



PRODUCT CATALOGUE

ANODE PLATE | Battery Recycling

www.anodosafrika.com

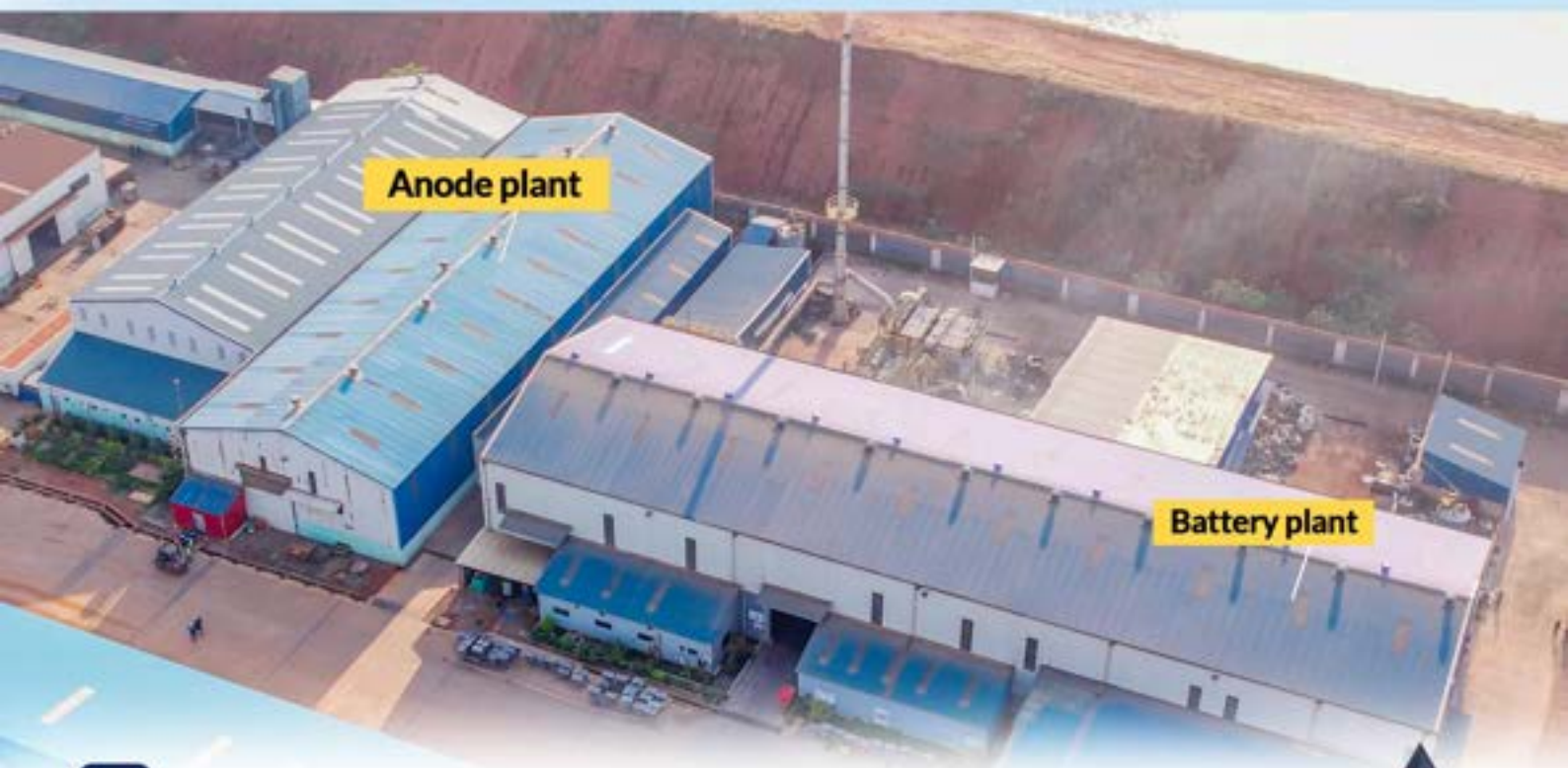
Performance • Persistence • Partnership



Introduction

Anodos Africa was established in the year 2018 for manufacturing of New Anode Plates required for Copper & Cobalt production. Anodos Africa is also recycling Scrap Batteries to produce pure Lead which is used as raw material for Anode Plates production. Anode Scrap Recycling capacity is 10,000 tons per year. Battery recycling capacity is 7,500 MT which can produce 5,000 MT of Lead Billets per year.

Anodos Africa is a part of Vinmart Group which has presence in DRC for more than 3 decades.



Advantages of Anode Plates

Continued commitment to research and development has resulted in several advancements in lead anode longevity and performance in recent years.

This is how we provide high-standard products that extend their useful life, maintain their mechanical properties and, thanks to their technology, have greater resistance to corrosion. Likewise, they allow our clients a high energy efficiency and high purity in the extracted electrolytic copper.

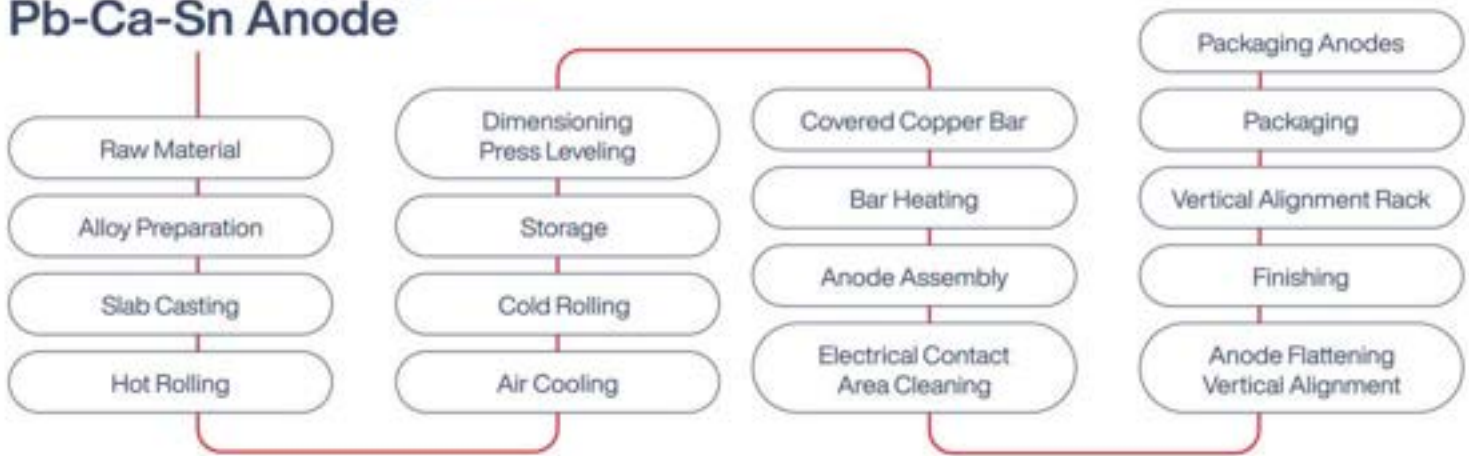
We manufacture our lead anodes with premium quality supplies, which meet high standards for the development of an efficient and sustainable mining industry.



Our lead anodes offer the following advantages:

1. High resistance to deformation
2. High resistance to corrosion
3. Improves conductivity
4. Eliminates risks of detachment from the body strong plate bar joint

Process Flow Diagram Pb-Ca-Sn Anode



Description of the Process

Process for Manufacturing of Anodes

The activities involved in the process of manufacturing insoluble lead anodes of lead are described below in general terms. In the Work Instruction documents, each of these Activities is described in detail.



Pb-Ca-Sn Alloy Preparation

It consists of preparing an alloy of lead and other components (calcium, tin, Pb) in metal pots, according to specifications. The pots must operate with temperatures according to the material used, controlled with immersion thermocouple inserted in each pot, which send the temperature values to the process control panel.

Slab Casting or Moulding

It is the stage of transfer of the molten lead alloy from the pot to metal molds, forming blocks, activity carried out as instructional Work Instruction AND-WRI-010, "Slab Casting".



Hot Rolling

Hot Rolling is the mechanical reduction of the blocks, at a working temperature that can vary from 280 to 240°C, until achieving a thickness, at least, three times the final thickness of the anodic sheet according to the production schedule of the month. In each pass it is reduced between 10 to 15% of the thickness, by means of rolling rollers.

Dimensioning and Levelling of Anodic Sheet

In this stage the anodic sheet is dimensioned according to format or design established for the project, made with a die-cut die mounted on eccentric press

Cold Rolling

It is the rolling activity that is carried out after resting for approximately 24 hours at room temperature, obtained in the hot rolling activity. In this stage the thickness is reduced between 5 to 19% in each pass to determine the final thickness according to the monthly production program forming anodic sheets, according to what is established in the instruction

Rolling or Levelling

The previously dimensioned sheets are thinned in a straightening machine which has lower and upper rollers, motorized independent adjustment. Leveler, allows to rectify the plates, ensuring the adequate flatness of the anodic sheets.

Aging

In this stage the anodic sheet must be in a rest position for some days specified previously.

Assembly of Anodes & Final Terminations

Assembly of Anodes & Final Terminations is the last stage of anodic manufacturing and refers to the assembly between the anodic sheet and the copper bar and then make the final endings of the product, sequentially the activities are the following:

Deoxidation of Bars:

It consists of a bath with flux to deoxidize the copper bars.

Platinized Bars:

It is the coating of the entire copper bar with an alloy of lead, silver.

Bar Moulding:

Process in which the copper bar with a cast lead coating inside a metal mould.



Cleaning of Electrical Contact Area, Anode Flattening & Vertical Alignment:

Contact Polishing

Refers to the removal of lead and impurities from the copper bar, corresponding to the contact area of the anode, by surface conditioning discs.

Vertical Alignment

Activity corresponding to verify the verticality of each anode using a plumb line. Any deviations out of tolerance are corrected manually by means of blows of rubber mallets.

Terminations

It must be verified by visual inspection of the anode, that it fulfills a well finished product aspect. When appropriate, the imperfections must be corrected, eliminated or minimized.

Anode Packaging

Packaging

Packaging is the activity that secures lead anodes finished in wooden crates or metal racks, suitable for transport, which must be identified through labels or printed in the same drawer, indicating at least project information, number of units per drawer or Racks, customer and purchase order, the latter, only if the client requests it.

Release of Products

Once the anodes corresponding to each box have been packed and registered, the Quality Control Officer must verify compliance with the activities and planned provisions of the anode manufacturing process that includes reception, chemical analysis of raw materials, and the final inspection of the finished product in each drawer.

Delivery of Anodes to Warehouse

Once the corresponding anodes have been released, the Production Foreman must inform the Warehouse Manager of the entrance of drawers or Racks to the boarding yard by means of "Delivery Guide" together with document "Product release", received the product in Warehouse, Warehouse Manager stamped copy of Quality Control Officer Document, as evidence of receipt of the product.



Global Presence of Vinmart Group



Our Associates across the globe

VINMART LTD

Tanzania - Dar Es - Salaam
P.O. Box 77007, 419, 4th floor, Harbour View Tower (JM Mail), Samora avenue Road, Dar Es Salaam, Tanzania

VINMETAL SYNERGIES FZCO

U.A.E - Dubai
Room - 908, JAFZA VIEW 18, Post Box 263104, Sheikh Zayed Road, Jebel Ali, Dubai UAE

EXCELSOURCE

INTERNATIONAL PVT. LTD
INDIA - VODODARA
301/302, Sampatti Complex Sardar Baug Lane, Race Course, VADODARA - GUJARAT. 39007, INDIA

VINMART

CHINA - Gaungzhou
1707, R&F Tian He Commercial Building, Lin He Dong Road, Opp, Guagdong, Tobacco Building, Tian He District, Guangzhou - PIN 510610, China

METMIN LTD

ZAMBIA - KITWE
P.O. BOX 23566, Plot No. 3709, Mansa Road, Light Industrial Area, Kitwe - Zambia.

ROSVIN PTY LTD

SOUTH AFRICA
The form Building, 15th Floor, 2 Maude Street, Sandton 2196



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- Mutanda Mining
- Golden Africa Mining
- Kisanfu Mining (Kimin)
- Kamoto Copper Company SARL (KCC)



info@anodosafrika.com | vikas.sharma@messarl.com
mohit.garg@messarl.com | devesh@mmrjv.com
ghanshyam@mmrjv.com

794, Deviation Route Likasi,
Lubumbashi, DRC

524 Avenue industrial, Commune Manika,
Kolwezi Lualaba

+243 808 398 157 | +243 858 418 695
+243 970 797 051 | +243 808 357 773

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