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a division of Denel (Pty.) Ltd

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PRETORIA METAL PRESSINGS a division of **DENEL (Pty.) Ltd.**

APPROVAL PAGE

FOR ORIGINAL SIGNATURES SEE ISSUE 1

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2001-09-05
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CHANGE RECORD SHEET

ISSUE	DETAILS	ECP NO	DONE BY	DATE
1	Specification implemented.	KB/268/01SA	I.P.	2001-08-30
2	Change description to accommodate cathodes and cropped bar.	E2/075/08SA	I.P.	2008-07-08
3	Update specification to LME requirements.	E2/172/09SA	I.P.	2009-08-26

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1. SCOPE

This specification covers the requirements for copper cathodes or cropped bar that conforms to this specification. (BS en 1978:1998 copper cathodes grade Cu-cath-1)

2. APPLICABLE DOCUMENTS

BS en 1978:1998 copper cathodes.

3. REQUIREMENTS

- 3.1 The material shall be supplied as copper cathodes or cropped with approximate dimensions as follows:

	CATHODES	CROPPED BAR
Length	$\pm 1\ 000\text{ mm}$	$\pm 800\text{ mm}$
Width	$\pm 1\ 000\text{ mm}$	$\pm 90\text{ mm}$
Thickness	Preferable between 10 and 20 mm	$\pm 70\text{ mm}$

3.2 Chemical composition

ELEMENT	SPECIFICATION
	%
Copper (Cu) (including silver)	99,95 Minimum
Arsenic (As)	0,0005 Maximum (1)
Selenium (Se)	0,0002 Maximum (2)
Tellurium (Te)	0,0002 Maximum
Cobalt (Co)	(3)
Nickel (Ni)	(3)
Lead (Pb)	0,0005 Maximum
Iron (Fe)	0,0010 Maximum (3)
Bismuth (Bi)	0,0002 Maximum (2)
Antimony (Sb)	0,0004 Maximum (1)
Silver (Ag)	0,0025 Maximum
Sulphur (S)	0,0015 Maximum (4)
Manganese (Mn)	(1)
Zinc (Zn)	(3)
Cadmium (Cd)	(1)
Chromium (Cr)	(1)
Phosphorus (P)	(1)
Silicon (Si)	(3)
Tin (Sn)	(3)

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- (1) (As + Cd + Cr + Mn + P + Sb) maximum 0,0015%
 (2) (Bi + Se + Te) maximum 0,0003%
 (3) (Co + Fe + Ni + Si + Sn + Zn) maximum 0,0020%
 (4) The Sulphur content shall be determined on a cast sample

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3.3 Workmanship

The material must be free from foreign material and deposits due to the chemicals used in the process.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection

- 4.1.1 Unless otherwise specified in the contract or order, the supplier is responsible for the performance of all inspection requirements as specified herein.
- 4.1.2 Except as otherwise specified, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements.
- 4.1.3 The purchaser or his representative reserves the right of inspection of Laboratory certificates of raw materials and components used for the manufacture of the material.
- 4.1.4 The supplier shall be responsible for making available to the purchaser all facilities necessary if required, for inspection of the material.
- 4.1.5 The supplier will be responsible for the implementation of an applicable quality management system to assure the appropriate quality of the product. The purchaser reserves the right to audit the supplier's production facilities at all times to ascertain whether quality requirements are being met.

5. BATCH IDENTIFICATION

- 5.1 The material shall be supplied in batches, where a batch is defined as the identifiable quantity of material produced by one manufacturer in one unchanged process, using the same materials and methods in accordance with the same specification.
- 5.2 The supplier shall ensure that all deliveries to the end user are fully traceable by batch number and that identification records be supplied to the end user to match batch number with inspection records.

6. PREPARATION FOR DELIVERY

6.1 Packing

- 6.1.1 The material must be supplied in strapped bundles suitable for forklift handling. The mass shall not exceed 3 000kg.

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6.2 **Package marking**

All bundles, to be legibly and durably marked with the following details on suitable labels:

- 6.2.1 Document and order number.
- 6.2.2 Name of supplier.
- 6.2.3 Batch number.

6.3 **Documentation for delivery**

The following documents must be forwarded with each consignment of material:

- 6.3.1 A certificate of conformance / analysis stating all the results of the tests conducted by the supplier during manufacture and final acceptance.

7. **NOTES**

If the supplier of the material is not the original manufacturer, the full name and address of the manufacturer must be supplied in writing with the submission of a tender.

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