

ADVANCED MANUFACTURING



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TITLE: TECHNICAL DATA SHEET

Description: Material Purchase Specification – Thabana Pipestore Extension **Date:** See Signature Block

Technical Data Sheet for the supply of: ASME SA-182M, Forged or Rolled Alloy and Stainless-Steel Pipe Flanges, Forged Fittings, and Valves and Parts for High-Temperature Service

	Name	Signature	Date
Prepared	GJ van Heerden Mechanical Engineer	<i>G.J. van Heerden</i>	20/11/2023
Reviewed	TP Choeu QC Manager	<i>TP Choeu</i>	2023/11/21
Reviewed	CIK Corbitt QA Manager	<i>CIK Corbitt</i>	2023/11/21
Approved	MD van Heerden MO Manager	<i>MD van Heerden</i>	2023/11/22

REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First issue

1 SCOPE

1.1. Supplying of Forged or Rolled Alloy and Stainless-Steel Pipe Flanges, Forged Fittings, Valves and Parts for High-Temperature Service 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, Valves and Parts for High-Temperature Service, ref. [1];
- 1.1.2. SA-961M, Specification for Common Requirements for Steel Flanges, Forged Fittings, Valves and Parts for Piping Applications, ref. [2];
- 1.1.3. ASME B16.5, Specification for Pipe Flanges and Flange Fittings, ref. [3];

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1.2 The supplier shall supply the material in compliance with this TDS.

2 APPLICABLE DOCUMENTS

- [1] ASME BPVC Section II, Part A, SA-182M, 2019 Edition.
- [2] ASME BPVC Section II, Part A, SA-961M, 2019 Edition.
- [3] ASME B16.5, Specification for Pipe Flanges and Flanged Fittings, 2017 Edition.
- [4] Doc No: AM-IMS-MAN-0001, Rev. 2.0, SHEQ Manual.

3 BASIC REQUIREMENTS

3.1 Ordering Information:

- | | | |
|--------|-----------------------------|---|
| 3.1.1 | Code of Manufacturing: | ASME Section II, Part A, 2019 Edition, ref. [1]; |
| 3.1.2 | Material Specification: | SA-182M, ref. [1]; |
| 3.1.3 | ASTM Designation: | Acceptable ASTM Editions – 1987a through 2018 with exceptions as stated in Table II-200-1 of ASME Section II, Part A; |
| 3.1.4 | Name of Material: | Austenitic Stainless-Steel; |
| 3.1.5 | Process: | Seamless; |
| 3.1.6 | Grade: | F304L; |
| 3.1.7 | Pressure Class: | As per ASME B16.5 or ASME B16.11; |
| 3.1.8 | Product Form: | As per Purchase Order; |
| 3.1.9 | Size: | As per Purchase Order; |
| 3.1.10 | Quantity: | As per Purchase Order; |
| 3.1.11 | End Finish: | As per Section 8 of this TDS; |
| 3.1.12 | Test Report Required: | Yes, as per Section 15 of this TDS; |
| 3.1.13 | Certification: | Certification is required as per Section 15 of this TDS; |
| 3.1.14 | Optional Requirements: | None; |
| 3.1.15 | Supplementary Requirements: | None; |

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3.1.16 Special Requirements: As specified in this TDS.

- 3.2 SI units of measure shall be used.
- 3.3 All documents shall be provided in the English language.
- 3.4 No Code Cases are allowed.
- 3.5 Notification and Hold Points, if any, shall be as given on the Purchase Order.

4 MANUFACTURING PROCESS

- 4.1 Shall conform to par. 6 of both SA-182M, ref. [1], and SA-961M, ref. [2].

5 CHEMICAL COMPOSITION REQUIREMENTS

- 5.1 An analysis of each heat of steel shall be made in accordance with par. 8 of SA - 961M, ref. [2].
- 5.2 Chemical composition shall be as prescribed in par. 8 and Table 2 of SA-182M, ref. [1], for Grade F304L.
- 5.3 Chemical analysis, samples and methods shall be in accordance with par. 8 of SA-961M, ref. [2].

6 HEAT TREATMENT

- 6.1 Shall be done as per par. 7 and Table 1 of SA-182M, ref. [1], for Grade F304L.

7 MECHANICAL PROPERTIES

- 7.1 All material mechanical properties shall conform to par. 9 and Table 3 of SA - 182M, ref. [1], for Grade F304L and all required tests are listed below:
 - 7.1.1 Tensile testing – Shall conform to par. 9.5 of SA-182M, ref. [1];
 - 7.1.2 Hardness testing – Shall conform to par. 9.6 of SA-182M, ref. [1];
 - 7.1.3 All testing methods and requirements shall conform to par. 9 of SA-961M, ref. [2].

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8 WORKMANSHIP, FINISH AND APPEARANCE

- 8.1 The surface finish and appearance shall comply with par 14 of SA-182M, ref. [1], and par. 15 of SA-961M, ref. [2].
- 8.2 Tolerances and dimensions shall comply with ASME B16.5, ref. [3].

9 FRACTURE TOUGHNESS REQUIREMENTS

- 9.1 Impact tests are not required, as exempted by the Mechanical Design Code for the Thabana Pipestore Extension Project.

10 REPAIRS

- 10.1 Repair by welding is **not permitted**.

11 NON-CONFORMANCES

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

12 IDENTIFICATION AND MARKING OF MATERIAL

- 12.1 Material shall be marked in accordance with:
 - 12.1.1 Par. 19 of SA-182, ref. [1], par. 20 of SA-961M, ref. [2], and par. 4 of ASME B16.5, ref. [3];
 - 12.1.2 Requirements of this TDS.
- 12.2 At minimum the marking shall include:
 - 12.2.1 Specification Number (SA-182M);
 - 12.2.2 Grade (F304L);

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- 12.2.3 Size (As per Purchase Order);
- 12.2.4 Piping Schedule or Pressure Class;
- 12.2.5 Heat number;
- 12.2.6 Heat treatment process (As per Section 6 of this TDS);
- 12.2.7 Manufacturer's name or identification mark.

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

12.4 All items shall be marked as per Purchase Order item reference and quantities clearly marked with a waterproof marker and certification thereof shall be submitted to the Purchaser.

13 HANDLING, PACKAGING AND DELIVERY

13.1 Handling, Packaging and Delivery shall conform to par. 21 of SA-961M, ref. [2].

13.2 The Supplier shall not dispatch material from its works until it has received the Purchaser's written acceptance of the Material Test Report (MTR).

13.3 All material supplied shall have a good surface finish

13.4 All items shall be protected from damage and contamination (inside and outside) from chemicals or solids that are detrimental to the integrity and corrosion resistance of stainless-steel.

13.5 The Material Supplier shall provide suitable means to clearly identify the following information on the outside of the packaging:

13.5.1 Material Specification, Class/Grade of Material;

13.5.2 Overall weight of Package;

13.5.3 Material Organisation's name and Details.

13.6 Inspection and Release notes shall accompany all material for delivery. No material will be accepted without the abovementioned release notes.

13.7 It is important that the full complement of items listed in the Purchase Order is to be delivered as specified in the Purchase Order.

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14 RIGHT OF ACCESS

14.1 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.

15 DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER

15.1 Copies of the material certificates for the material as required by par. 18 of SA - 182M, ref. [1], par. 19 of SA-961M, ref. [2], 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.

15.2 The manufacturer shall provide the test report in accordance with the requirements of par. 18 of ref. [1].

15.3 The Material certificates shall include, but not limited to test results and information as applicable:

15.3.1 Description of material;

15.3.2 Heat treatment type;

15.3.3 Chemical Analyses results (heat and/or product);

15.3.4 Tensile test/property results;

15.3.5 Width in the gage length (if longitudinal strip tension tests were used);

15.3.6 Hardness test results;

15.3.7 Non-destructive electric test results, if available;

15.3.8 Results of all other tests required by ref. [1], ref. [2] and this TDS;

15.3.9 Visual acceptance of material surfaces, cleanliness and packaging;

15.3.10 Heat treatment report if available;

15.3.11 Clear reference to the producing mill or factory;

15.3.12 A statement that the forged stainless-steel piping fittings were manufactured, sampled, tested, inspected, handled and packaged in accordance with the requirements of the material specification (SA-182M) and this TDS.

15.4 Legible copies of the original certificates from the Mill are required.

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15.5 All material certificates and test reports shall be traceable to the material identification marking.

16 QUALITY ASSURANCE REQUIREMENTS

16.1 All general and specific Quality Assurance requirements stated in the Purchase Order and this TDS shall be met.

16.2 Comply with ref. [4].