



# COPPER ROD

OFC & FRHC / Upcast & Continuous Cast



## About Universal Metals

Universal Metals (Pvt.) Ltd operates a state-of-the-art European CCR line, making us the only manufacturer in Pakistan capable of producing FRHC copper rod in full compliance with ASTM B49. Using reclaimed copper with a minimum purity of 99.90%, we deliver rods that meet the highest quality standards while promoting true sustainability, enabling copper to be reused repeatedly without loss of performance.

Alongside our FRHC production, we run one dedicated upcast furnace for manufacturing oxygen-free copper rod with a minimum copper content of 99.99%, using Grade A / Cu-Cath-1 copper cathodes. This combination of advanced technology and dual production lines gives Universal Metals the largest installed copper rod manufacturing capacity in Pakistan.

## Applications

Our copper rods serve as the primary feedstock for a wide range of downstream products:

- Control Cables
- Instrumentation Cables
- Solar Cables
- Power Cables
- Enamelled Copper Wire
- House Wiring
- Paper Covered Copper Strip
- Copper Grounding Conductors

Reference Standard: ASTM B49

## Physical Properties

Property	Value	Unit
Elongation in 250 mm, min	30	%
Resistivity, max	0.017241	$\Omega \cdot \text{mm}^2/\text{m}$
Conductivity, min	100	% IACS
Surface Oxide Thickness, max	750	$\text{\AA}$ (Angstrom)

## Available Diameters

Diameter	Rod Type	Tolerance
8 mm	FRHC, Oxygen Free	$\pm 0.38 \text{ mm}$
10.5 mm	FRHC, Oxygen Free	$\pm 0.38 \text{ mm}$
12.5 mm	Oxygen Free	$\pm 0.38 \text{ mm}$
14 mm	FRHC, Oxygen Free	$\pm 0.38 \text{ mm}$
16 mm	Oxygen Free	$\pm 0.38 \text{ mm}$
20 mm	Oxygen Free	$\pm 0.51 \text{ mm}$

# Chemical Composition

Copper Rod

Reference Standard: ASTM B49, Maximum allowable impurity limits

Element	FRHC Rod	Oxygen Free Rod
Tellurium, max	10 ppm	2 ppm
Selenium, max	10 ppm	3 ppm
Bismuth, max	5 ppm	1 ppm
Antimony, max	50 ppm	4 ppm
Arsenic, max	10 ppm	5 ppm
Tin, max	150 ppm	2 ppm
Lead	150 – 450 ppm	5 ppm
Iron, max	20 ppm	10 ppm
Nickel, max	150 ppm	10 ppm
Sulfur, max	20 ppm	15 ppm
Silver, max	150 ppm	25 ppm
Oxygen	100 – 400 ppm	5 ppm
Cadmium, max	100 ppm	1 ppm
Phosphorous, max	N/A	3 ppm
Zinc, max	80 ppm	1 ppm
Manganese, max	N/A	0.5 ppm
<b>Copper Content, min</b>		<b>99.90%</b>
<b>99.99%</b>		

All values per ASTM B49 specification. Oxygen-free copper rod is manufactured from Grade A / Cu-Cath-1 cathodes via upcast technology. FRHC rod is produced from reclaimed copper via continuous casting and rolling (CCR).

The material is supplied on coils with the following dimensions. Each coil is secured onto a wooden pallet with appropriate measures taken to prevent corrosion and damage from the surrounding environment.

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Metric	FRHC	Oxygen Free Copper Rod
Inner Diameter	600 mm	600 mm
Outer Diameter	1600 mm	1630 mm
Height	800 – 1000 mm	400 mm
Nominal Weight	3000 – 3500 kg	2500 ± 200 kg

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