2017 Edition, Pipe Flanges and Flanged Fittings, NPS 1/2 through NPS 24, Metric/Inch Standard;
- 6. DSG-310-405, Revision 0, Piping, Flanges and Fittings for ASME III NC and ND Installation;
- 7. DSG-310-406, Revision 0, Piping, Flanges and Fittings for ASME B31.1 Installation;
- 8. EN10204-2004, Metallic products types of inspection documents

2 BASIC REQUIREMENTS

2.1 Ordering Information:

- 2.1.1 Material Specification: ASME SA-182M, ref. 3
- 2.1.2 ASTM Designation: Acceptable ASTM Editions – 1987a through 2007 with exceptions as stated in Table ED-1 of ASME Section II, Part A
- 2.1.3 Grade: F316L
- 2.1.4 Name of Material: Austenitic Stainless Steel
- 2.1.5 Description: WNRF Flange, ref. 5
- 2.1.6 Quantity: As per Purchase Order

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- | | | |
|--------|-----------------------------|------------------------------|
| 2.1.7 | Size: | As per Purchase Order |
| 2.1.8 | Class: | As per Purchase order |
| 2.1.9 | Tolerances: | As per paragraph 7 of ref. 5 |
| 2.1.10 | Surface Finish: | As per par. 12.2 of ref. 3 |
| 2.1.11 | Supplementary Requirements: | Not Applicable |
| 2.1.12 | Additional Requirements: | Not Applicable |

2.2 SI units of measurement shall be used.

2.3 All documents shall be provided in the English language.

2.4 No Code Cases are allowed.

2.5 Notification and Hold Points, if any, shall be as given on the Purchase Order.

3 CHEMICAL COMPOSITION REQUIREMENTS

3.1 An analysis of each heat of steel shall be made in accordance with par. 8.2 of SA-961M, ref. 4.

3.2 Chemical composition shall be as prescribed in par. 7 of SA-182M, and Table 2, ref. 3 for Grade F316L.

3.3 Grade F316L shall have a maximum nitrogen content of 0.10% (See Note H of Table 2 of ref. 3).

3.4 Chemical analysis, samples, and methods shall be in accordance with par. 8.1 of SA-961M, ref. 4.

4 HEAT TREATMENT

4.1 Solution treatment and quench in accordance with par. 6 and Table 1 of SA-182M, ref. 3, for Grade F316L.

4.2 The applicable requirements of par. 7 of SA-961M, ref. 4, shall be met.

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5 MECHANICAL PROPERTIES

- 5.1 Mechanical property tests shall be carried out as described in par. 8 of SA-182M, ref. 3.
- 5.2 All required mechanical tests shall be performed in accordance with the requirements of SA-182M, Table 3, ref. 3, for Grade F316L, when tested in the final heat-treated condition.
- 5.3 Mechanical tests methods shall be in accordance with par. 9, 10 and 11 of SA-961M, ref. 4

6 WORKMANSHIP, FINISH AND APPEARANCE

- 6.1 According to the requirements of par. 12 of SA-182M, ref. 3, and par. 15 of SA-961M, ref. 4.
- 6.2 Tolerances and dimensions according to par. 7 of ASME B16.5, ref. 5.

7 FRACTURE TOUGHNESS REQUIREMENTS

- 7.1 Impact testing is not required.

8 EXAMINATIONS AND REPAIRS

- 8.1 Repair by welding is not allowed.

9 SUPPLEMENTARY AND ADDITIONAL REQUIREMENTS

- 9.1 Not Applicable

10 NON-CONFORMANCES

- 10.1 The Purchaser shall be notified by non-conformance reports of any condition that does not comply with specified requirements of this TDS, the Purchase Order, applicable Codes and Standards as listed in Section 2 of this document, during the delivery, or on the detection of any Counterfeit, Fraudulent or Suspect Items.
- 10.2 Disposition of the notified non-conformances require approval from the Purchaser.

11 IDENTIFICATION AND MARKING OF MATERIAL

- 11.1 In accordance with:
 - 11.1.1 Paragraph 17 of SA-182M, ref. 3;
 - 11.1.2 Paragraph 20 of SA-961M, ref. 4;

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11.1.3 Paragraph 4 of ASME B16.5, ref. 5

11.1.4 Requirements of this TDS

11.2 Marking shall include at least:

11.2.1 Material Specification Number and Grade;

11.2.2 Nominal Pipe Size (NPS or DN);

11.2.3 Class Designation;

11.2.4 Heat Number or Heat Identification;

11.2.5 Certifying organisation's name or symbol;

11.2.6 Product Conformance (B16.5).

11.3 Photos of the applied marking on the material shall be sent to the purchaser for acceptance prior to packaging and shipping.

11.4 All items shall be marked as per Purchase Order item reference and quantities clearly marked with a nuclear grade waterproof marker.

12 HANDLING, PACKAGING AND DELIVERY

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- 12.1 The Supplier shall not dispatch material from its works until it has received the Purchaser's written acceptance of the Material Certificates.
- 12.2 All items are to be handled; cut and ground; with Austenitic Stainless Steel compatible materials, internally; externally. Handling with exposed carbon steel contact area equipment must be avoided at all times.
- 12.3 All items shall be protected from damage and contamination (inside and outside).
- 12.4 The Material Supplier shall provide suitable means to clearly identify the following information on the outside of the packaging:
- 12.4.1 Material Specification, Class/Grade of Material;
- 12.4.2 Overall weight of Package;
- 12.5 Inspection and Release notes shall accompany all material for delivery. No material will be accepted without the abovementioned release notes.
- 12.6 All products and chemicals in contact with the material must meet the following requirements:
- 12.6.1 Total halogens (chlorine + fluorine + bromine) < 200 ppm
- 12.6.2 Total sulphur < 200 ppm
- 12.6.3 Other prohibited materials not allowed as a known constituent of the product: lead, zinc, copper, aluminium, cadmium, tin, mercury, antimony, bismuth, silver, cobalt, arsenic, rare earths, gallium, indium, ferric iron salts, low melting point alloys in general and their compounds.
- 12.7 It is important that the full complement of items in the Purchase Order is to be delivered as specified in the Purchase Order.

13 RIGHT OF ACCESS

- 13.1 Access to the Supplier's and its Sub tier Supplier's facilities shall be provided to the Purchaser, Authorized Inspector or others authorized by the Purchaser including his customer and end user for surveillance, inspection, or audit.

14 DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER

- 14.1 Copies of the material certificates for the material as required by SA-182M, ref. 3, and SA-961M, ref. 4, and this TDS shall be submitted by email for acceptance by the Purchaser. No material shall be shipped without the Purchaser's acceptance of the certificates.

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14.2 The Supplier shall furnish certified test reports and certificates as required by ref. 3, ref. 4 and this TDS in accordance with Type 3.1 of ref. 8 (As permitted in ref. 6 and ref. 7) to the Purchaser with the shipment of items. These shall include but not limited to:

14.2.1 Heat number

14.2.2 Material Specification, including year of issue and revision letter;

14.2.3 Chemical Analyses results (heat)

14.2.4 Tensile test results

14.2.5 Hardness results

14.2.6 Visual acceptance of material surfaces, cleanliness and packaging

14.2.7 Heat treatment type and report if available

14.2.8 Results of all other tests required by SA-182M, ref. 3, and SA-961M, ref. 4, and this TDS;

14.3 The following information shall be included in the documentation to be furnished by the Supplier:

14.3.1 Description of material

14.3.2 Identification marking of content

14.3.3 Clear reference to the producing mill or factory

14.4 Legible copies of the original certificates from the Mill are required (if available).

14.5 All material certificates and test reports shall be traceable to the heat number marked on the material.

14.6 Documentary proof that material and chemicals that come in contact with the material like the packaging and marking ink that was used, comply with the requirements of paragraph 12.6 of this TDS.

15 QUALITY ASSURANCE REQUIREMENTS

15.1 All general and specific Quality Assurance requirements stated in this Technical Data Sheet, the Purchase Order and ref. 8 shall be met.

15.2 The material supplier shall as a minimum be ISO 9001:2015 accredited