APAR

Tomorrow's solutions today

Aluminium & Alloy Wire Rods, and Specialty Wires

Comprehensive Solutions for Power, Industrial & Infrastructure Applications

www.apar.com

About APAR

APAR: A Legacy of Manufacturing and Engineering Excellence

With a rich legacy spanning over six decades, APAR Industries Limited has evolved from a modest power conductor manufacturer into a global powerhouse in the electrical and energy infrastructure, earning worldwide acclaim for its pioneering spirit and commitment to quality. Navigating the evolving tides of technological innovation and market growth, APAR's reach now extends to over 140 countries, supported by 10 state-of-the-art manufacturing facilities across India and 1 strategic facility in the UAE.

The company commands distinction among India's foremost enterprises, having attained the prestigious 155th rank on both the Fortune 500 India 2024 and Economic Times 500 India 2023 rankings, with a revenue of around USD 2.2 billion (FY24-25), underscoring its robust financial standing and sustained growth trajectory. It is one of the fastest-growing companies, with a revenue CAGR of more than 30% between FY20-21 and FY24-25, based on consolidated financial statements in INR.

Our Global Positioning

The world's largest
global aluminium and alloy conductor manufacturer.

India's largest exporter
and producer of speciality and renewable cables.

Top 10 players
in the lubricants industry in India.

Great Place To Work
certified with 2000+ Employees

World's 3rd largest
and India's largest transformer oils manufacturer.

Amongst the world's largest
Manufacturers of Continuously Transposed Conductors (CTC) and Paper Insulated Copper Conductors (PICC) products.

First and the only
Indian company to provide solution in copper & fiber hybrid cables.

$2 Billion
Revenue

140+
Global footprint

66
Years of excellence

11
Manufacturing facilities

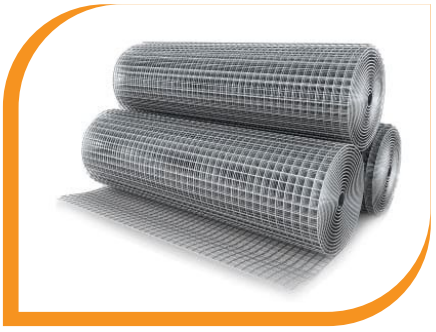
ALUMINIUM & ALLOY RODS

PRODUCT PORTFOLIO:

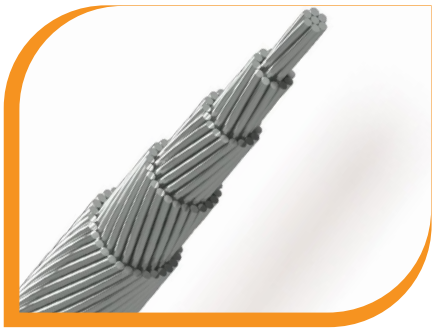
Aluminium & Alloy Rods: 1XXX, 4XXX, 5XXX, 6XXX, 8XXX series

1XXX SERIES

4XXX SERIES



5XXX SERIES



6XXX SERIES

8XXX SERIES

6101, 6201, 6061 ALLOY GRADES

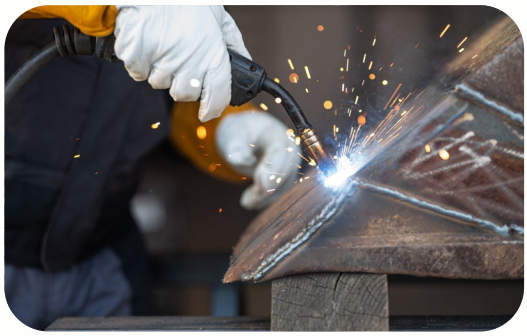
APPLICATIONS

We develop and manufacture a comprehensive range of Aluminium alloys, catering to diverse industry requirement.

Power & Transmission

Telecom

Rivets



Welding

Manufacturing Capacity & Capabilities

- Wide diameter range from 3 mm to 21 mm+, catering to diverse industry needs
- Specialized capability in higher diameters: 9.5 mm to 21 mm
- Only company with UL certification for 8XXX series, ensuring global quality compliance
- Coil sizes available up to 2.0 MT for efficient bulk handling
- Custom manufacturing aligned with international standards and client specifications
- Quick turnaround times to meet dynamic project requirements
- Global reach with local support through APAR USA LLC

Certifications & Standards

- IEC, ASTM, EN, DIN, BS, NFC, IS, BIS, AWS

1XXX Series Aluminium Rod

High Conductivity Solutions for Electrical Applications

1XXX SERIES

APAR 1XXX series Aluminium rods are engineered for superior electrical conductivity and reliability, making them ideal for use in cables and conductors across power and transmission applications.

Manufactured using high-purity Aluminium, these rods ensure excellent conductivity, consistent performance, and enhanced durability, meeting the demanding requirements of the electrical industry.

We develop and manufacture a comprehensive range of Aluminium alloys, catering to diverse industry requirements.

KEY GRADES:

1100 | 1120 | 1350 | 1370 | Grade 2 (IS 4026)

APPLICATIONS:

- Power and distribution conductors
- Electrical cables
- Overhead transmission lines

KEY ADVANTAGES:

- High electrical conductivity
- Uniform mechanical properties
- Excellent formability and workability
- Compliance with international standards

1XXX Series Aluminium Rods - Chemical, Electrical & Mechanical Properties

CHEMICAL COMPOSITION

Aluminium Alloy Designation	% Chemical Composition														
	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ga	B	Ti	Va	Ti+Va	Other Each	Other Total	AL
1100	0.95		0.05-0.20	0.05	-	-	0.1	-	-	-	-	-	0.05	0.15	99
1120	0.1	0.4	0.05-0.35	0.01	0.2	0.01	0.05	0.03	0.05	-	-	0.02	0.03	0.1	99.2
1350	0.1	0.4	0.05	0.01	-	0.01	0.05	0.03	0.05	-	-	0.02	0.03	0.1	99.5
1370	0.1	0.25	0.02	0.01	0.02	0.01	0.04	0.03	0.02	-	-	0.02	0.03	0.1	99.7
Grade 2 of IS 4026 std.	0.13	0.3	0.04	0.01	-	Cr+Zr 0.01 each	-	-	-	-	-	0.02	0.03	0.1	99.6

ELECTRICAL & MECHANICAL PROPERTIES

Aluminium Alloy Designation	APAR Product Code	Temper	Diameter	Tensile strength (Mpa)		Elongation	Resistivity	Conductivity
			(mm)	Min	Max	(%)	(μΩm)	(%IACS)
1100	1100		9.50 ± 0.50	95	125	16.0-16.8	30.372	56.77
1120	1120		15.00 ± 0.50	145	151	6.8-7.6	29.725	58
	EC - 2HO	O	9.50 ± 0.50	-	70	20	27.367	63
			12.50 ± 0.50					
	EC – 2H01	O	9.50 ± 0.50	-	90	15	27.899	61.8
			12.50 ± 0.50					
	EC - 2H2	H2	9.50 ± 0.50	93	123	4.0 - 8.0	28.264	61
			12.50 ± 0.50					
	EC - 2H4	H4	9.50 ± 0.50	93	123	4.0 - 8.0	28.264	61
			12.50 ± 0.50					
1350 / 1370	EC - 2H11	H11	9.50 ± 0.50	80	95	25	27.852	61.9
			12.50 ± 0.50					
	EC - 2H12	H12	9.50 ± 0.50	83	117	4.0 - 8.0	28.035	61.5
			12.50 ± 0.50					
	EC - 2H14	H14	9.50 ± 0.50	103	138	4.0 - 8.0	28.08	61.4
			12.50 ± 0.50					
	EC – 2H16	H16	9.50 ± 0.50	117	152	4.0 - 8.0	28.126	61.3
			12.50 ± 0.50					
	EC - 2H19	H19	9.50 ± 0.50	93	123	4.0 - 8.0	28.172	61.2
			12.50 ± 0.50					
Grade 2 of IS 4026 std.	EC - 211	G2-T1	9.50 ±0.50	64	98	12	28.035	61.5
	EC - 212	G2-T1	9.50 ± 0.50	98	123	8	28.035	61.5
			12.50 ± 0.50					
	EC - 221	G2-T2	9.50 ±0.50	64	98	12	28.264	61
	EC - 222	G2-T2	9.50 ±0.50	83	123	8	28.264	61

The values presented are indicative of typical specifications. We also offer customized solutions, manufacturing products in accordance with international standards and specific customer requirements.

4XXX Series Aluminium Rod

Optimized for Welding & Brazing Applications

APAR 4XXX series Aluminium rods are specifically engineered for welding wire applications, offering consistent performance and reliability. Developed to meet evolving industry requirements, these alloys deliver excellent weld quality across a wide range of applications.

4XXX SERIES

KEY GRADES:

4043 Aluminium Alloy

The 4043 Aluminium alloy is one of the most widely used materials for Metal Inert Gas (MIG) welding and brazing applications. It is particularly suitable for welding heat-treatable Aluminium alloys, especially the 6XXX series, as well as for repair welding of Al-Si cast alloys such as 353 and A356.

APPLICATIONS:

- Welding filler wires
- Spray and flame metallizing wires
- Welding of Aluminium alloys: 5052, 6061, 6063
- Repair welding of casting alloys: 43, 355, 356, 214

KEY ADVANTAGES:

- High electrical conductivity
- Uniform mechanical properties
- Excellent formability and workability
- Compliance with international standards

4XXX Series Aluminium Rods - Chemical, Electrical & Mechanical Properties

CHEMICAL COMPOSITION

Aluminium Alloy Designation	Si	Fe	Cu	Ti	Zn	Mn	Mg	Other Each	Other Total	Al
4043	4.50 - 6.00	0.6	0.3	0.15	0.1	0.15	0.2	0.05	0.15	REM

ELECTRICAL & MECHANICAL PROPERTIES

Aluminium Alloy Designation	APAR Product Code	Temper	Diameter	Tensile strength (Mpa)	Elongation	Resistivity	Conductivity
			(mm)	Min	(%)	(μΩm)	(%IACS)
4043	Alloy W/R 4043	M	9.50 ± 0.50	150	16.00	31.93	54
	Alloy Wire 4043		6.00 ± 0.06	170	1.50	30.50	56.53
		T8	4.00 ± 0.04	190	1.50	30.50	56.53
			3.00 ± 0.03	200	2.00	30.50	56.53

The values presented above are indicative of standard specifications. We also offer customized manufacturing solutions, adhering to international standards and specific customer requirements.

- We develop and manufacture a comprehensive range of Aluminium alloys to meet diverse application needs.
- Wires are available in multiple sizes and configurations, tailored to specific customer requirements

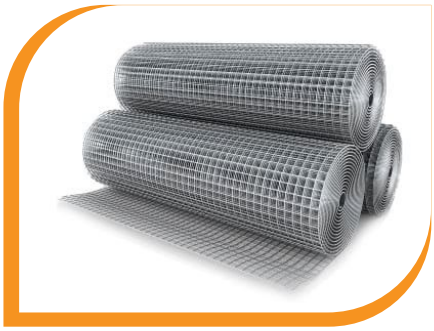
Flexible supply formats:

- Wire rods supplied in coils up to 2.0 to 3.0 MT
- Drawn wires (4.0 mm to 6.0 mm) in coils up to 1.0 MT
- Fine wires (3.0 mm to 4.0 mm) in coils up to 0.5 MT

5XXX Series Aluminium Rod

High Strength & Corrosion-Resistant Alloys for Demanding Applications

APAR 5XXX series Aluminium rods are designed for applications requiring excellent strength, durability, and superior corrosion resistance, particularly in challenging environments such as marine and industrial settings. With excellent resistance to saltwater exposure and reliable performance even at near absolute zero temperatures, these alloys ensure consistent performance under extreme conditions.



5XXX SERIES

KEY GRADES:

5005 | 5050 | 5052 | 5154 | 5754

APPLICATIONS:

- Metal wire mesh and industrial strainers
- Marine and offshore components
- Automotive and industrial rivets
- Cable armouring and braiding
- Architectural and signage applications
- Fasteners, hangers, and specialty components

KEY ADVANTAGES:

- Excellent corrosion resistance (including marine environments)
- Good weldability and formability
- High strength-to-weight ratio
- Reliable performance in extreme temperatures

5XXX Series Aluminium Rods - Chemical, Electrical & Mechanical Properties

CHEMICAL COMPOSITION

Aluminium Alloy Designation	% Chemical Composition										
	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other Each	Other Total	AL
5005	0.30	0.70	0.20	0.20	0.50 - 1.10	0.1	0.25	-	0.05	0.15	REM
5050	0.30	0.70	0.20	0.10	1.10 - 1.80	0.1	0.25	-	0.05	0.15	REM
5052	0.25	0.40	0.10	0.10	2.20 - 2.80	0.15-0.35	0.1	-	0.05	0.15	REM
5154	0.50	0.50	0.10	0.50	3.10 - 3.90	0.25	0.2	0.2	0.05	0.15	REM
5754	0.65	0.40	0.10	0.50	2.60 - 3.60	0.3	0.2	0.15	0.05	0.15	REM

ELECTRICAL & MECHANICAL PROPERTIES

Aluminium Alloy Designation	Temper	Tensile strength (Mpa)		Elongation	Resistivity	Conductivity
		Min	Max	(%)	(μΩm)	(%IACS)
5005	F	165	205	15	33.10	52
5050	F	165	-	15	-	-
	O	125	145	20	-	-
5052	F	235	-	14	50.831	33.92
5154	F	210	-	8	56.19	30.69
	O	-	285	25	51	33.8
5754	F	200	-	14	43.103	40

The values presented above are indicative of standard specifications. We also offer customized manufacturing solutions, adhering to international standards and specific customer requirements.

- We develop and manufacture a comprehensive range of Aluminium alloys to meet diverse application needs.
- Wires are available in multiple sizes and configurations, tailored to specific customer requirements

Flexible supply formats:

- Wire rods supplied in coils up to 2.0 to 3.0 MT
- Drawn wires (4.0 mm to 6.0 mm) in coils up to 1.0 MT
- Fine wires (3.0 mm to 4.0 mm) in coils up to 0.5 MT

6XXX Series Aluminium Rod

Versatile Alloys for Electrical & Mechanical Applications

APAR 6XXX series consists of Aluminium alloys containing silicon and magnesium, which combine to form magnesium silicide, making these alloys heat-treatable.

6XXX SERIES

KEY GRADES:

6101 | 6201 | 6061

APPLICATIONS:

- AAAC conductors
- Helical fittings and accessories
- Transmission & distribution (T&D) hardware
- ADSS fittings and components

KEY ADVANTAGES:

- Heat-treatable for improved strength
- Good conductivity with mechanical reliability
- Excellent corrosion resistance
- Suitable for both electrical and structural applications

6XXX Series Aluminium Rods -
Chemical, Electrical & Mechanical Properties

1) Electrical Grade Aluminium Alloy [6101 & 6201]

Designed specifically for electrical applications, these alloys offer:

- Good electrical conductivity
- Enhanced mechanical strength
- Reliable performance in overhead conductors and fittings

CHEMICAL COMPOSITION

Aluminium Alloy Designation	Si	Fe	Cu	Cr	Zn	Mn	Mg	B	Other Each	Other Total	Al
6101	0.40 – 0.80	0.50	0.10	0.03	0.10	0.03	0.50 – 0.80	0.06	0.03	0.10	REM
6201	0.50 – 0.90	0.50	0.10	0.03	0.10	0.03	0.60 – 0.90	0.06	0.03	0.10	REM

ELECTRICAL & MECHANICAL PROPERTIES

Aluminium Alloy Designation	APAR Product Code	Temper	Diameter	Tensile strength (Mpa)	Elongation	Resistivity	Conductivity
			(mm)	Min	(%)	(μΩm)	(%IACS)
6101	Alloy 6101 (T4), Sol. Tr.	T4	9.50 ± 0.50	157	14	34.48	50
			12.50 ± 0.50				
	Alloy 6101 (T8), Sol. Tr.	T8	3.00 to 6.00	295	3	32.53	53

The values presented are indicative of standard specifications. We also offer customized solutions, manufactured in accordance with international standards and specific customer requirements.

- We develop and manufacture a comprehensive range of Aluminium alloys to meet diverse application requirements.
- Wires are available in multiple sizes and configurations, tailored to specific customer needs.

Flexible supply formats:

- Wire rods supplied in coils up to 2.0 to 3.0 MT
- Drawn wires (4.0 mm to 6.0 mm) in coils up to 1.0 MT
- Fine wires (3.0 mm to 4.0 mm) in coils up to 0.5 MT

2) Mechanical Grade Aluminium Alloy [6061 & 6063]

The 6000 series Aluminium alloys, including 6061 and 6063, contain silicon and magnesium, which combine to form magnesium silicide, making these alloys heat-treatable.

This unique composition provides an excellent balance of strength, formability, and corrosion resistance, making them well-suited for a wide range of mechanical and structural applications.

CHEMICAL COMPOSITION

Aluminium Alloy Designation	% Chemical Composition										
	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ti	Other Each	Other Total	AL
6061	0.40 –0.80	0.70	0.15 – 0.40	0.15	0.80 – 1.20	0.04 –0.35	0.25	0.15	0.05	0.15	REM
6063	0.20 –0.60	0.35	0.10	0.10	0.45 – 0.90	0.10	0.10	0.10	0.05	0.15	REM

ELECTRICAL & MECHANICAL PROPERTIES

Aluminium Alloy Designation	Temper	Diameter	Tensile strength (Mpa)	Elongation	Resistivity	Conductivity
		(mm)	Min	(%)	(µΩm)	(%IACS)
6061	M	9.50 ± 0.50	118	12	43.10	40
		12.50 ± 0.50				
6061	T4	9.50 ± 0.50	177	14	43.10	40
		12.50 ± 0.50				
6061	T8	3.00 to 6.00	343	6	43.10	40

The values presented are indicative of standard specifications. We also offer customized solutions, manufactured in accordance with international standards and specific customer requirements.

- We develop and manufacture a comprehensive range of Aluminium alloys to meet diverse application requirements.
- Wires are available in multiple sizes and configurations, tailored to specific customer needs.

Flexible supply formats:

- Wire rods supplied in coils up to 2.0 to 3.0 MT
- Drawn wires (4.0 mm to 6.0 mm) in coils up to 1.0 MT
- Fine wires (3.0 mm to 4.0 mm) in coils up to 0.5 MT

8XXX Series Aluminium Rod

High Conductivity Alloys for Advanced Electrical Applications

APAR 8XXX series Aluminium rods are specifically engineered for electrical applications, offering an optimal balance of conductivity, strength, and durability. Widely used as a cost-effective and lightweight alternative to copper, these alloys deliver comparable creep performance, ensuring long-term reliability in power distribution systems. With a superior strength-to-weight ratio and reduced installation stress, 8XXX alloys enable efficient and safe cable manufacturing and handling.

8XXX SERIES

KEY APPLICATIONS:

- Building wires and house wiring cables
- Underground and service cables
- Cable armouring and braiding
- Copper cladding on Aluminium wires
- Power distribution and utility cables

KEY ADVANTAGES:

- Comparable creep performance to copper
- High strength-to-weight ratio
- Lower installation tension, reducing risk of insulation damage
- Excellent ductility for wire drawing and rolling processes
- Lightweight and cost-effective alternative to copper

8XXX Series Aluminium Rods - Chemical, Electrical & Mechanical Properties

CHEMICAL COMPOSITION

	% Chemical Composition														
Aluminium Alloy Designation	Si	Fe	Cu	Mn	Mg	Cr	Zn	Ga	B	Ti	Va	Ti+Va	Other Each	Other Total	AL
8030	0.1	0.30 - 0.80	0.15 -0.30	-	0.05	-	0.05	-	0.001 - 0.04	-	0.03	-	0.03	0.10	REM
8176	0.03 - 0.15	0.40 - 1.00	-	-	-	-	0.1	0.03	-	-	-	-	0.05	0.15	REM

ELECTRICAL & MECHANICAL PROPERTIES

Aluminium Alloy Designation	APAR Product Code	Temper	Diameter	Tensile strength (Mpa)		Elongation	Resistivity	Conductivity
			(mm)	Min	Max	(%)	(µΩm)	(%IACS)
8030	Are available in different sizes and subtypes on request							
8176	8176	F	9.50 ± 0.50	95	110	14	28.45	60.6
			12.00 ± 0.50	95	110	14	28.45	60.6
			15.00 ± 0.50	89	95	14	28.45	60.6
			22.00+/- 0.50	89	95	14	28.45	60.6

The values presented are indicative of standard specifications. We also offer customized solutions, manufactured in accordance with international standards and specific customer requirements.

- We develop and manufacture a comprehensive range of Aluminium alloys to meet diverse application requirements.
- Wires are available in multiple sizes and configurations, tailored to specific customer needs.

Flexible supply formats:

- Wire rods supplied in coils up to 2.0 to 3.0 MT
- Drawn wires (4.0 mm to 6.0 mm) in coils up to 1.0 MT
- Fine wires (3.0 mm to 4.0 mm) in coils up to 0.5 MT

SPECIALTY WIRES

PRODUCT PORTFOLIO:

Electircal Grade Aluminium Wires

Aluminium Clad Steel Wire

ACS/ACIS Stranded Conductor

Aluminium Tube

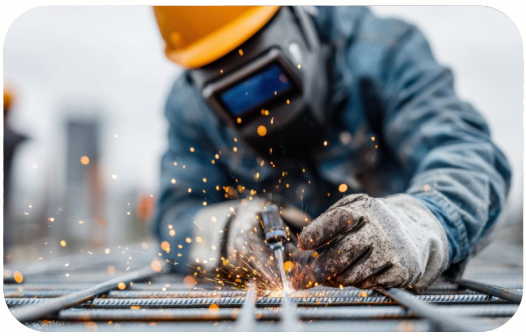
We develop and manufacture a comprehensive range of indigenously engineered specialty wires, designed for critical and high-performance applications across industries.

APPLICATIONS

Power & Transmission

Telecom

Rivets



Welding

Manufacturing Capacity & Capabilities

- Wide range of wire sizes and configurations as per customer requirements
- Capability to support complex and application-specific designs
- Flexible manufacturing for diverse industrial applications
- Custom-built solutions in line with international standards

Certifications & Standards

IEC, ASTM, EN, DIN, BS, NFC, IS, BIS

Specialty Wires:
Electrical Grade Aluminium Wires

- Primarily used in cables and conductors, these wires offer reliable electrical performance.
- Alloy grades: 6061, 6101, 6201
- Size range: 1.83 mm to 11.07mm

6061, 6101, 6201
ALLOY GRADES

Aluminium Alloy Wires for Industrial Applications:

- Indigenously developed by our in-house R&D team, these wires are suited for critical hardware and fittings.
- Applications include helical fittings, armoured rods, T&D hardware fittings, telecom ADSS and
- OPGW accessories
- Alloy grades: 6061, 6101, 6201
- Size range: 2.5 mm to 11 mm

Mechanical Grade Aluminium Alloy Wires

- Designed for strength and durability in mechanical applications.
- Applications include metal wire mesh, industrial strainers, marine and automotive rivets, cable armouring and braiding
- Alloy grades: 5052, 5154, 5754
- Size range: 3 mm to 4 mm

Welding Grade Aluminium Wires

- Engineered for welding applications requiring consistency and precision.
- Alloy grade: 4043
- Size range: 3 mm to 4 mm

Specialty Wires:
Aluminium-Clad Steel Wire

Aluminium-Clad Steel (ACS) Wire

- Widely used in OPGW cables, shield wires, and structural applications, these wires offer an optimal combination of strength and conductivity.
- Applications include OPGW cables, chain link fencing, shield wires, helical fittings, and ADSS fittings
- Manufactured in compliance with internationally accepted standards and specifications

Extra High-Strength Aluminium-Clad Steel (ACS) Wire

Engineered for demanding applications requiring superior tensile strength and durability, particularly in transmission and infrastructure environments

Aluminium-Clad Invar Wire (AS Invar)

Specialty wires designed for high-temperature, low-sag (HTLS) conductors, forming the core of invar-type conductor technology composed of Fe–36% Ni alloy, known for its exceptionally low thermal expansion properties

Key Characteristics:

- Extremely low coefficient of thermal expansion (~3.7 × 10^{-6} /°C up to 230°C)
- Significantly lower expansion compared to steel and Aluminium
- Aluminium cladding enhances corrosion resistance
- Reliable performance under high-temperature operating conditions
- Ensures minimal sag in overhead transmission lines

Aluminium CLAD INVAR - AS PER JCS 1404 STD.

Diameter	Diameter Tolerance	Min. Tensile Strength	Min. Elongation at fracture on 250mm Gauge length	Mon. No. of twists on 100xD	Min. Radial Thickness of Aluminium Cladding	Coefficient of Linear Expansion		Mass	Min. Conductivity	DC Resistance @ 20°C
						15~230°C	230~290°C			
(mm)	(mm)	(N/mm²)	%	(turns)	(mm)	X 10-6 C-1	X 10-6 C-1	(Kg/Km)	(%IACS)	(Ω/Km)
3	± 0.06	1030			10% of nominal radial thickness			50.19		17.42
3.4	± 0.07	981						64.46		13.56
3.8	± 0.07	981	1.5	20		≤ 3.70	≤ 10.80	80.52	13.8	10.86
4.3	± 0.08	932						103.11		8.48
5	± 0.10	932						139.41		6.27

Aluminium CLAD INVAR - HIGH STRENGTH

Diameter	Diameter Tolerance	Min. Tensile Strength	Min. Elongation at fracture on 250mm Gauge length	Mon. No. of twists on 100xD	Min. Radial Thickness of Aluminium Cladding	Coefficient of Linear Expansion		Mass	Min. Conductivity	DC Resistance @ 20°C
						15~230°C	230~290°C			
(mm)	(mm)	(N/mm²)	%	(turns)	(mm)	X 10-6 C-1	X 10-6 C-1	(Kg/Km)	(%IACS)	(Ω/Km)
2	± 0.04	1150						22.31		39.2
2.3	± 0.04	1150						29.5		29.64
2.6	± 0.05	1150						37.7		23.2
2.8	± 0.05	1130						43.72		20
3	± 0.06	1130						50.19		17.42
3.4	± 0.06	1100	1.5	20	10% of nominal radial thickness	≤ 3.70	≤ 10.80	64.46	13.8	13.56
3.8	± 0.06	1100						80.52		10.86
4	± 0.06	1080						89.22		9.8
4.3	± 0.06	1080						103.11		8.48
4.5	± 0.06	1080						112.92		7.74
5	± 0.07	1030						139.41		6.27

Specialty Wires:
ACS/ACIS Stranded Conductors

Specialty steel alloy conductors designed for reinforcement in a wide range of overhead transmission lines, offering an optimal balance of strength and conductivity.

Available in conductivity ranges from 14% to 40% IACS, enabling flexibility across diverse application requirements.

SINGLE WIRE AS PER EN 50540 STANDARD (TYPE - 20EHSA)

Diameter (mm)			Tensile Strength		Cross section	D C Resistance at 20°C	Nominal Weight	Minimum Thickness of Aluminium Cladding
Std	Max	Min	N/mm²	KN	mm²	Ω /km	Kg/km	mm
1.6	1.64	1.56	1620	3.26	2.011	42.28	13.25	0.08
1.75	1.79	1.71	1620	3.9	2.405	35.34	15.85	0.088
2.25	2.29	2.21	1620	6.44	3.976	21.38	26.2	0.113
2.5	2.54	2.46	1580	7.76	4.909	17.32	32.35	0.125
2.75	2.791	2.709	1580	9.38	5.94	14.31	39.14	0.138
3	3.045	2.955	1580	11.17	7.069	12.03	46.58	0.15
3.25	3.299	3.201	1545	12.82	8.296	10.25	54.67	0.163
3.5	3.553	3.448	1545	14.86	9.621	8.83	63.4	0.175
3.75	3.806	3.694	1515	16.73	11.045	7.7	72.78	0.188

- Coefficient of linear expansion : 13.0 x 10-6 /°C
- Modulus of Elasticity : 23500 Ksi (162000 MPa)
- Temperature coefficient of Resistance : 0.0036/°C
- Minimum Aluminium Thickness : 10% of nominal wire radius

Intermediate wire sizes are also available.

SINGLE WIRE AS PER EN 50540 STANDARD (TYPE - 14EHSA)

Diameter (mm)			Tensile Strength		Cross section	D C Resistance at 20°C	Nominal Weight	Minimum Thickness of Aluminium Cladding
Std	Max	Min	N/mm²	KN	mm²	Ω /km	Kg/km	mmm
1.6	1.64	1.56	1825	3.67	2.011	61.24	14.66	0.037
1.75	1.79	1.71	1825	4.39	2.405	51.21	17.53	0.04
2.25	2.29	2.21	1825	7.26	3.976	30.97	28.99	0.052
2.5	2.54	2.46	1790	8.79	4.909	25.09	35.79	0.058
2.75	2.791	2.709	1790	10.63	5.94	20.73	43.3	0.063
3	3.045	2.955	1790	12.65	7.069	17.42	51.53	0.069
3.25	3.299	3.201	1760	14.6	8.296	14.84	60.48	0.075
3.5	3.553	3.448	1760	16.93	9.621	12.8	70.14	0.081
3.75	3.806	3.694	1725	19.05	11.045	11.15	80.52	0.086

- Coefficient of linear expansion : 11.9 x 10-6 /°C
- Modulus of Elasticity : 174000 MPa
- Temperature coefficient of Resistance : 0.0036/°C
- Minimum Aluminium Thickness : 10% of nominal wire radius

Intermediate wire sizes are also available.

SPECIALTY WIRES:
ALUMINIUM CLAD STEEL STRANDED CONDUCTORS

Aluminium-clad steel wire (also referred to as AW, AS, or AC) is a bimetallic conductor consisting of a high-strength steel core uniformly and continuously clad with Aluminium. This construction combines the mechanical strength of steel with the conductivity and corrosion resistance of Aluminium.

ACS/ACIS STRANDED CONDUCTORS

Manufactured by stranding Aluminium-clad steel wires, these conductors are designed for use in overhead transmission systems where both strength and conductivity are critical.

APPLICATIONS:

- Earth wires and shield wires
- Core reinforcement in Aluminium conductors
- Overhead transmission line applications

Aluminium clad steel Wires are concentrically stranded over a central wire of Aluminium clad steel wire

- Aluminium Clad Steel Stranded wires can be customized for strength and conductivity on request as per customer requirements.
- Aluminium Clad Invar stranded conductors can be customized on request as per customer requirements.

Aluminium CLAD STEEL CONDUCTOR (ACS) - EN 50182

Code Name	Sectional Area	Stranding		Overall Diameter of Conductor	Weight	D C Resistance at 20°C	Rated Strength
		No. of Wires	Individual wire diameter				
	mm²	No.	mm	mm	Kg/km	Ω /Km	KN
24-A20SA	24.2	7	2.1	6.3	161.5	3.5364	32.49
34-A20SA	34.4	7	2.5	7.5	229	2.4953	46.04
49-A20SA	49.5	7	3	9	329.7	1.7328	66.3
66-A20SA	65.8	19	2.1	10.5	441	1.3102	88.18
93-A20SA	93.3	19	2.5	12.5	624.9	0.9245	124.98
117-A20SA	117	19	2.8	14	783.9	0.737	156.77
147-A20SA	147.1	37	2.25	15.8	989.2	0.5881	197.13
182-A20SA	181.6	37	2.5	17.5	1 221.2	0.4764	243.38
243-A20SA	242.5	61	2.25	20.3	1 636.1	0.3579	325
299-A20SA	299.4	61	2.5	22.5	2 019.8	0.2899	401.24

APAR Quality & Manufacturing Excellence

Manufactured at APAR's state-of-the-art facilities in India at Athola and Khanvel (Silvassa), and Lapanga (Odisha), our Aluminium & Alloy Rods and Specialty Wires embody consistent quality, advanced manufacturing, and dependable global supply. These strategically located facilities are equipped to support high-performance production while ensuring reliability across diverse customer requirements.

Supported by robust systems and integrated operations, we consistently meet and exceed customer expectations. From raw material processing to final product delivery, our end-to-end processes ensure precision, consistency, and reliability at every stage. This seamless integration enables us to maintain strict quality standards while delivering efficiency and responsiveness across applications.

Our products are certified by leading international agencies, reflecting our commitment to quality, reliability, and performance, and providing strong assurance of consistent standards across all our offerings.

Certifications and Standards

IEC, ASTM, EN, DIN, BS, NFC, IS, BIS, AWS

1. ASTM B211/B211M: Standard Specification for Aluminium and Aluminium-alloy rolled or cold finished Bar, Rod and Wire
2. ASTM B316/B316M: Standard Specification for Aluminium and Aluminium-Alloy Rivet and Cold-Heading Wire and Rods. Specifically for fasteners and cold-forming
3. ASTM B609/B609M: Standard Specification for Aluminium 1350 Round Wire, Annealed and Intermediate Tempers, for Electrical Purposes.
4. ASTM B233: Standard Specification for Aluminium 1350 Drawing Stock for Electrical Purposes. Used for producing EC grade Aluminium wire (9.5mm – 25.4mm diameter).
5. ASTM B398 / B398M: Standard Specification for Aluminium-Alloy 6201-T81 Wire for Electrical Purposes.
6. ASTM B531: Standard Specification for Aluminium 5005 Drawing Stock for Electrical Purposes.
7. ASTM B800: Standard Specification for 8000 Series Aluminium Alloy Wire for Electrical Purposes - Annealed and Intermediate Tempers.
8. ASTM B415: Standard Specification for Hard-Drawn Aluminium-Clad Steel Wire.
9. ASTM B502: Standard Specification for Aluminium-Clad Steel Core Wire for Use in Overhead Electrical Conductors.
10. ASTM B415-16(2021): Standard Specification for Hard-Drawn Aluminium-Clad Steel Wire. This is the primary standard for single Aluminium-clad steel wires.
11. ASTM B502/502M-23: Standard Specification for Aluminium-Clad Steel Core Wire for Aluminium Conductors, Aluminium-Clad Steel Reinforced (ACSR/AW).
12. EN 1715 (Parts 1-4): Aluminium and aluminium alloys - Aluminium redraw rod
13. EN ISO 18273:2015/2016 (Adopted by CEN): Welding consumables - Wire electrodes, wires and rods for welding of aluminium and aluminium alloys - Classification. Defines Al4043, Al5356, Al5183, Al4047
14. EN 60889 (1995/2004): Hard-drawn aluminium wire for overhead line conductors.
15. EN 60889 (1995/2004): Hard-drawn aluminium wire for overhead line conductors.
16. EN 61232:1995/A11:2000: Aluminium-clad steel wires for electrical purposes. This standard applies to bare, hard-drawn, round, aluminium-clad steel wires used for reinforcement in aluminium conductors and for all aluminium-clad steel stranded conductors. It defines classes 20SA, 27SA, 30SA, and 40SA based on conductivity.
17. UL Certified for model AWR8176, conductor material-component aluminium wire stock
18. Plants certified as per ISO 9001, ISO 14001 & ISO 45001
19. Laboratories accredited as per ISO 17025:2017
20. BIS Licenses for IS 733- wrought aluminium and aluminium alloy bars, rods and sections (for general engineering purposes)
21. IS 5484- EC grade aluminium rod produced by continuous casting and rolling

Sustainability & ESG Commitment

Sustainable development, guided by strong ESG principles, forms the foundation of APAR's growth strategy. We are committed to continuously enhancing the sustainability of our processes and products, driving responsible operations and long-term value creation.

APAR

Tomorrow's solutions today

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