

RESTRICTED

PRETORIA METAL PRESSINGS

a division of Denel (Pty.) Ltd

SPECIFICATION FOR BILLETS: 2% ANTIMONY/LEAD ALLOY

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1. **SCOPE**

1.1 This specification covers Billets of 2% Antimony/Lead Alloy.

2. **APPLICABLE DOCUMENTS**

None

3. **REQUIREMENTS**

3.1 **General material requirements**

3.1.1 The material shall be supplied in Billets with the following dimensions:

Length: 175mm ^{+0/-5mm}

Diameter: 71mm ^{+0/-5mm}

The Billets may be tapered, within the diameter tolerance, to one side to assist removal after casting. Deformation of the billet on the trimmed side is allowed to a maximum diameter of 74mm.

3.1.2 Each Billet shall be stamped on the top side with a number that will identify the alloy. In this case the number shall be 2. The top side of the Billet shall be regarded as the side where the Billet was trimmed to remove shrinkage cavities.

3.1.3 Each container shall be colour coded: Red.

3.2 **Chemical and metallurgical properties**

3.2.1 **Chemical composition** (Cast analysis)

Element	Specification (%)
Antimony (Sb)	1,85 - 2,15
Tin (Sn)	0,01 max
Copper (Cu)	0,01 max
Arsenic (As)	0,01 max
Nickel (Ni)	0,01 max
Bismuth (Bi)	0,05 max
Silver (Ag)	0,04 max
Iron (Fe)	0,005 max
Zinc (Zn)	0,005 max
Selenium (Se)	0,005 max
Calcium (Ca)	0,005 max
Aluminium (Al)	0,005 max
Sulphur (S)	0,005 max
Lead (Pb)	Balance

3.3.2 **Metallurgical properties**

- 3.3.2.1 The material shall be dry, clean and of uniform composition and shall not contain segregation, dross, oxides or any foreign material.
- 3.3.2.2 After casting, the Billets shall be trimmed on the top side to ensure that the Billets are free from shrinkage cavities.
- 3.3.2.3 The casting process shall be such that the Billets are free from cold joints, deep surface cavities or internal porosity.

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.

4.2 **Quality conformance inspection**

4.2.1 **Lot information**

- 4.2.1.1 A lot shall consist of one or more batches of material produced by one manufacturer in accordance with the same specifications using one continuous set of operating conditions. All material must be of the same cast or heat.
- 4.2.1.2 If the quantity is such that more than one cast is required, material of the same cast shall be grouped together. Each case or bundle shall be clearly identifiable as to the relevant cast number.

- 4.2.1.3 The supplier shall ensure that all deliveries to the end user are fully traceable by lot number and that identification records are supplied to the end user to match lot numbers with inspection records.

5. **PREPARATION FOR DELIVERY**

5.1 **Packing**

- 5.1.1 To be supplied in reusable steel bins with lids. The design of the bins shall be such that the material remains dry during transport and storage. The mass shall not exceed 1 500 kg, unless otherwise agreed between the supplier and purchaser. The bins may be used for as many consignments as is economically viable.

5.2 **Package marking**

All containers are to be legibly and durably marked with the following details:

- 5.2.1 Document and order number.
5.2.2 The name of the supplier.
5.2.3 Relevant colour code.
5.2.4 Batch/cast number.

5.3 **Documentation for delivery**

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

- 5.3.1 The original specification which accompanied the order in the case of a single consignment or the final consignment of staggered deliveries.
- 5.3.2 A certificate of conformance / analysis stating all the results of the tests conducted by the supplier during manufacture and final acceptance.
- 5.3.3 A certificate of acceptance, issued by the end user or his duly appointed representative or a letter from the end user for the release of the consignment for shipment in the case of an overseas supplier.
- 5.3.4 The supplier's delivery note shall clearly state the relevant order and document number.

6. **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 during the tender process.