

# ENGINEERING: ENGINEERING SYSTEMS ENABLEMENT QUALITY MANAGEMENT SYSTEM

## EXOTHERMIC-INSULATING RISER SLEEVES

FOR

KOEDOESPOORT FOUNDRY

### TECHNICAL SPECIFICATION

Specification number	SE_KDS_SPEC_2041
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Compiler name	Engineer
Date	24/03/2024
Signature	
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Signature	
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## 1 DOCUMENT VERSION

This specification supersedes all previous specifications for exothermic-insulating riser sleeves used by the Transnet Koedoespoort (KDS) Foundry. |

## 2 PURPOSE

The purpose of this document is to provide the potential supplier with the minimum technical requirements for procuring exothermic-insulating riser sleeves for the KDS Foundry. Exothermic insulating sleeves are hollow cylinders made of moldable, exothermic riser material which is inserted into the sand mold and forms a sheath around the cylindrical design. Exothermic-insulating sleeves are used in the steel casting process to compensate for shrinkage during solidification. |

## 3 SCOPE OF SPECIFICATION

This specification highlights the different types of exothermic-insulating riser sleeves utilised at the KDS Foundry.

Table 1: Different types of exothermic-insulating riser sleeve material used at the KDS Foundry.

<b>MATERIAL DESCRIPTION</b>
Exothermic open sleeve 125 mm
Exothermic cored insert 5/8
Square neck down sleeve 125 mm
Exothermic cored insert 8/11
Exothermic open sleeve 75 mm
Exothermic insert 7/10
Exothermic open sleeve 100 mm
Round neck down sleeve 175 mm
Exothermic cored insert 10/13
Square neck down sleeve 75 mm
Round neck down sleeve 150 mm
Open sleeve 175mm
Exothermic insert 4/7

Exothermic cored insert 6/9
Round neck down sleeve 95mm

#### **4 REFERENCE DOCUMENTATION**

[N/A ]

#### **5 DEFINITIONS AND ABBREVIATIONS**

[N/A ]

#### **6 TECHNICAL REQUIREMENTS**

##### **6.1 Material requirements**

- Exothermic sleeves can be furnished as hollow open cylinder (open sleeve) shown in figure 1 or a sleeve with a core breaker (figure 2) or round neck down (figure 3), shown in Appendix 1.
- The shape, height and diameter dimensions of the sleeves shall conform to the requirements given in Appendix 2.
- The thickness of the sleeves shall be uniform across the diameter and thick enough to withstand rough handling during moulding.
- The exothermic sleeves shall be uniform in colour and free from any foreign material.
- The moisture content of the sleeves shall not exceed 3%.
- The sleeves shall withstand molten metal temperatures of up to 1600 degrees Celsius without developing any cracks.
- The sleeves shall be homogeneously bonded with smooth and well finished appearance. It shall not contain any cracks, cavities, patches and friable powder.

##### **6.2 Process requirements**

- Visual inspection prior and post processes.
- Sort and categorize sleeves.
- Use calibrated machinery and equipment.
- Maintain records of all standard operating procedures, specifications, and calibrations.
- Follow a typical process flow. |

## 7 QUANTITY

The approximate quantities used by KDS Foundry per year are indicated in table 2 below, however, quantities of sleeves that need to be delivered shall be indicated as and when required.

Table 2: Different types of exothermic-insulating riser sleeve material with respective quantities used at the KDS Foundry.

<b>MATERIAL DESCRIPTION</b>	<b>QUANTITIES</b>
Exothermic open sleeve 125 mm	10 000
Exothermic cored insert 5/8	10 000
Square neck down sleeve 125 mm	2 000
Exothermic cored insert 8/11	2 000
Exothermic open sleeve 75 mm	4 000
Exothermic insert 7/10	1 000
Exothermic open sleeve 100 mm	1 000
Round neck down sleeve 175 mm	1 000
Exothermic cored insert 10/13	18 000
Square neck down sleeve 75 mm	1 000
Round neck down sleeve 150 mm	1 000
Open sleeve 175mm	1 000
Exothermic insert 4/7	2 000
Exothermic cored insert 6/9	2 000
Round neck down 95mm	1 000

## 8 POST PURCHASE SUPPORT

- Availability of supplier and his premises for any issues arising.
- Return and replacement of scrapped sleeves resulting from transportation or manufacturing damage.

## **9 DOCUMENTATION REQUIRED**

### **9.1 Procurement stage**

- [ N/A ]

### **9.2 On delivery**

[Each batch is to be delivered with a delivery note and material conformance certificate. ]

## **10 DELIVERY**

Upon delivery, the castings shall;

[10.1 Be stacked and packed in an orderly sequence.

10.2 Be stored and transported in a moisture free and dry environment.

10.3 Branded with an identification logo i.e., name of manufacturer, batch number, date of manufacture, dimensions of the sleeves, type, shelf life and the number of the sleeves.

10.4 Transportation and handling of sleeves shall be adequate to prevent mechanical damage. ]

Delivery address:

[Transnet Engineering: ESE Foundry office building A16

Mop Road

Opposite Foundry business

Koedoespoort

Pretoria

0186 ]

## **11 TIME FRAME**

[Expected lead times shall be as stipulated on the RFQ or tender document.

Supplier is expected to deliver sleeves on terms indicated on the RFQ or tender document. ]

## **12 ACCEPTANCE CRITERIA**

It is the responsibility of the supplier to ensure the understanding of the requirements/technical requirements of a required product or service. 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/service, the product/service shall be evaluated for conformance to specification requirements, using the acceptance criteria stipulated in the tender document.

### 13. Appendices

#### Appendix 1: Different types of exothermic sleeves.



Figure 1: Open/cylindrical exothermic sleeves.

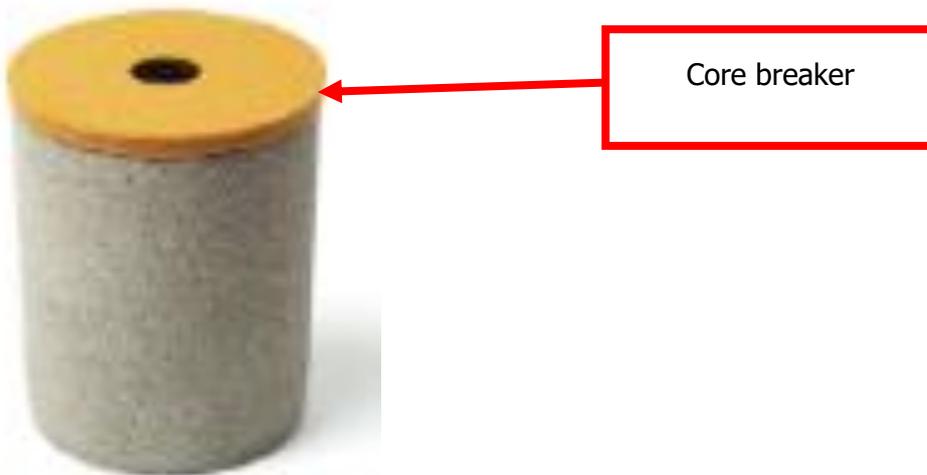


Figure 2: Cylindrical exothermic sleeve with a core breaker.



Figure 3: Illustrates an open square neck down exothermic sleeve.

## Appendix 2: Exothermic sleeves dimensions

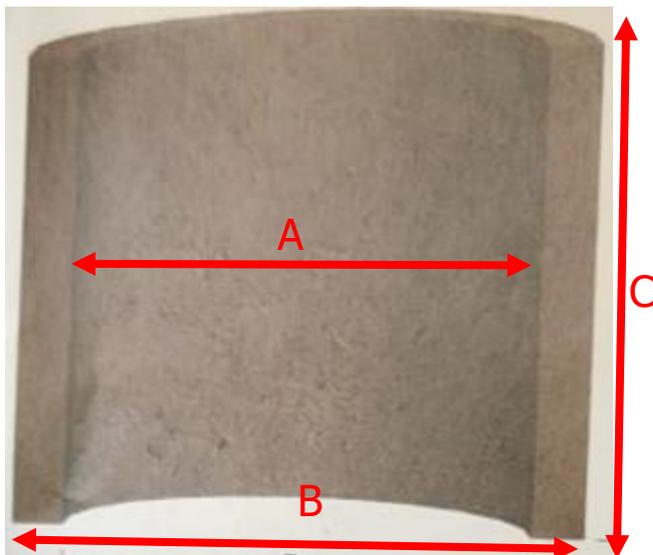


Figure 4: Illustrates a hollow exothermic sleeve.

Table 3: The basic dimensions of a hollow exothermic sleeve.

<b>Exothermic sleeve</b>	<b>A (Inner diameter in mm)</b>	<b>B (Outer diameter in mm)</b>	<b>C (Height in mm)</b>
Exothermic open sleeve 125 mm	<b>125</b>	<b>157</b>	<b>125</b>
Exothermic open sleeve 75 mm	<b>75</b>	<b>95</b>	<b>125</b>
Exothermic open sleeve 100 mm	<b>100</b>	<b>125</b>	<b>125</b>
Open sleeve 175mm	<b>175</b>	<b>213</b>	<b>175</b>

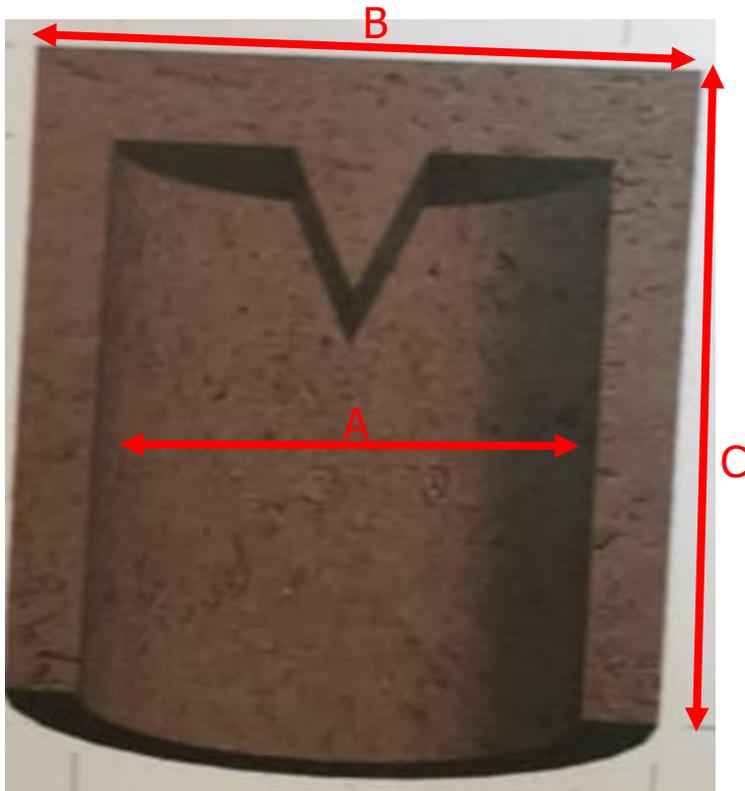


Figure 5: Illustrates an exothermic sleeve insert

Table 4: The basic dimensions of an exothermic sleeve insert

<b>Exothermic sleeve</b>	<b>A (Inner diameter in mm)</b>	<b>B (Outer Diameter in mm)</b>	<b>C (Height)</b>
Exothermic cored insert 5/8	<b>52</b>	<b>74</b>	<b>80</b>
Exothermic cored insert 8/11	<b>79</b>	<b>103</b>	<b>110</b>
Exothermic insert 7/10	<b>70</b>	<b>92</b>	<b>99</b>
Exothermic cored insert 10/13	<b>97</b>	<b>125</b>	<b>133</b>
Exothermic cored insert 6/9	<b>59</b>	<b>81</b>	<b>90</b>
Exothermic insert 4/7	<b>41</b>	<b>62</b>	<b>73</b>

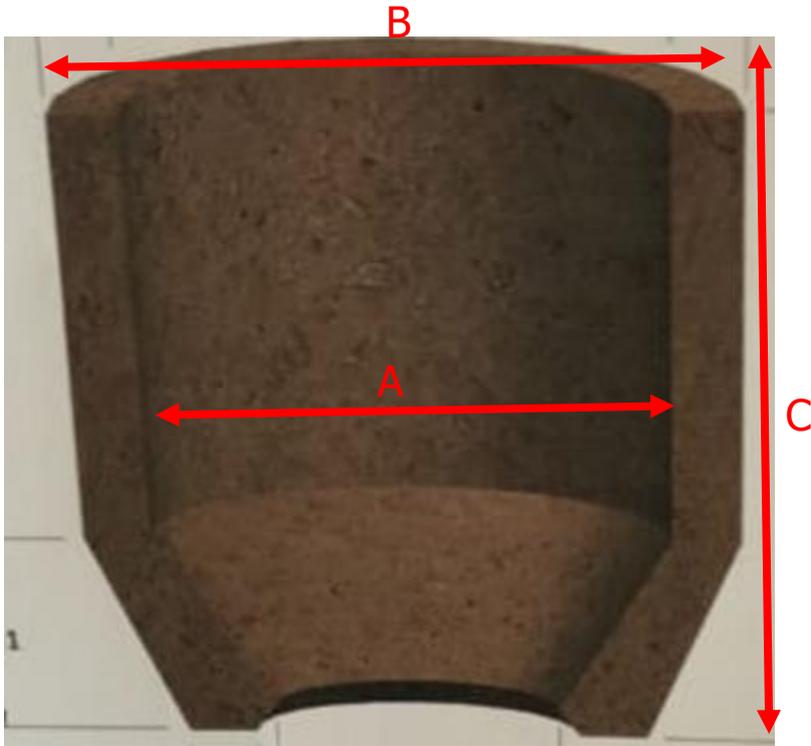


Figure 6: Illustrates round neck down exothermic sleeve.

Table 5: The basic dimensions of a round neck down exothermic sleeve.

<b>Exothermic sleeve</b>	<b>A (Inner diameter)</b>	<b>B (Outer Diameter)</b>	<b>C (Height)</b>
Round neck down 175 mm	<b>175</b>	<b>213</b>	<b>175</b>
Round neck down 95mm	<b>95</b>	<b>123</b>	<b>100</b>
Round neck down sleeve 150 mm	<b>150</b>	<b>175</b>	<b>147</b>

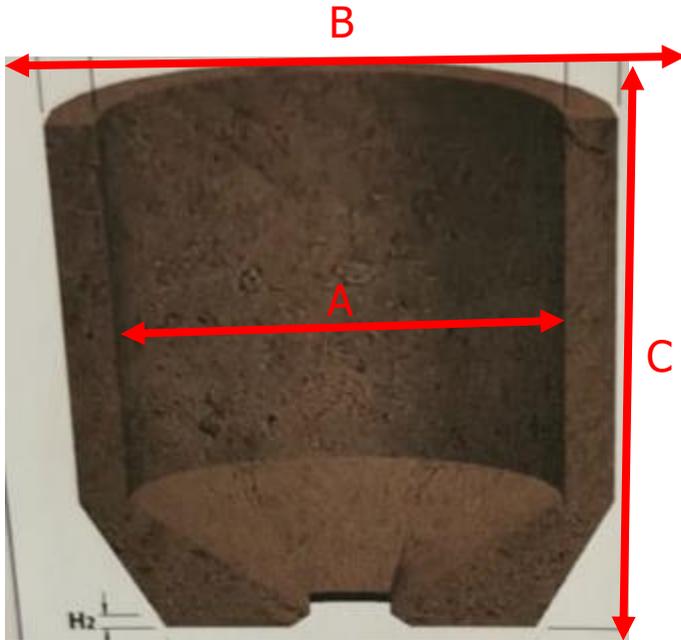


Figure 7: Illustrates square neck down exothermic sleeve

Table 6: The basic dimensions of a square neck down exothermic sleeve.

<b>Exothermic sleeve</b>	<b>A (Inner diameter in mm)</b>	<b>B (Outer Diameter in mm)</b>	<b>C (Height in mm)</b>
Square neck down sleeve 125 mm	<b>125</b>	<b>157</b>	<b>125</b>
Square neck down sleeve 75 mm	<b>75</b>	<b>95</b>	<b>90</b>