



TRANSNET ENGINEERING

TECHNICAL SPECIFICATION FOR MINED SILICA SAND (GRADE B)

Date Released: 23 May 2022

Revision: 00

Doc. No.: RD_RD_BLM_SPEC_00

Bidders Signature

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SUMMARY OF REVISION

First issue-: 23 May 2022

The following revisions have been made in this version:

Change	Description
00	First version
00	Second revision with more detailed information

Bidders Signature

DOCUMENT CONTROL

Distribution List

Name	Email	Company

Bidders Signature

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Bidders Signature

1. Scope

The purpose of this specification is to request the supply of mined Silica sand which has basic properties required to make green sand mould. The silica sand should be able to give good sand properties such as Flowability, green strength, permeability, and the good refractoriness when they are mixed with bentonite and coal dust. The silica sand grains must have good permeability (B-grade) and also should have high refractoriness of above 1550°C

2. Technical Requirements

2.1 Typical Chemical properties:

Silica as SiO ₂	98% Min
Aluminium as Al ₂ O ₃	1.5% Max
Total Iron as Fe ₂ O ₃	0.25% Max
Titanium as TiO ₂	0.15% Max
Phosphorus as P ₂ O ₅	0.05% Max
Calcium as CaO	0.09% Max
Magnesium as MgO	0.01% Max
Sodium as Na ₂ O	0.02% Max
Potassium as K ₂ O	0.52% Max

2.2 Material properties

CHARACTERISTICS	ASTM SPECIFICATION	ACCEPTANCE STANDARD
AFS	50 – 60	Test results
Clay content (A.F.A)	2% MAX	Test results
Fines No.	60-80	Test results
Moisture	0.10% MAX	For info only
Temperature	35° MAX	Test results
Total Fines	20% Max	Test results
Total Sand Retained on 3 adjacent cells	60% Min	Test results
LOI	0.5% MAX	Test results
Sintering Temperature	1500°C	Test results

Bidders Signature

3 General Requirements

- 3.1** The bidder shall indicate if they cannot comply with each clause and subclause of this specification.
- 3.2** Bidders shall provide within the tendering period complete and detailed information as required in this specification, to enable clear and acceptable assessment and adjudication of their offers.
- 3.3** Capability and facility audit will be undertaken prior to final award.

4 Transnet's Obligations

- 4.1** Transnet shall avail relevant personnel for briefing prior to award of the tender to potential bidders.
- 4.2** Transnet shall provide relevant technical specification of the item required.

5 Bidder's Obligations

- 5.1** The tenderer shall be responsible for the following: -
 - 5.1.1** Provide indicative prices of the work that is required for information purposes.
 - 5.1.2** Provide the necessary technical support, know-how and quality standards required
 - 5.1.3** The bidder must provide a budget quote (indicative price) per task tabulated in the introduction
 - 5.1.4** The sand will be delivered with the secured truck to avoid the sand being exposed to rain/water prior introduced to sand system.

6 SHREQ: Safety, Health, Risk, Environment, Quality

- 6.1** The bidder shall indicate all health and safety hazards associated with the delivery of silica sand.
- 6.2** The supplier shall provide the material safety datasheet (MSDS's) and technical material datasheet each time the delivery of silica sand is made.
- 6.3** The supplier shall have a quality management plan in place (guided by ISO: 9001 international specification)

Bidders Signature

7 Compliance Checklist to be completed by all bidders

Item No.	Description	Ability to comply. (Yes/No)
1.	Provide delivery using a Tipper truck for the convenience on off-loading of sand.	
2.	Provide support and information regarding B-grade of silica sand in order to produce moulds that conform to product requirements.	
3.	Share the expertise and knowledge with regard to the sourcing of silica sand when necessary.	
4.	Have a quality management plan in place (guided by ISO: 9001 international specification)	
5.	Supply completed delivery note with MSDS's and technical material datasheet.	

8 Document Authorities


COMPILED BY



Tshepo Dhlamini

Acting Senior Engineer

CHECKED & APPROVED



Mukovhe Mashawana

Acting Senior Engineer

Bidders Signature

ENGINEERING: ENGINEERING SYSTEMS ENABLEMENT

QUALITY MANAGEMENT SYSTEM

COAL DUST

TECHNICAL SPECIFICATION

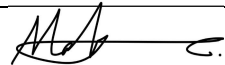

Specification number	SE_BFX_SPEC_2010
Version number	00
Compiler name	Ntoro Makhofane
Compiler signature	
Date	10.07.2024
Approver name	Tshepo Dhlamini
Approver signature	
Date	10.07.2024

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1 DOCUMENT VERSION

This specification supersedes all previous specifications for the purchase of coal dust.

2 PURPOSE

The purpose of this document is to supply the potential supplier with the minimum technical requirements that the supplier must comply to.

3 SCOPE OF SPECIFICATION

Coal dust blended with Bentonite (used as fire retardant) to use as a carbon enhancer in greensand moulding.

4 REFERENCE DOCUMENTATION

NONE

5 DEFINITIONS AND ABBREVIATIONS

NONE

6 TECHNICAL REQUIREMENTS

Table 1: Technical requirement compliance of material to be purchased

Typical properties without Bentonite	
Fixed Carbon	>50%
Lustrous Carbon	>6%
Sulphur	≈0.74%
Volatiles	>23%
Ash	<16.5%
pH	>7.9%
Inherent Moisture	<5%
Bulk Density	≈ 0.77
Typical Coal/Bentonite Blend Properties	
Grading Retained on 63µm	38 – 60%
AGS	160 – 210
Volatiles	<28%
Ash	<36% (when containing Bentonite)
Bentonite Content	20 – 25%

7 QUANTITY

Table 2: List of quantities

Description	Quantity
Coal Dust	Tanker

8 POST PURCHASE SUPPORT

NONE

9 DOCUMENTATION REQUIRED

9.1. Procurement stage

Material safety data sheet.

9.2. On delivery

Material safety data sheet

Quality certificate

Delivery note

10 DELIVERY

Is delivery required? YES

Delivery address:

Transnet Engineering: Foundry

Transnet Road

Linquinda

Bloemfontein

9301

11 TIME FRAME

Two weeks from date of purchase Order (PO), failure to meet the deadline, Transnet is obligated to return purchased material with or without notice.

12 ACCEPTANCE CRITERIA

It is the responsibility of the supplier to ensure the understanding of the requirements/technical requirements of a required product. It is also the responsibility of the supplier to enquire and seek clarity on areas that may be unclear.

Upon the delivery of a product, the product shall be evaluated for conformance to specification requirements, using the acceptance criteria in Table 2 and the suppliers performance criteria in Table 3.

Table 2: Evaluation Criteria-**CONSUMABLES**

	Criteria	Conformity		Comments
		C	NC	
1.1	Product supplied according to specified quantity.			
1.2	Packaging of product intact.			
1.3	Material certificate provided.			
1.4	Material certificate inclusive product details required as per specification.			
1.5	Material certificate indicates safety requirements of product.			
1.6	Material certificate indicates storage information of product. (Where applicable)			
1.7	Product proves capability to withstand, or product is within specified range. (During product inspection/testing)			
1.8	Product is fully capable of fulfilling intended use.			

1.9	Deviations/limitations of product clearly stated.			
1.10	Delivery note provided.			

Table 3: Supplier performance evaluation

Vendor's performance criteria	1	2	3	4	5	N/A
Timelines of deliveries						
Quality of product						
Evidence of supplying product						
Quantity of product						
Competitiveness of price						
Shelf life						
Packaging						
Compliance to specification						
Responsiveness to emails/calls/messages						
General specification compliance						
Material Datasheet Safety Data sheet						
Warranty						
Accreditation certificate						
Technical requirements						
Total Score						

ENGINEERING: ENGINEERING SYSTEMS ENABLEMENT

QUALITY MANAGEMENT SYSTEM

ACTIVE CLAY BENTONITE

TECHNICAL SPECIFICATION



Specification number	SE_BFX_SPEC_2009
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Compiler name	Ntoro Makhofane
Compiler signature	
Date	10.07.2024
Approver name	Tshepo Dhlamini
Approver signature	
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9.1	Procurement stage	4
9.2	On delivery	4
10	Delivery	4
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1 DOCUMENT VERSION

This specification supersedes all previous specifications for the purchase of Active Sodium Bentonite.

2 PURPOSE

The purpose of this document is to supply the potential supplier with the minimum technical requirements that the supplier must comply to.

3 SCOPE OF SPECIFICATION

Technical requirements of high purity Active Sodium Bentonite for mixture of Greensand moulding.

4 REFERENCE DOCUMENTATION

NONE

5 DEFINITIONS AND ABBREVIATIONS

Bentonite – Clay substance suitable for use as a binding agent for greensand moulding.

6 TECHNICAL REQUIREMENTS

Table 1: Technical requirement compliance of material to be purchased

Properties requirement	
Color	Fawn
Appearance	Powder
Moisture	8 – 15%
Bulk Density (Piled under moisture condition)	1.1 – 1.8 g/cm ³
Particle Size distribution: on 150µm on 106µm	<15% retained <5% Retained
pH (5% in water)	9 – 11%
Water absorption (on sinter plate)	580 ± 5%
Cation exchange capacity (meq/100g)	≈ 80
Viscosity (Mash funnel)	Immediate: 25 – 32s 10 Minutes: 28 – 45s
Chemical Analysis	
SiO ₂	55 – 65%
Al ₂ O ₃	>18%
Fe ₂ O ₃	>3%
CaO	>0.8%

MgO	>3.6%
K ₂ O	>0.6%
Na ₂ O	>2.30%
L.O.I	<9%
Mineralogy	
Montmorillonite	>80%
Quartz	5% -13%
Mica	>0.5%

7 QUANTITY

Table 2: List of quantities

Description	Quantity
Active Sodium Bentonite	Tanker

8 POST PURCHASE SUPPORT

NONE

9 DOCUMENTATION REQUIRED

9.1 Procurement stage

- Material safety data sheet.

9.2 On delivery

- Material safety data sheet
- Quality certificate
- Delivery note

10 DELIVERY

Is delivery required? YES

Delivery address:

Transnet Engineering: Foundry

Transnet Road

Linquinda

Bloemfontein

9301

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