

# Powered for Progress.

Hindalco's Advanced Copper Solutions.





## About Aditya Birla Group

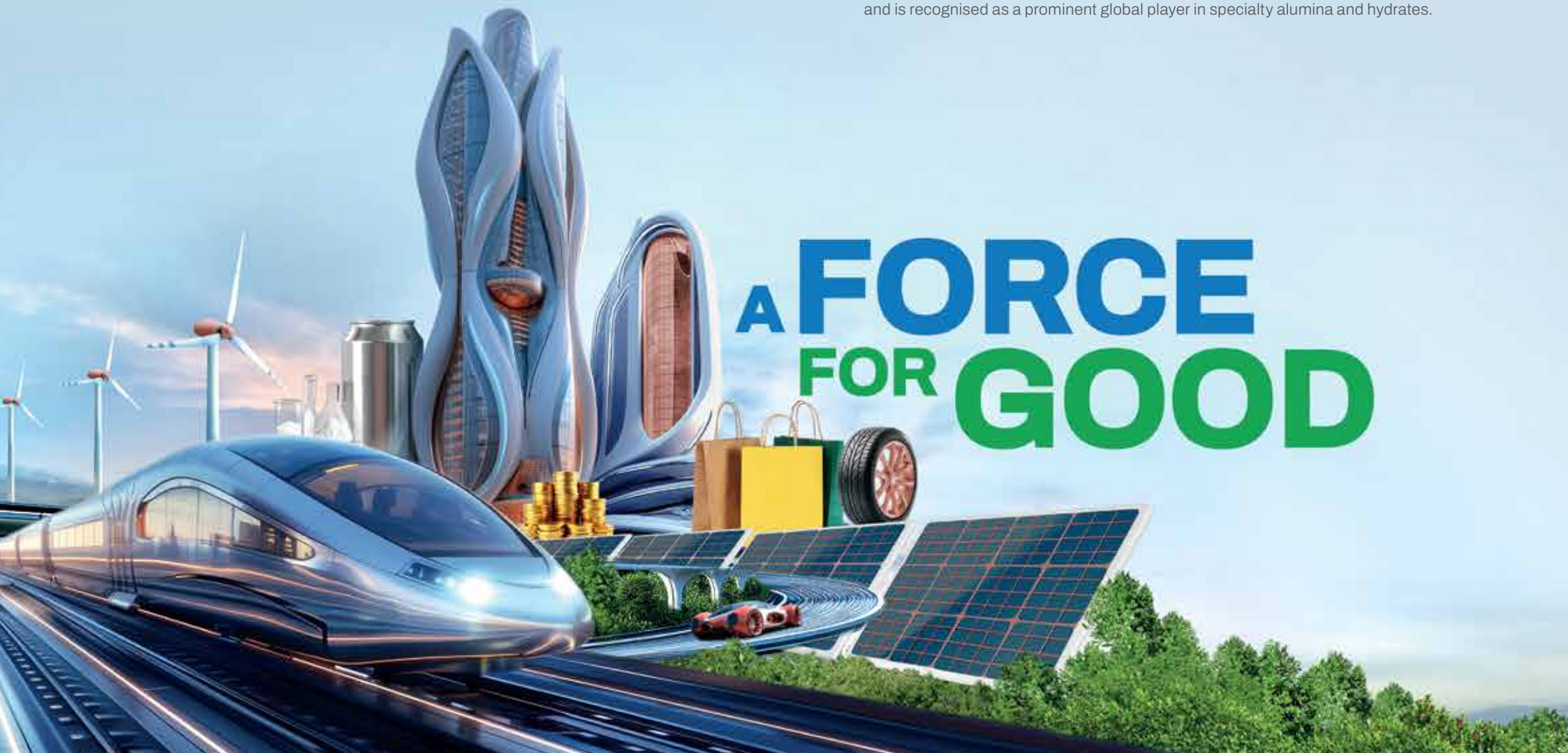
Aditya Birla Group (ABG), a global conglomerate with a turnover of \$63 Billion, is in the league of Fortune 500 companies. Headquartered in India, the Group is present across 14 industry sectors. It has achieved global and national market leadership in several sectors like metals, pulp and fibre, chemicals, textiles, carbon black, cement, financial services, and fashion retail.

## About Hindalco

Hindalco Industries Limited is the metals flagship company of the Aditya Birla Group and a global leader in Aluminium, Copper, and Specialty Alumina. It is India's largest fully integrated aluminium manufacturer and one of Asia's top primary aluminium producers. Its subsidiary, Novelis Inc., is the world's largest aluminium rolling company and recycler.

Hindalco also operates a major copper smelter and fertiliser plant, and is the Second largest Copper Rod Manufacturer outside China meeting over 50% of the nation's domestic refined copper demand.

Our specialty alumina (Chemicals) business is at the forefront of the industry in India and is recognised as a prominent global player in specialty alumina and hydrates.



## Our Commitment to Sustainability

### Carbon Footprint

Currently, 80% of waste is re-used, including 2.3 M tons of red mud and over 100% of fly ash.



### Environmental Effects

Hindalco aims to reduce net water intensity by 30% by FY'25 compared to 2019, saving over 18 MCM of water annually.



### Recycling of Waste

During the fiscal year 2022, Hindalco processed and recycled 2.2 MM tons of aluminium scrap.



### Impact on Biodiversity

Hindalco contributes to environmental conservation with 190 HA of greenbelt and 450,000 trees planted each year.

## HINDALCO INDUSTRIES

### TOP 1%

S&P Global (DJSI) ESG Score 2024

**87** / 100

as of February 7, 2024.

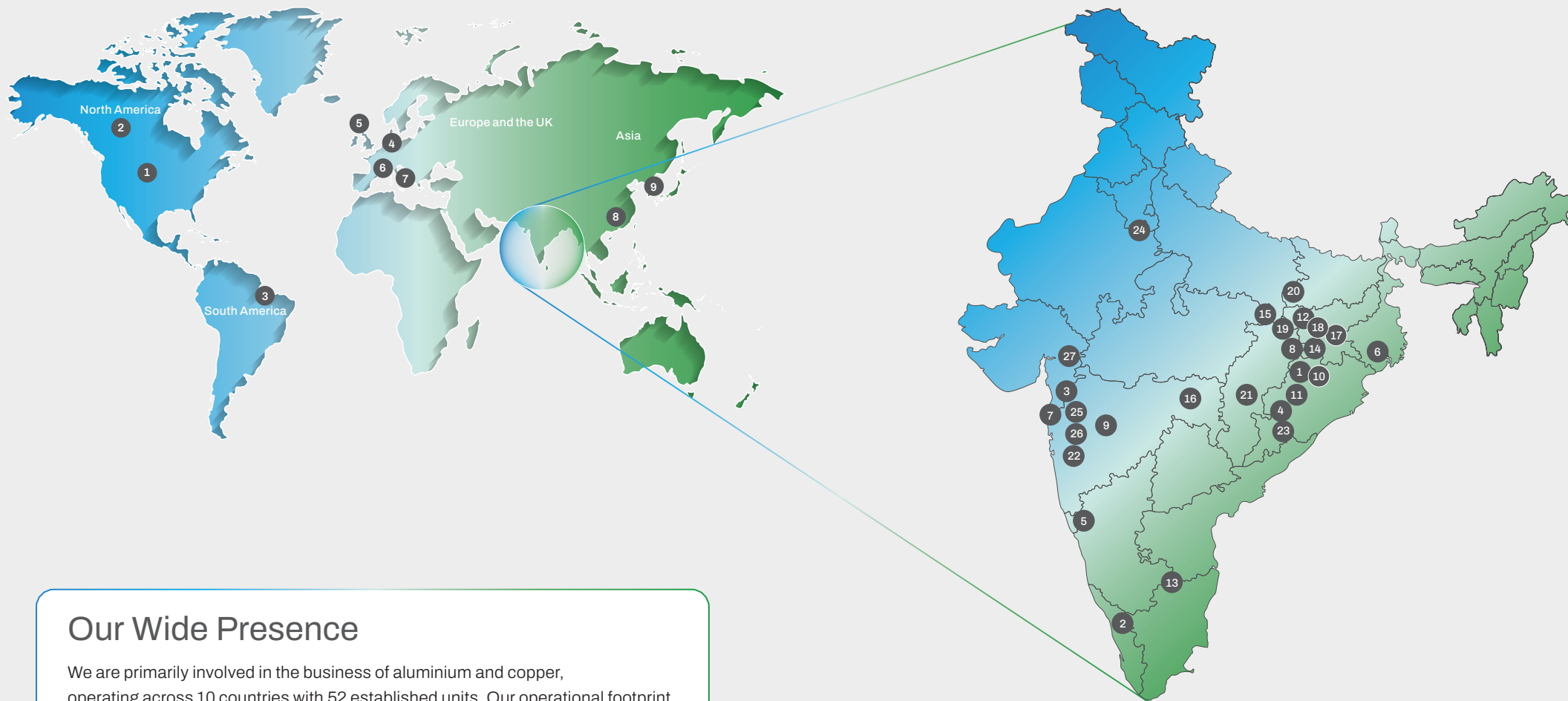
Position and Score are industry specific and reflect exclusion screening criteria. Learn more at [spglobal.com/esg/yearbook](https://spglobal.com/esg/yearbook)

### ESG Targets

- Zero net carbon & net loss of biodiversity by 2050.
- 100% of electricity requirement from renewable energy by 2050.
- Zero waste to landfill by 2050.
- Zero harm to occupational health & safety.

At Hindalco, our unwavering commitment to enriching lives is intricately woven into our sustainability efforts. We firmly believe in creating a greener future, and to achieve this, we are committed to attaining our environmental goals. Our ESG commitment is deeply ingrained in our strategic priorities, which drive positive change and make a lasting impact on the planet. Awarded "Most Sustainable Aluminium Company" in Dow Jones sustainable indices five years in a row from 2020-2024.





## Our Wide Presence

We are primarily involved in the business of aluminium and copper, operating across 10 countries with 52 established units. Our operational footprint across India has been indicated on the map.

### Novelis' Global Operations

#### North America and South America

Novelis Inc.	
1. US	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
2. Canada	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
3. Brazil	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

#### Europe and the UK

4. Germany	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
5. UK	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
6. Switzerland	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
7. Italy	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

#### Asia

8. China	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
9. South Korea	■ ■ ■ ■ ■ ■ ■ ■ ■ ■

### Domestic Operations

1. Aditya Aluminium	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	8. Gare Palma (IV/IV)	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	15. Mahan	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	22. Taloja	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
2. Alupuram	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	9. HAAL	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	16. Mouda	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	23. Utkal Alumina	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
3. Asoj	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	10. Hirakud FRP	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	17. Muri	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	24. Bhiwadi	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
4. Baphlimali	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	11. Hirakud S&P	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	18. Netarhat (4 mine sites)	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	25. Silvassa	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
5. Belagavi	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	12. Kathautia	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	19. Renukoot	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	26. Pune	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
6. Belur works	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	13. Kuppam	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	20. Renusagar	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	27. Waghodia, Vadodara	■ ■ ■ ■ ■ ■ ■ ■ ■ ■
7. Dahej	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	14. Lohardaga (4 mine sites)	■ ■ ■ ■ ■ ■ ■ ■ ■ ■	21. Samri	■ ■ ■ ■ ■ ■ ■ ■ ■ ■		

■ CPP ■ Refinery ■ Smelter ■ Extrusion/FRP/Foil ■ Bauxite ■ Coal ■ Copper/Tube/Alloys ■ Personal Mobility Solutions

## Our Innovation Capabilities

Innovation is not just our biggest tool; it is the foundation of our journey to unveil new products, combinations, and designs to cater to an array of opportunities.

Our innovation capabilities are one part of the equation, with external associations and industry learnings completing the loop. We invest in partnerships, specialised innovation centres, and state-of-the-art facilities to bolster our innovation capabilities.

Our innovation centres at Belagavi and Taloja in India are recognised by the Department of Scientific and Industrial Research (DSIR). This relentless pursuit of ours is substantiated through new patents, well-equipped innovation labs and our increased spending on Research and Development (R&D).

## Key Highlights



**Patents Filed**



**Patents Granted**



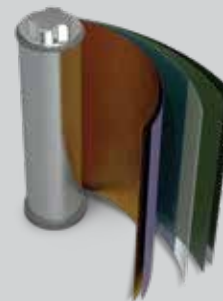
**New Products  
Developed**



**Copper Tubes for Air Conditioning  
and Refrigeration**



**Specialty Copper Alloys for  
High-speed Applications**



**Copper Foils for Li-ion Batteries and  
BESS Applications**



# One Hindalco Many Solutions

At Hindalco, we offer materials, products and solutions engineered to suit the needs of various applications across sectors.



Solutions for Aviation

Solutions for Packaging

Solutions for Building and Infrastructure

Solutions for Railways

Solutions for Mobility

Solutions for Safety

Solutions for Electrification

Solutions for Renewable Energy

Solutions for Aerospace

Solutions for Consumer Durables

Solutions for Circularity

Solutions for Defence

## Our 5 Range Brands Offers Unique Benefits Across Sectors:



Products/solutions that are circular in nature and hold recreation or recycling at their core.

Ingots from Recycled Aluminium, Aluminium Circles for Cookware, Aluminium Foil for Food Packaging.



Products/solutions that are zero or low carbon, use alternate sources of energy, and are ultimately greener, smarter, and better.

Primary Ingots made using Renewable Energy, Ultra light Gauge Aluminium Foil for Packaging, Recycled from E-Scrap/ Cu Scrap & Copper Recycling products, Copper Solar Round Wires, Copper Solar Bus Bars.



Products/solutions which promise use of superior technology to deliver precision and meeting exacting standards for high-tech applications.

Precision Extrusions for Transport, Aerospace, Defence and Electricals & Electronics, AluAlu foil for pharmaceutical packaging, Aluminium Rolled Stock for Closure, Clad, Litho, Detonators, Fin, Foil and Battery Foil, EV Copper Foil, Copper Oxygen-Free Rods, Specialty Copper Alloys Rods for Railway Electrification, Copper Tubes for air conditioning and refrigeration, Speciality Alumina Solutions for Refractory, Ceramics, Polishing, and Battery applications, EV Battery Frame Solutions, E- bike components, Battery Foil Solutions.



Products/solutions that offer the promise of durability and toughness.

Roofing and Façade Solutions for B&C, Bus Body Solutions.



Product/ solutions that offer safety as their core value proposition.

Flame Retardant Solutions for Electrical Transmission, Building and Construction, Automotive, Railways and many more.



## Hindalco's Copper Division: Birla Copper

### Empowering India's Growth with Integrated Copper Solutions

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Birla Copper, the copper division of Hindalco Industries, operates one of the world's largest single-location custom copper smelting complexes at Dahej on the west coast of India, in Gujarat. This state-of-the-art facility comprises two copper smelters, two refineries, two continuous cast rod (CCR) plants, a captive power plant, a captive oxygen plant, and a precious metals recovery unit.

Our fully integrated copper complex at Dahej produces 99.99% pure electrolytically refined copper cathodes, which are further processed into continuous cast copper rods, oxygen-free copper rods, oxygen free electronic rods up to 20 mm and speciality alloy rods and wires in various sizes. These high-quality products are used across critical sectors including railway electrification, automotive industry, electric vehicles (EVs), consumer durables, and industrial wiring.

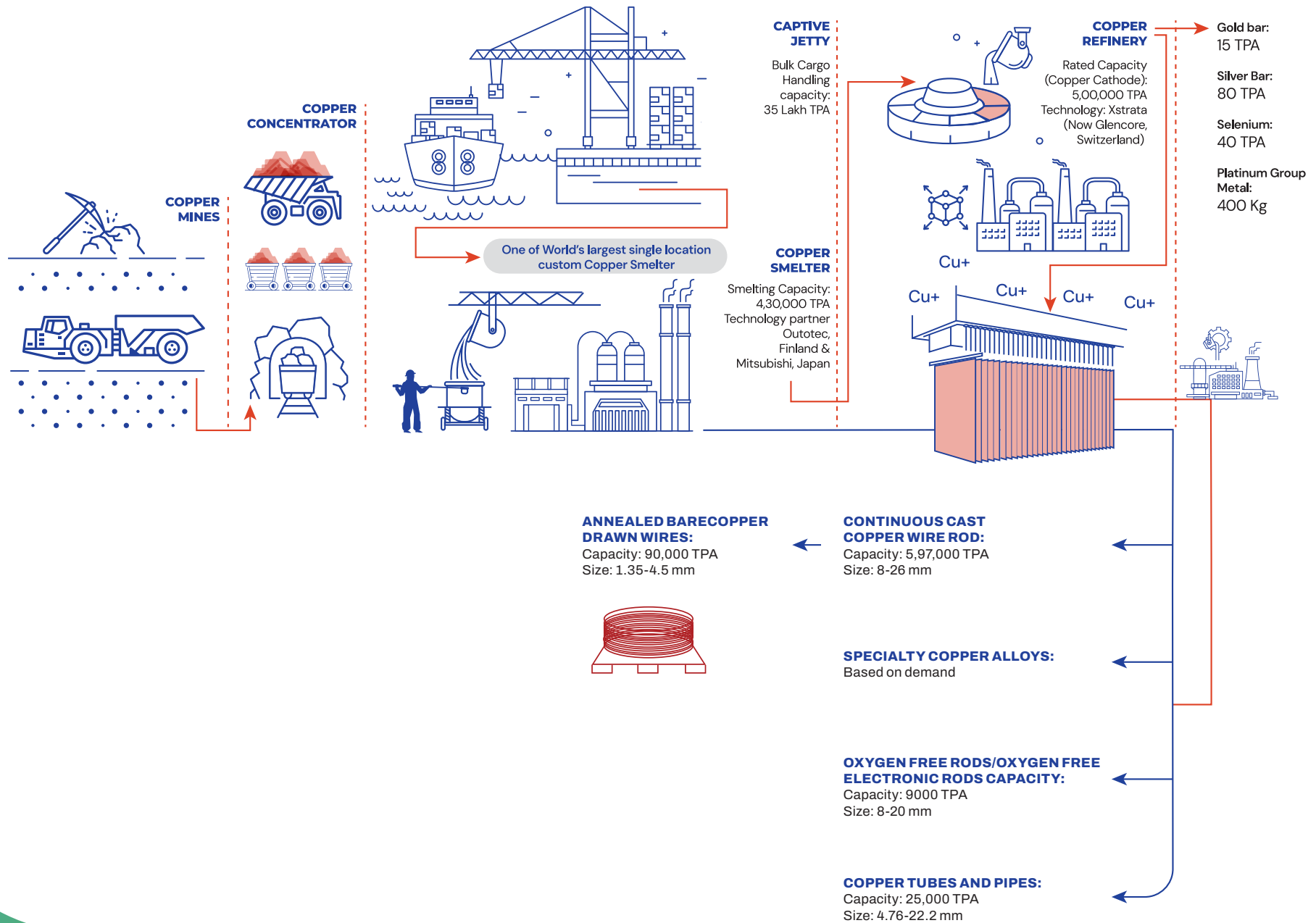
To further strengthen our downstream capabilities, Birla Copper Asoj has expanded Hindalco's production capacity to deliver a diverse range of advanced copper solutions such as rods, drawn wires, oxygen-free rods, and speciality alloys which are designed to meet sensitive applications and meet specific demand from Indian Railways and Metro infrastructure projects.

In line with our commitment to innovation and customer-centric solutions, we have further expanded and are launching new downstream products, including copper tubes for the air conditioning and refrigeration (ACR) industry, such as inner-grooved tubes, and ED Copper foil for Li-Ion Cells at our Wagodia facility in Gujarat.

These initiatives are a vital part of our contribution to the 'Make in India' mission, reinforcing our role as a leading player in India's copper value chain and a trusted partner in the nation's infrastructure and industrial development.



# From Ore to Excellence - Copper Smelting and Refinery Process







## Copper Cathodes

Our copper cathodes, refined through the Mount ISA electro-refining process, offer exceptional purity of 99.99%- and 10- 15 mm thickness. These high-grade cathodes are the key input for a wide range of premium copper products, designed for highly efficient electrical and thermal applications.

**Benefits:** The hallmark of our high-quality copper lies in its exceptionally low impurity levels, where even trace amounts of selenium, bismuth, or antimony in parts per million (ppm) can significantly impact conductivity. Our cathodes are distinguished by their high-grade composition and minimal impurities, ensuring exceptional conductivity.

**Certifications:** Meeting stringent Indian and global standards such as BS 6017, BS EN 1978, ASTM B-115, and IS-191, which are recognised as Grade A cathodes on London Metal Exchange (LME).

**Applications:** These superior cathodes serve as the input for extensive range of high-quality copper products including copper tubes, reflecting our commitment to innovation and excellence in every aspect of our operations. Nearly 75 % of the produce is processed into continuous wire rods.





## ETP Continuous Cast Copper Rod (8 to 26 mm)

Our ETP rods are made from electrolytically refined copper cathodes, made by utilising state-of-the-art production technologies from South Wire, USA, and Conti Rod, Germany. We ensure that our rods meet the highest standards for all downstream applications, guaranteeing optimal performance and reliability.

**Benefits:** Engineered for optimal electrical conductivity and high reliability, Hindalco's rods enhance efficiency across electrical energy generation, transmission, and distribution.

**Certifications:** Our rods comply to all international standards set by ASTM-49, BS EN 1977, IS 12444 ensuring quality and reliability across all applications. Additionally, Hindalco's specialised continuous cast rods for railway applications, ranging from 19.6mm to 26mm, are RDSO-approved, making them the best choice for electrifying railway networks.

### Applications:

**House Wires & Infrastructure Cables:** Ensuring safe, reliable, and energy-efficient electrical connections in residential, commercial, and industrial installations.

**Charging Stations:** Providing fast, efficient EV charging solutions to expand infrastructure.

**Transformers:** Improving power distribution efficiency, voltage regulation, and grid reliability.

**Automotive Industry:** Optimising vehicle wiring and winding for enhanced durability and efficiency.

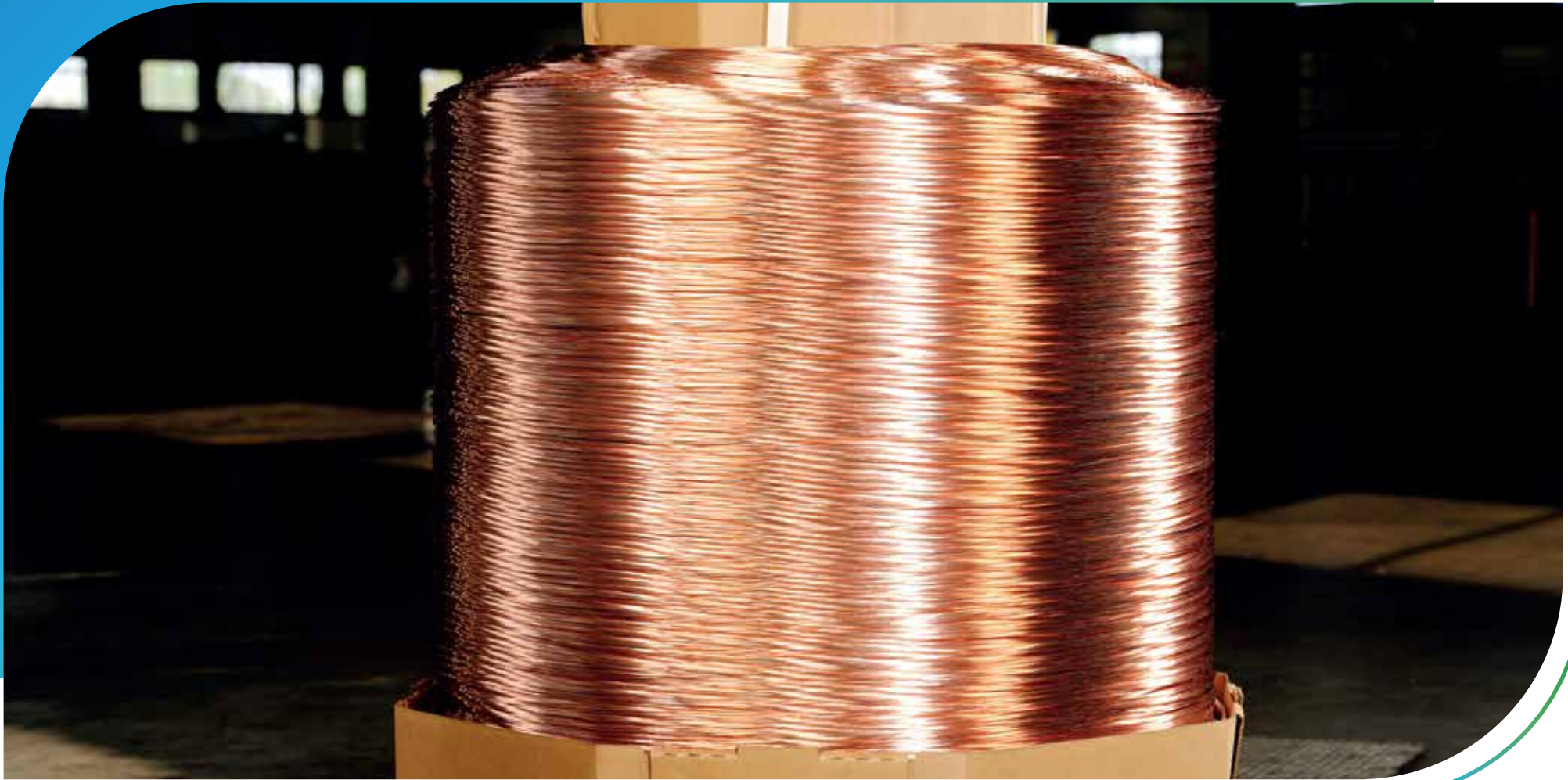
**Power Transmission:** Enabling long-distance electricity distribution with minimal energy loss.

**Enamelled Copper Wires for Electric Motors:** For conductivity in consumer and industrial applications.

**Green Energy Generation:** Boosting efficiency in renewable energy systems like wind and solar.

**Super Fine Segment:** HIL's copper rod is designed for high-precision winding wires, ideal for next-gen product performance.





## Annealed Bare Copper Drawn Wires (1.35 to 4.5 mm)

We provide superior quality drawn wires ranging from 1.35 to 4.5 mm, produced from superior-quality ETP copper rods using high-end Niehoff machines for unmatched precision and consistency.

**Certification:** Our wires comply to ASTM: B3.

**Applications:** Drawn wires are used for a wide range of applications, including House Wiring, Infrastructure Cables, Charging Stations, Transformers and in Automotive industry. Enamelled copper wires have application in Electric Motors and Green Energy Generation.

**USP:** These wires are drawn from 8 mm ETP rods and can be used as an alternative to 8 mm rods, saving both processing time and energy.



## Specialty High-performance Copper Alloy Rods

### Cu-Ag Rods (19.6 to 23 mm)

**Benefits:** Hindalco's Cu-Ag rods are engineered to deliver exceptional properties, combining high electrical conductivity and mechanical strength with enhanced thermal stability.

**Certifications:** The specifications for BS EN 1977 are being met for this alloy and they are approved by the Delhi Metro.

**Application:** Hindalco's Cu-Ag rods are engineered to minimise high amplitude and vibration at elevated voltages, ensuring reliable and consistent performance in critical applications such as railway electrification, high-speed metros, dedicated freight corridors, and bullet trains.

### Cu-Mg Rods (19.6 to 23 mm)

Producing Cu-Mg wire rods requires precise alloy tolerance to achieve optimal balance between tensile strength and electrical resistivity.

**USP:** Hindalco utilises specialised Rautomead graphite crucible furnace technology to produce Copper Magnesium rods.

**Certifications:** The Cu-Mg rods produced by Hindalco meet EN 50119:2009 standards.

**Application:** Cu-Mg rods are ideal for applications in high-speed rails, metros, dedicated freight corridors, dropper wires, and automotive industries offering enhanced strength and performance.

**Other Alloy Capabilities:** Hindalco also offers other customised alloys like Copper Tin & Beryllium, and others, tailored to meet specific industry requirements.





## Oxygen-Free Copper Rods (8 to 20mm)

### CCR OFC (Oxygen-Free Copper Rods)

**USP:** Our oxygen-free Copper rods have a copper purity of about 99.95% and contain no more than 10 ppm of oxygen. They are produced without the use of metallic or other de-oxidisers.

**Certifications:** Our oxygen-free rods comply to IS 12444, ASTM-B49, BS EN 1977 and AS/NZS 1574.

**Application:** Large Motors & Transformers • Wire & Cable Manufacturing • Aerospace Industry • Automotive Wiring Harnesses • Robotic Arms • Printer Head Cables  
• High-end Audio & Video Systems • Trolley Wire (High Creep Resistance) • Ultra-fine Magnet Wire • Miniaturised Circuitry • Multi-strand Drawing Machines  
• Conform Process Strips • Energy & Heat Transfer Systems • Telecom Industry Cables • Advanced Applications (EVs, Semiconductors, Solar Panels)

### CUOFE (Oxygen-Free Electronic Copper Rods)

**USP:** Hindalco's high purity (99.99%), high-precision Oxygen-Free Electronic Copper (CuOFE), with highly controlled oxygen content ranging from 2 ppm to 5 ppm, offers superior conductivity (minimum 101 % IACS).

**Certifications:** They comply to ASTM-B 49, BS EN 1977 and AS/NZS 1574.



## Gold Bar

**Refinement Process:** Refined using acid leaching and precipitation with Metso-outotec technology. With >99.90% purity, available in 1 kg bars.

**Benefits:** Consistent, high-quality bars with minimal impurities, ensuring premium value.

**Applications:** Jewellery, ornamentation, investment, and reserve asset.

**Certifications:** ISO 9001 and ISO 14001.





## Silver Bar

**Refinement Process:** Refined with an electrolytic process with Metso-outotec technology. With >99.90% purity, available in 20 kg bars.

**Benefits:** High-quality silver with controlled impurities for exceptional consistency.

**Applications:** Investment, industrial use, medical, photography, silverware, and jewellery.

**Certifications:** ISO 9001 and ISO 14001.



## Selenium

**Refinement Process:** Refined using a selenium recovery furnace and precipitation, powered by Metso-outotec technology. With >99.90% purity, available in powder form.

**Benefits:** Consistent high purity maintained through rigorous process control.

**Applications:** Glass manufacturing, chemicals, pharmaceuticals, electronics, and semiconductors.

**Certifications:** ISO 9001 and ISO 14001.





## Platinum Group Metals (PGM)

**Refinement Process:** Our PGMs are refined through an acid leaching and precipitation process. The technology supplier is Metso-outotec. The PGMs are available in powder form.

**Benefits:** PGMs are a valuable source for extracting pure platinum and palladium metals.

**Applications:** PGMs play a critical role in various high-tech and industrial processes, including medical applications, the chemical industry, the automotive industry, electronics and jewellery.

**Certifications:** Our Precious Metal Refinery is ISO 9001 and ISO 14001 certified. We are also working towards obtaining LBMA certification.



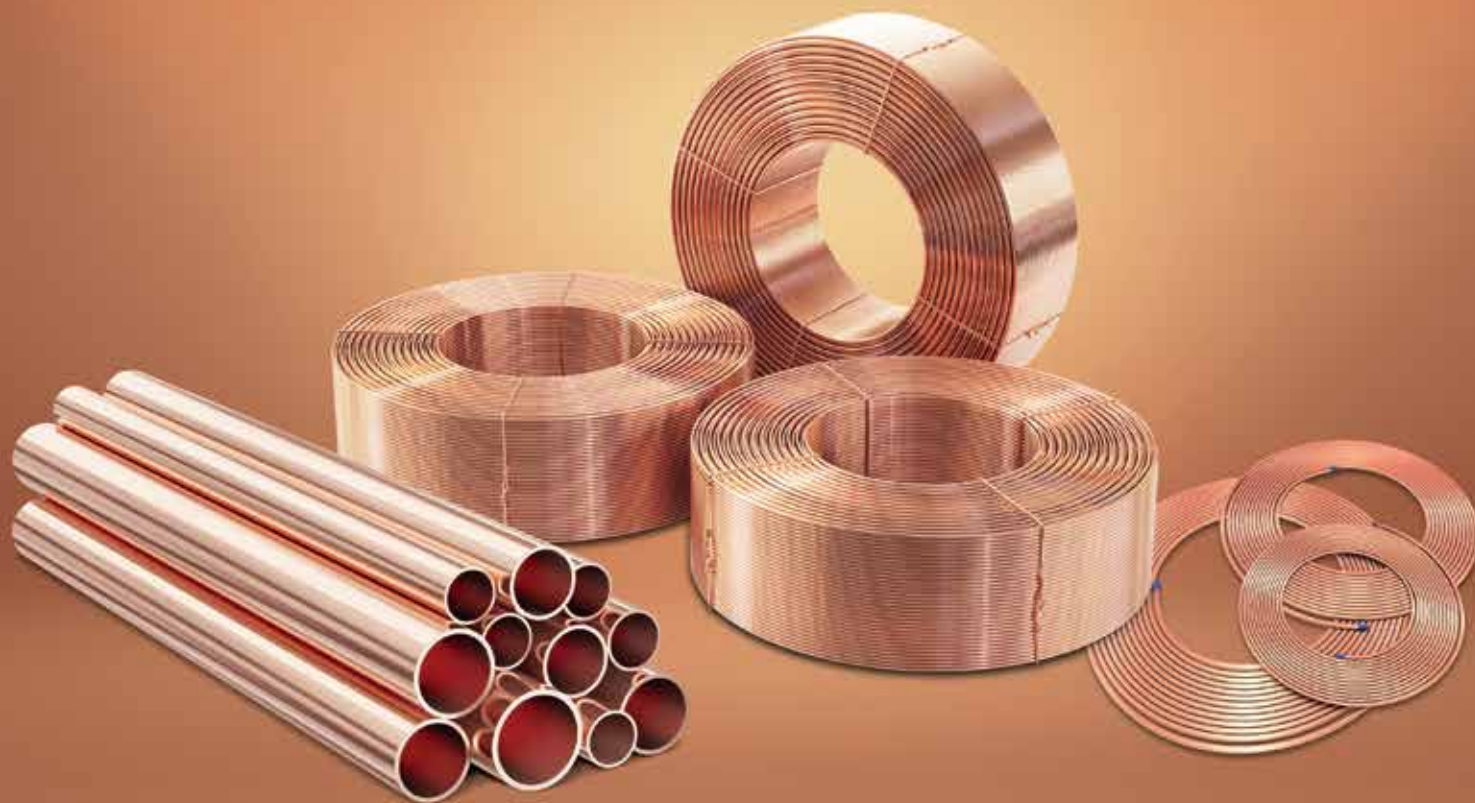


## New Ventures

Stay tuned for our upcoming state-of-the-art facilities, including a Copper Tube Facility for air conditioning and refrigeration applications, and a Recycling E-scrap and Cu scrap plant aimed at reducing our environmental footprint while producing sustainable copper products.

- Copper Tube Facility for air conditioning and refrigeration applications.  
(Plant is in the final stage of completion and will be commissioned by the end of financial year 2025).
- Recycling E-scrap and Cu scrap plant (Plant to be commissioned by 2027).





## Hindalco's Copper Tubes

We have partnered with best-in-class technology suppliers to build our capability to produce Plain Copper Tubes, Inner Grooved Copper Tubes, Pancake Coils and Straight Length Copper Tubes.

**Product Size Range:**

**Plain Tubes:** Ranges from 4.76 to 22.2 mm diameter, and Wall thickness: 0.28 to 1.22 mm.

**Inner Grooved Tubes:** Ranges from 5 to 10 mm diameter, and Wall thickness: 0.18 to 0.50 mm.

**Pancake Coil / Straight Length:** Ranges from 4.76 to 22.22 mm diameter, and Wall thickness: 0.28 to 1.10 mm.

**USP:** BIS 10773 compliant thin-walled copper tube is made from LME Grade "A" copper cathode which ensures efficient heat transfer and reliability under high pressure.

**Certifications:** Product compliant to ASTM B68/B75/B280/B88/B111/B251/B903, JIS H3300, EN 12735-1/2, IS 10773, GB/T 20928 specifications.

**Application:** Our future-ready copper tubes will be used for HVAC & refrigeration applications, HVAC Servicing Industry, Medical & Gas applications.



## Recycled Copper (From E-scrap/ Cu scrap)

**USP:** A one-of-its-kind recycling project in Gujarat, India. Which will be capable to recycle e-scrap, copper scrap, and other copper-bearing secondary materials, including PCBs equivalent to 3 million cell phones annually, significantly reducing carbon footprint while producing environmentally friendly copper.

**Certifications:** Certifications of products, are yet to come.

**Applications:** In making high quality, sensitive finished products out of copper Hindalco, through its Birla Copper division, is the first company in India to invest in a state-of-the-art e-waste recycling facility. Hindalco is leading the way in sustainable metal recovery.

First phase of this is being designed with an impressive input capacity of 80,000 MT of material, including 30,000 MT of printed circuit boards sourced from the e-waste generated in India. This initiative will contribute significantly to the circular economy by recovering valuable metals from electronic waste, helping reduce environmental impact and conserve natural resources.



## Range of applications

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Building & Construction, Infrastructure, Smart Cities - Housing Wire, Bus Bars, Copper Tapes, and other Cables.

Consumer durables & Industrial Equipment - Industrial motors, Industrial and Other Cables, Agricultural Motors, Consumer Goods.

Transportation - Railways.

Automotive - Electric Vehicles and IC.

Power Sector - Power Cables and Transformers.

Renewable Energy - Solar Wind, Energy Storage.









**ADITYA BIRLA**

METALS

**Registered Office:**

**Hindalco Industries Limited**

One Unity Centre, Tower 4, 21st Floor,  
D-Wing, Senapati Bapat Marg,  
Lower Parel West, Mumbai 400 013.

**Regional Office:**

**Hindalco Industries Limited**

One Unity Centre, Tower 4, 21st Floor,  
D-Wing, Senapati Bapat Marg,  
Lower Parel West, Mumbai 400 013.

**Hindalco Industries Limited**

4th Floor, Prestige Summit,  
No. 6, St. John's Road  
Halasuru, Bengaluru 560 042.

**Hindalco Industries Limited**

5th Floor, Mindmill Corporate Towers,  
24A, Sector-16A Film City, Gautam Budh Nagar,  
Noida 201 301, Uttar Pradesh.

**Works:**

**Hindalco Industries Limited  
(Unit Birla Copper)**

P.O. Dahej, Lakhigam, Bharuch 392 130,  
Gujarat (02641) 251 009.

**Birla Copper Asoj Pvt. Ltd.**

Survey No. 21, Village Asoj,  
Vadodara-Halol Highway, Waghodia,  
Vadodara 391 510, Gujarat.

**Hindalco Industries Limited**

Plot No. 187/P-P/1/B/2-6,  
GIDC Industrial Estate, Waghodia,  
Vadodara 391 760, Gujarat.