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TITLE: TECHNICAL DATA SHEET

Description: Non-ASME Code Material Specification – Thabana Pipestore Extension Date: See Signature Block

Technical Data Sheet for the Supply of: ISO Fasteners

	Name	Signature	Date
Prepared	GJ van Heerden Mechanical Engineer	<i>G.J. van Heerden</i>	27/12/2023
Reviewed	TP Choeu QC Manager	<i>TP Choeu</i>	2024/01/05
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Approved	MD van Heerden MO Manager	<i>MD van Heerden</i>	2024/01/08

REVISION HISTORY

Rev	Date	Description of changes
1.0	See signature block	First issue

1. SCOPE

1.1. For the supply of ISO Fasteners, which shall conform to all the applicable requirements of:

- 1.1.1. ISO 4014, Standard for Hexagon Head Bolts – Product Grades A and B, ref. [1];
- 1.1.2. ISO 4017, Standard for Fasteners – Hexagon Head Screws – Product Grades A and B, ref. [2]; ;
- 1.1.3. ISO 4032, Standard for Hexagon Regular Nuts (Style 1) – Product Grades A and B, ref. [3];
- 1.1.4. ISO 7089, Standard for Plain Washers – Normal Series – Product Grade A, ref. [4];
- 1.1.5. DIN 580, German Standard for Lifting Eye Bolts, ref. [5];

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- 1.1.6. DIN 582, German Standard for Lifting Eye Nuts, ref. [6];
- 1.1.7. ISO 898-1, Standard for Mechanical Properties of Fasteners Made of Carbon and Alloy Steel; Part 1: Bolts, Screws and Studs with Specified Property Classes – Coarse Thread and Fine Pitch Thread, ref. [7];
- 1.1.8. ISO 898-2, Standard for Mechanical Properties of Fasteners Made of Carbon and Alloy Steel; Part 2: Nuts with Specified Property Classes – Coarse Thread and Fine Pitch Thread, ref. [8];
- 1.1.9. ISO 3506-1, Standard for Fasteners - Mechanical Properties of Corrosion-Resistant Stainless-Steel Fasteners - Part 1: Bolts, Screws and Studs with Specified Grades and Property Classes, ref. [9];
- 1.1.10. ISO 3506-2, Standard for Fasteners - Mechanical Properties of Corrosion-Resistant Stainless-Steel Fasteners - Part 2: Nuts with Specified Grades and Property Classes, ref. [10];
- 1.1.11. And this TDS.

2. APPLICABLE DOCUMENTS

- [1] ISO 4014, 2022 Edition;
- [2] ISO 4017, 2022 Edition;
- [3] ISO 4032, 2023 Edition;
- [4] ISO 7089, 2000 Edition;
- [5] DIN, 580, 2018 Edition;
- [6] DIN, 582, 2018 Edition;
- [7] ISO 898-1, 2013 Edition;
- [8] ISO 898-2, 2022 Edition;
- [9] ISO 3506-1, 2020 Edition;
- [10] ISO 3506-2, 2020 Edition;
- [11] ISO 16228, 2017 Edition
- [12] Advanced Manufacturing, SHEQ Manual, Document Number AM-IMS-MAN-0001, Revision 2.0.

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3. BASIC REQUIREMENTS

3.1. Ordering Information:

- 3.1.1. Fastener Material: As per Table 1;
- 3.1.2. Type and Grade: As per Table 1;
- 3.1.3. Coating: None required
- 3.1.4. Size: Specified in the Purchase Order;
- 3.1.5. Quantity: Specified in the Purchase Order;
- 3.1.6. Additional Requirements: None in this TDS.
- 3.1.7. Marking Requirements: As per Section 11 of this TDS.
- 3.1.8. Delivery Requirements: As per Section 12 of this TDS.

Table 1: List of Fastener Types

Faster Type	Product Specification	Product Grade	Material Specification	Material Grade	Property Class
Hexagon Head Bolts	ISO 4014, ref. [1]	A and B	Stainless-Steel, ISO 3506-1, ref. [9]	A2	70
Hexagon Head Screws	ISO 4017, ref. [2]	A and B	Stainless-Steel, ISO 3506-1, ref. [9]	A2	70
Hexagon Head Screws	ISO 4017, ref. [2]	A and B	Carbon Steel, ISO 898-1, ref. [7]	N/A	8.8
Hexagon Regular Nuts (Style 1)	ISO 4032, ref. [3]	A and B	Carbon Steel, ISO 898-2, ref. [8]	N/A	8

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Hexagon Regular Nuts (Style 1)	ISO 4032, ref. [3]	A and B	Stainless-Steel, ISO 3506-2, ref. [10]	A2	70
Plain Washer – Normal Series	ISO 7089, ref. [4]	A	Carbon Steel, Hardness Class 200 HV	N/A	N/A
Plain Washer – Normal Series	ISO 7089, ref. [4]	A	Stainless-Steel, ISO 3506-1, ref. [9], Hardness Class 200 HV	A2	70
Lifting Eye Bolts	DIN 580, ref. [5]	N/A	Carbon Steel	C15 or C15E	N/A
Lifting Eye Nuts	DIN 582, ref. [6]	N/A	Carbon Steel	C15 or C15E	N/A

4. GENERAL REQUIREMENTS

- 4.1. SI units of measurement shall be used.
- 4.2. All documents shall be provided in the English language.
- 4.3. Notification and Hold Points, if any, shall be as stated on the Purchase Order.

5. CHEMICAL COMPOSITION REQUIREMENTS

- 5.1. For Carbon Steel Fasteners, listed in Table 1 above, the chemical composition shall comply with the requirements contained in ISO 898-1, ref. [7], and ISO 898 - 2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 5.2. For Stainless-Steel Fasteners, listed in Table 1 above, the chemical composition shall comply with the requirements contained in ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].

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6. MECHANICAL AND PHYSICAL PROPERTIES

- 6.1. For Carbon Steel Fasteners, listed in Table 1 above, the mechanical and physical properties shall comply with the requirements contained in ISO 898-1, ref. [7], and ISO 898-2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 6.2. For Stainless-Steel Fasteners, listed in Table 1 above, the mechanical and physical properties shall comply with the requirements contained in ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].

7. WORKMANSHIP, FINISH AND APPEARANCE

- 7.1. The fasteners, listed in Table 1 above, shall be clean, commercially sound and without any surface discontinuities.

8. REPAIRS

- 8.1. Repair by welding of surface and any other defects are **not permitted**.

9. EXAMINATION AND TESTING REQUIREMENTS

- 9.1. Carbon Steel Fasteners, listed in Table 1 above, shall comply with the inspections and test as stipulated in ISO 898-1, ref. [7], and ISO 898-2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 9.2. Stainless-Steel Fasteners, listed in Table 1 above, shall comply with the inspections and test as stipulated in ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].

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, or during the delivery process and following the detection of any Counterfeit, Fraudulent or Suspect Items.
- 10.2. Disposition of the notified non-conformances require approval from the Purchaser of the listed fasteners.

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11. IDENTIFICATION AND MARKING OF MATERIAL

- 11.1. Marking of Carbon Steel Fasteners shall be done according to the requirements of ISO 898-1, ref. [7], and ISO 898-2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 11.2. Marking of Stainless-Steel Fasteners shall be done according to the requirements of ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].

12. PACKAGING AND DELIVERY

- 12.1. All packages for all types of fasteners and of all sizes shall be marked through labelling.
- 12.2. Carbon Steel Fasteners shall be marked and packaged according to the requirements of ISO 898-1, ref. [7], and ISO 898-2, ref. [8], as well as, DIN 580, ref. [5], and DIN 582, ref. [6].
- 12.3. Stainless-Steel Fasteners shall be marked and packaged according to the requirements of ISO 3506-1, ref. [9], and ISO 3506-2, ref. [10].
- 12.4. All fastener packages shall be marked as per Purchase Order item reference numbers and quantities clearly indicated.
- 12.5. All fasteners shall be free of dirt, surface contamination, indentations, discontinuities and scratch marks before being packaged and also after delivery.
- 12.6. All materials and chemicals in contact with the fasteners shall not be detrimental to the integrity or chemical composition of the fasteners.
- 12.7. The Supplier shall not dispatch any fasteners from its premises until it has received the Purchaser's written acceptance of the required material certificates, test reports, inspection and release documentation.
- 12.8. It is important that the full complement of fasteners in the Purchase Order is to be delivered in accordance with the requirements of 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.

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14. DOCUMENTATION TO BE PROVIDED BY THE SUPPLIER

- 14.1. Test reports are required for the various fasteners in accordance with ISO 16228, ref. [11], of Type F3.1. A consolidated report covering all the fasteners, listed in Table 1 above, is also acceptable.
- 14.2. All material certificates and / or test reports shall be traceable to the Purchase Order and materials specified therein.
- 14.3. The following information shall be included, as a minimum, in the documentation to be supplied:
 - 14.3.1. Description of the fastener materials;
 - 14.3.2. Identification marking of the fasteners;
 - 14.3.3. Clear reference to the producing mill or factory;
 - 14.3.4. Heat/Cast/Lot numbers;
 - 14.3.5. Method of manufacturing;
 - 14.3.6. Heat treatment if applicable;
 - 14.3.7. Grade and property class of the fastener materials.
- 14.4. Legible copies of the original fastener material certificates from the Mill are required, if available.
- 14.5. All material certificates and test reports shall be traceable to the respective fastener materials.

15. QUALITY ASSURANCE REQUIREMENTS

- 15.1. All general and specific Quality Assurance requirements stated in ref. [12] and this TDS shall be met.