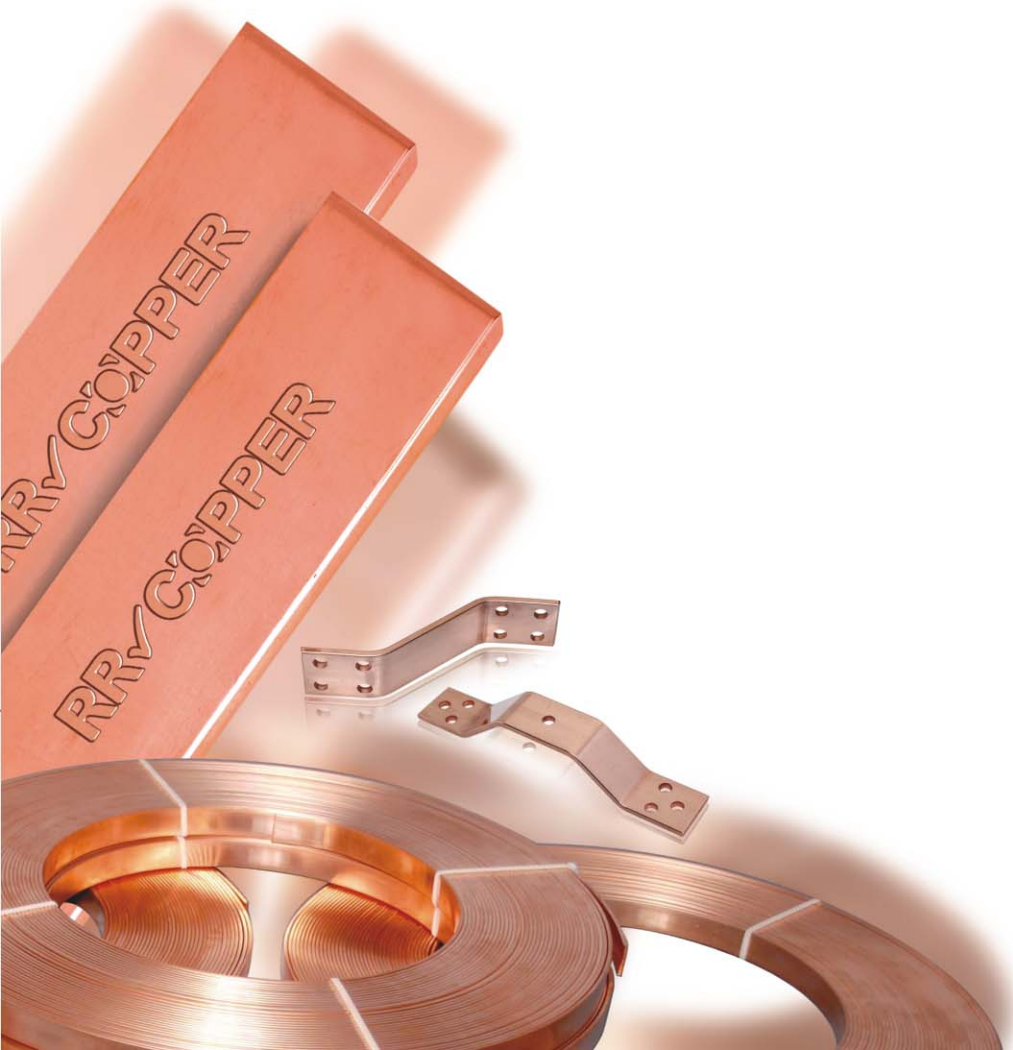
RAM RATNA
GROUP

RR COPPER

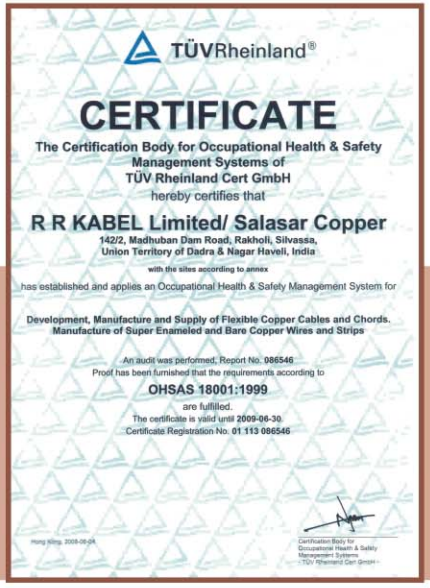


RAM RATNA GROUP

ENRICHING LIVES THROUGH INNOVATION

Innovation, transparency and trust are the key drivers to growth and excellence in Ram Ratna Group. In fact, it is a way of life. Present in over 73 countries across the globe, the Group endeavours to set standards that redefine quality, delivery and customer care. The Group's success is attributed to its promptness in identifying and responding to emerging market needs. Top-of-the-line technologies driven by a skilled team of technocrats give the Group a cutting edge in both domestic and global markets.

Ram Ratna Group is a Manufacturer of Rectangular Copper Bus Bars, Tapes (strips), Fabricated Bus Bars and Tin Plated Copper Bus Bars. Ram Ratna Group is a leading fabricator of Copper, all these products are manufactured using OXYGEN FREE COPPER on modern upcast machines, as per the Indian as well as International standards. These products are available in a wide range of sizes/dimensions. The hardness of the product can be altered to meet specific customer needs.


TÜVRheinland®

CERTIFICATE

The Certification Body for Occupational Health & Safety Management Systems of TÜV Rheinland Cert GmbH hereby certifies that

R R KABEL Limited/ Salasar Copper

142/2, Madhuban Dam Road, Rakholi, Silvassa, Union Territory of Dadra & Nagar Haveli, India

with the sites according to annex

has established and applies an Occupational Health & Safety Management System for

Development, Manufacture and Supply of Flexible Copper Cables and Chords. Manufacture of Super Enameled and Bare Copper Wires and Strips

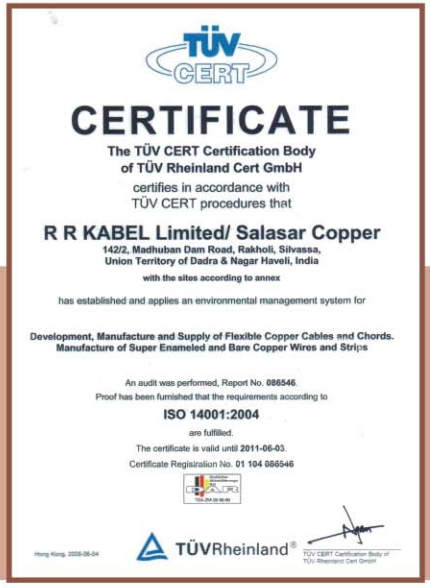
An audit was performed, Report No. 086546.
Proof has been furnished that the requirements according to

OHSAS 18001:1999

are fulfilled.
The certificate is valid until 2009-06-30.
Certificate Registration No. 01 113 086546

Hong Kong, 2008-06-04

Certification Body for Occupational Health & Safety Management Systems - TÜV Rheinland Cert GmbH -


TÜV CERT

CERTIFICATE

The TÜV CERT Certification Body of TÜV Rheinland Cert GmbH certifies in accordance with TÜV CERT procedures that

R R KABEL Limited/ Salasar Copper

142/2, Madhuban Dam Road, Rakholi, Silvassa, Union Territory of Dadra & Nagar Haveli, India

with the sites according to annex

has established and applies an environmental management system for

Development, Manufacture and Supply of Flexible Copper Cables and Chords. Manufacture of Super Enameled and Bare Copper Wires and Strips

An audit was performed, Report No. 086546.
Proof has been furnished that the requirements according to

ISO 14001:2004

are fulfilled.
The certificate is valid until 2011-06-03.
Certificate Regisiration No. 01 104 086546

Hong Kong, 2008-06-04

TÜVRheinland®

TÜV CERT Certification Body of TÜV Rheinland Cert GmbH

BUS BARS

APPLICATIONS

Rectangular Copper Bus Bars and Tapes (strips) are used :-

- For Power Distribution in control panels.
- As connectors in big windings.
- As base conductors in different insulating materials.
- As earthing connectors in High rise building & power sub-stations.

Different shaped and profiled tapes are used in MCCB, ACB as moving contacts. Trapezoidal shaped tapes are used in Rotor windings. Special shaped bars are used for power switches in transmission and distribution lines.

GENERAL PROPERTIES

PHYSICAL PROPERTIES: RADIUS ON CORNERS OF STRIPS / BUS BAR

Over	Up to and including	Nominal radius (mm)	Tolerance (mm) (+/-)
1.00	1.60	0.60	0.15
1.60	2.25	0.80	0.15
2.25	3.55	1.00	0.20
3.55	Above 3.55	1.25	0.25

MECHANICAL & ELECTRICAL PROPERTIES

Temper	Tensile Strength (Mpa) (Min)	Elongation (%) (Min)	Hardness (HV)	Resistively at 20° 0hm.mm^2/mtr.(Max)	Conductivity (%) (Min)
Annealed	200	35	40-65	0.01737	99.25
Half-Hard	250	15	65-90	0.01777	97.00
Hard	300	8	Above 90	0.01777	97.00

DIMENSIONAL TOLERANCES FOR COPPER BUS BAR/STRIP

Nominal Width (mm)		Tolerance on Width (+/-)	Tolerance on Nominal Thickness (mm) (+/-)				
Over	Up to including		from 0.5 up to and including 3.00	over 3.0 up to and including 6.00	over 6.0 up to and including 10.00	over 10.0 up to and including 18.00	over 18.0 up to and including 30.00
1.00	10.00	0.08	0.03	0.04	0.07	-	-
10.00	18.00	0.10	0.03	0.04	0.07	0.10	-
18.00	30.00	0.15	0.04	0.06	0.08	0.10	0.15
30.00	50.00	0.20	0.05	0.08	0.10	0.12	0.15
50.00	80.00	0.25	0.06	0.10	0.12	0.15	0.18
80.00	120.00	0.30	-	0.12	0.15	0.18	0.20
120.00	160.00	0.40	-	-	0.18	0.20	0.25
160.00	200.00	0.50	-	-	0.20	0.25	0.30

Note - Where the ratio Nominal width: Nominal thickness is greater than 20:1 tolerance values agreed between purchaser & Supplier.

SIZE RANGE:

Width: 160mm max

Thickness: 25 mm max

Cross sectional area: 2500 mm^2 max #

- with exception for some sizes for production

PACKING:

- Coils as Pancake and Traverse wound.
- Straight lengths.

TIN PLATING

- High quality tin-plated copper bus bar as per International Standards.
- Tin plating process using 99.5 % pure Tin anode.
- Coating thickness 3 to 15 microns and as per customer specification.

RR✓COPPER

COPPER TAPES

- Copper tapes (supplied in coils) are made from oxygen free high conductivity copper of approximately 101% IACS
- Width : 10 to 50 mm
- Thickness : 2.0 to 6.0 mm
- Standard I.D. of Coil : 300 mm
- Max. O.D of Coil : 1000 mm
- Temper : Annealed
- Application : Earthing

FABRICATED BUS BARS

Fabricated copper bus bars provide a quick, convenient, and economical solution for panel and switchgear makers.

HIGH QUALITY AND EASY INSTALLATION

Oxygen Free Copper as raw material & high tech machines ensure production of reliable, accurate Bus bars to suit customer designs & specifications.

CUSTOMER BENEFITS

- Reduce internal scrap.
- Ease of installation.
- Reduce maintenance cost for equipment.
- Save processing time.
- Enrich profit margins.
- Quick delivery.

INHOUSE FABRICATION PROCESSES

- Punching
- Tapping
- Welding
- Bending
- Cutting
- Tin Plating

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