



IATF 16949

Since our founding, we have been committed to continually improving our safety and environmental performance through ongoing training and new technology. Safety is a top priority. All our products are RoHS compliant.

## Industry Segments Where We Serve



## RASHTRIYA METAL INDUSTRIES LTD.

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## RASHTRIYA METAL INDUSTRIES LTD.



Copper | Brass | Nickel Based Alloys  
 • Sheets • Strips • Foils



Rashtriya Metal Industries Ltd. is one of the premier producers of speciality Cold Rolled Strips in a wide range of Copper and Copper Alloys. Established in 1947, we have been manufacturing copper and copper alloy strips, for more than 75 years. By continuous investment in equipment and technology, we have emerged as a leader in speciality copper alloy strips, blanks and cups.

Our premium and high performance products cater to worldwide customers in Ammunition, Transformer, HT Power Cable, Automotive, Switchgear, Electronics, Communications, Electrical, Locks & Keys, Decorative, Coinage and other engineering industries. These are manufactured and supplied from our plant in Sarigam (near Vapi) in Gujarat.

## Manufacturing Range

Alloy	For Strips & Foils				For Sheets		
	Thickness Range (Min-Max) mm	Width Range (Min-Max) mm	Coil ID mm	Coil Density (Max coil weight) Kg/mm width	Thickness Range (Min-Max) mm	Width Range (Min-Max) mm	Length (Max) mm
Copper (XLPE, ETP, DHP, TBC)	0.03 - 0.30	10-350	100-300	2-3	-	-	-
	0.31 - 0.80	10-450	100-300	2-3	0.30 - 1	450 Max	1500
	0.81 - 3.00	20-400	300-500	2-3	1 - 3.00	450 Max	4000
Brass	0.08 - 0.30	6-350	100-300	2-3	0.30 - 1	450 Max	1500
	0.31 - 0.80	6-450	100-400	2-3	1 - 4.5	450 Max	4000
	0.81 - 4.25	20-450	300-500	2-3	4.5 - 7	30 - 400	1500
					7 - 10	40 - 400	1500
Nickel Silver & Cupro-Nickel	0.10 - 0.30	10-350	100-300	2-3	-	-	-
	0.31 - 0.80	20-450	300-400	2-3	0.30 - 1	450 Max	1500
	0.81 - 4.00	20-450	300-400	2-3	1 - 4	450 Max	4000



## TECHNICAL DATA Brass Sheets, Strips & Foils

Trade Name	CuZn40	CuZn37	CuZn36	CuZn35	CuZn33	CuZn30	CuZn15	CuZn10	CuZn05	
Standard Conformance	Muntz Metal	Yellow Bras	Yellow Brass	Yellow Brass	Yellow Brass	Cartridge Brass	Red Brass	Commercial Bronze	Gilding Metal	
IS	IS 410	IS 410	-	-	-	IS 410	-	IS 2768	IS 3167	
ASTM	C28000	C27200	C27000	C27000	C26800	C26000	C23000	C22000	C21000	
BS 2870	CZ109	CZ108	CZ107	CZ107	CZ107	CZ106	CZ102	CZ101	CZ125	
DIN 17660	2.0360	2.0321	2.0335	-	2.0280	2.0265	2.0240	2.0230	2.0220	
EN 1652	CW509L	CW508L	CW507L	-	CW506L	CW505L	CW502L	CW501L	CW500L	
JIS 3100	C2801	C2720	-	C2680	C2680	C2600	C2300	C2200	C2100	
Chemical Composition (%)										
Copper	60	63	64	65	67	70	85	90	95-98	
Zinc	40	37	36	35	33	30	15	10	REM	
Other Impurities	<0.75	<0.60	<0.60	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	
Temper	Mechanical Properties									
Annealed (O)	Hardness (HV)	85 Max	80 Max	80 Max	80 Max	80 Max	80 Max	55 -75	55 -75	55 -75
	Tensile Strength (N/mm2)	275 Min	275 Min	275 Min	275 Min	275 Min	275 Min	245 Min	245 Min	230 - 280
	Elongation (% Min)	30	40	40	40	40	50	35	35	35
Quarter Hard(HA)	Hardness (HV)	85-100	75-110	75-110	75-110	75-110	75-100	75-95	75-95	70 - 90
	Tensile Strength (N/mm2)	350-420	335-380	335-380	335-380	335-380	320-345	275 - 325	275 - 325	255 - 325
	Elongation (% Min)	20	30	30	30	30	35	15	15	12
Half Hard (HB)	Hardness (HV)	100-125	110-135	110-135	110-135	110-135	100-125	95-110	95-110	80 - 100
	Tensile Strength (N/mm2)	420-490	380-450	380-450	380-450	380-450	345-405	325 - 375	325 - 375	290 - 355
	Elongation (% Min)	12	15	15	15	15	20	7	7	7
Hard (H)	Hardness (HV)	125 -155	135-165	135-165	135-165	135-165	125 Min	110 -140	110 -140	100 -115
	Tensile Strength (N/mm2)	490 Min	450-515	450-515	450-515	450-515	405 Min	350 Min	350 Min	345 Min
	Elongation (% Min)	5	5	5	5	5	5	3	3	3
Extra Hard (HE)	Hardness (HV)	160 -180	165-185	165-185	165-185	165-185	150 Min	140 -160	130 -145	115 -125
	Tensile Strength (N/mm2)	565 Min	515-660	515-660	515-660	515-660	480 Min	480 Min	440 Min	385 Min
	Elongation (% Min)	-	-	-	-	-	-	-	-	-
Spring Hard (HS)	Hardness (HV)	-	185 Min	185 Min	185 Min	185 Min	185 Min	155 -180	140 -160	120 -135
	Tensile Strength (N/mm2)	-	660 Min	660 Min	660 Min	660 Min	655 Min	540 Min	475 Min	415 Min
	Elongation (% Min)	-	-	-	-	-	-	-	-	-
Application	Locks, Key Blanks, Architectural, Nuts & Bolts, Condenser Plates, Heat Exchanger & Condenser Tubes	Flashlight Shell, Lamp Fixtures, Locks, Fasteners, Hinges, Plumbing accessories, Pins, Rivets & Switchgears				Ammunition Components, Flashlight Shell, Lamp Fixtures, Locks, Hinges, Rivets, Connectors & Terminals	Socket, Fasteners, Fire Extinguishers, Conductors of Heat Exchangers, Switchgears	Bullet Jacket, Lipstick Cases, Screw Rivets	Coins, Medals, Bullet Jacket, Fuse Caps, Primers, Jewellery Base for gold plate	

## TECHNICAL DATA Copper, Nickel based Alloys - Sheets, Strips & Foils

Trade Name	ETP	DHP	TBC	Ni-Silver			Ni-Brass	Cupro Nickel	
Standard Conformance	Electrolytic Tough Pitch Copper	Deoxidized, High Residual Phosphorus Copper	Tin Bearing Copper						
IS	IS 191/ 14811/ 1897		IS 3331	IS 2283- NS10	IS 2283- NS12	IS 2283- NS15	-	-	
ASTM	C11000	C12200	C14410	C74500	C75700	C75400	C73200	C71300	
BS 2870	C101	C106	-	NS 103	NS 104	NS 105	-	CN105	
EN 1652	CW004A	CW024A	-	CW401J	CW403J	-	-	CW 350 H	
JIS	C1100	C1220	-	C7451	-	C7541	-	-	
Chemical Composition (%)									
Copper	99.90 Min	99.90 Min	99.50 Min	60-65	60-65	60-65	74-76	Rem	
Tin	-	-	0.07 - 0.20	-	-	-	-	-	
Zinc	-	-	-	Rem	Rem	Rem	19-21	0.50 Max	
Nickel	-	-	-	9-11	11-13	14-18	4.5-5.5	24-26	
Phosphorous	-	0.015 - 0.040	0.015 - 0.045	-	-	-	-	-	
Other Impurities	-	-	-	1% Max	1% Max	1% Max	0.5% Max	2% Max	
Temper	Mechanical Properties								
Annealed (O)	Hardness (HV)	55 Max	55 Max	60 Max	100 Max	105 Max	105 Max	-	70-100
	Tensile Strength (N/mm2)	195 Min	195 Min	-	350-400	380-420	380-420	-	290 Min
	Elongation (% Min)	35	35	-	45	40	40	-	-
	Elongation 15%min for XLPE strips								
Quarter Hard(HA)	Hardness (HV)	55-75	55-75	60 - 80					
	Tensile Strength (N/mm2)	215 Min	215 Min	-					
	Elongation (% Min)	25	25	-					
Half Hard (HB)	Hardness (HV)	75-90	75-90	80 - 100	125-160	130-160	135-165	115-135	100-140
	Tensile Strength (N/mm2)	250 Min	250 Min	-	400-500	420-520	420-550	-	-
	Elongation (% Min)	15	15	-	20	15	15	-	-
Hard (HD)	Hardness (HV)	90 Min	90 Min	105 - 125	160-185	160-190	165-195	135-165	140-160
	Tensile Strength (N/mm2)	274 Min	274 Min	-	500-580	520-600	550-650	-	-
	Elongation (% Min)	-	-	-	5	3	3	-	-
Extra Hard (HE)	Hardness (HV)	110 Min	110 Min	125 - 145	185Min	190 Min	195 Min	165-185	160-180
	Tensile Strength (N/mm2)	340 Min	340 Min	-	580 Min	600 Min	650 Min	-	-
	Elongation (% Min)	-	-	-	-	-	-	-	-
Spring Hard (HS)	Hardness (HV)	-	-	-	-	-	-	185 Min	180Min
	Tensile Strength (N/mm2)	-	-	-	-	-	-	-	-
	Elongation (% Min)	-	-	-	-	-	-	-	-
Extra Spring Hard (HES)	Hardness (HV)	-	-	-	-	-	-	-	-
	Tensile Strength (N/mm2)	-	-	-	-	-	-	-	-
	Elongation (% Min)	-	-	-	-	-	-	-	-
Application	Electrical Components, Bus Bars, Commutators, Process Equipment, Transformers & HT Power Cable (XLPE)	Tubing, Chemical Engineering & general application especially those involving Welding & Brazing	Automobile Radiators & Heat Exchangers	Keys, Coinage, Springs, Diaphragms, Surgical & Dental Equipments			Coinage		