VALMETO PRODUCTS

1. COPPER

1.1. Copper Wire Rod (8,00 mm / 12,50 mm)

Copper wire rod is the primary raw material for cable and conductor manufacturing, produced via Continuous Casting & Rolling (CCR) or Upcast technology.

"High electrical conductivity, Homogeneous structure, Excellent drawability" making it ideal for electrical and industrial applications.

Diameter: 8,00 mm / 12,50 mm. Low ovality (high roundness)

Standards: ASTM B49, EN 1977, IEC references

Material Grades
Cu-ETP (C11000) ⟶ standard cable applications
Cu-OF (C10200) ⟶ oxygen-free copper
Cu-OFE ⟶ high purity for advanced electronics

Chemical Properties

Purity: ≥ 99.9% Cu
Oxygen content: Cu-ETP: ≤ 300 ppm, Cu-OF / Cu-OFE: ≤ 5 ppm
Surface Quality; Bright and clean surface, Low oxide layer, Free from cracks and defects, Uniform structure

Electrical Properties

Conductivity: ≥ 58 MS/m (≥100% IACS)
Low electrical resistance
Stable conductivity performance

Mechanical Properties

Temper: As Cast / Hot Rolled / Annealed
High elongation
Excellent drawability

Coil Specifications

Coil weight: 2,000 kg – 5,000 kg
Coil type: Loose coil, Compact coil
Packaging: steel strapping + stretch film + pallet (optional)

Applications

Cable & Conductor Manufacturing; Power cables (LV / MV / HV), Data & telecom cables
Electrical & Electronics; Magnet wire, Transformer and motor windings
Industrial; Wire drawing plants, Stranding processes

1.2. Copper Mono Wire

Copper mono wire is a single solid conductor produced by drawing copper wire rod (8.00 mm / 12.50 mm) through multi-stage drawing processes.

Final conductor (solid wire)
Intermediate product for stranded conductors

Diameter: 0,10 mm – 3,00 mm. Special: down to 0,05 mm
Surface Quality; Bright finish, Oxide-free, Clean and smooth surface, Free from drawing defects

Material Grades

Cu-ETP (C11000) ⟶ standard
Cu-OF / Cu-OFE ⟶ high purity
Purity: ≥99.9%

Electrical Properties

Conductivity: ≥58 MS/m (≥100% IACS)

Low resistance
Stable current flow

Mechanical Properties (Temper)

Type	Description	Application
Soft Annealed	High flexibility	Cable production
Half Hard	Medium strength	Special uses
Hard Drawn	High strength	Overhead lines

Product Forms: Coils, Spools (DIN / BS), Basket coils

Applications

Cable Industry; Power cables, Data cables
Electrical & Electronics; Magnet wire, Coil winding, Transformers
Industrial; Stranding input, Connectors
Automotive & EV; Wiring harness, Sensors

1.3. Stranded Copper Wires

Stranded copper conductors are produced by twisting multiple individual copper wires into a defined geometric structure.

Surface: smooth, oxide-free

Technical Insight

Increasing number of strands → higher flexibility
Smaller individual wires → better bending performance
Larger constructions → used in higher cross-sections

Conductor Classes (IEC 60228)

Class	Description	Characteristics	Application
Class 2	Semi-stranded	Rigid / limited flexibility	Fixed installations
Class 5	Flexible	Standard flexible conductor	Power & control cables
Class 6	Extra flexible	Very fine stranding	Robotics, automotive, dynamic use

Technical Specifications

Copper grade: Cu-ETP (C11000), Cu-OF (C10200), Cu-OFE
Purity: ≥99.9%
Oxygen content: Cu-ETP: ≤ 300 ppm, Cu-OF/OFE: ≤ 5 ppm
Conductivity: ≥58 MS/m (≥100% IACS)
Low electrical resistance
Uniform current distribution across strands

Stranding Types

Constructions: 7 wires (1+6), 19 wires (1+6+12), 24 wires, 32 wires, 45 wires, 75 wires etc.

Concentric Stranded

Symmetrical layering (1+6+12…)
Standard cable conductors

Compact Stranded

Mechanically compressed

Smaller overall diameter

Higher conductor density

Bunched Stranded

Random arrangement
Maximum flexibility
Used in Class 5 & 6 conductors

Temper (Mechanical Condition)

Type	Description	Usage
Soft Annealed	High flexibility	Standard cables
Hard Drawn	Higher strength	Limited / special applications

Surface & Coating Options

Type	Description	Advantage
Bare Copper	Standard	Cost-effective
Tin Plated Copper	Tin coating	Anti-oxidation, better solderability
Silver Plated (rare)	High-end	High-frequency performance

Size Range & Cross Section

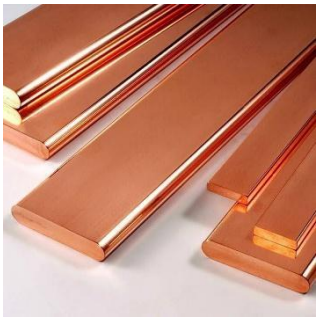
Cross-section range: 0,5 mm² – 500 mm²
Example Configurations
7 × 0,52 mm → ~1.5 mm²
19 × 1,00 mm → ~15 mm²
37 × 1,35 mm → ~50 mm²

Applications (Segment-Based)

Power & Energy; Low & medium voltage cables, Underground cables,
Flexible Cables; Control cables, Machine cables
Automotive & EV; Vehicle wiring harness, Battery connections,
Industrial Systems; Robotics, Moving machinery, Dynamic cable systems

1.4. Copper Busbar

Flat rectangular copper conductors used in power distribution systems as an alternative to cables.



Technical Specifications

Sizes: 10×2 mm, 20×3 mm, 30×5 mm, 50X10 mm, 100X10 mm
Standard: EN 13601, ASTM B187 / B152
Surface: Bare / Tin-plated / Silver plated
Temper: Soft / Hard

Dimensions:

Thickness: 2 mm – 20 mm, Width: 10 mm – 200 mm, Length: 3 meters – 6 meters

Grades

Cu-ETP (C11000) → standard
Cu-OF / OFE → high purity
Cu-DHP → corrosion resistant

Electrical Properties

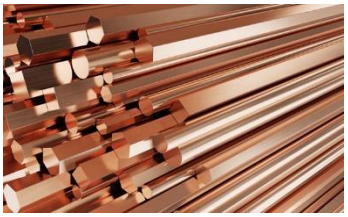
Conductivity: ≥58 MS/m (≥100% IACS)
High current carrying capacity

Applications

Energy & Electrical; Switchgear panels, Power distribution systems, Industrial power systems
Transformer & Power Systems; Power transformers, Distribution transformers, Busbar systems
Industrial; Industrial applications, UPS systems, Electrical panels
Electrical Panels; EV charging systems, Battery connections, Renewable energy

1.5. Copper Rods / Bars

Solid copper bars produced by extrusion or drawing. Applications; CNC machining, Connectors, Electrodes, Machinery components



Technical Specifications

Shapes: Round / square / hex
Diameter: 5 mm – 300 mm
Grades: Cu-ETP, Cu-DHP, CuCrZr

1.6. Copper Profiles

Custom-designed copper sections. Applications: Transformers, Electrical equipment, Special machinery

Technical Specifications

Process: Extrusion / drawing
Section: Custom
High precision tolerances

1.7. Copper Tubes (R / L / K / Pancake / Capillary)

Seamless copper tubes in various tempers and forms. Applications: HVAC systems, Refrigeration, Gas lines, Heat exchangers



Technical Specifications

Types: R (hard), L (medium), K (soft)
Standards: EN 12735 / ASTM B88
Forms: Straight / coil / pancake
Capillary tubes available

1.8. Copper Sheets / Strips

Flat rolled copper products in sheet or coil form. Applications: Electrical equipment, Automotive industry, Connector manufacturing, Decorative uses

Technical Specifications

Thickness: 0,05 mm – 50 mm
Form: Sheet / coil
Standard: EN 1652

1.9. Copper Foils

Ultra-thin copper materials. Applications: PCB manufacturing, Lithium batteries, EMI shielding, Electronics

Technical Specifications

Thickness: 0,006 mm – 0,20 mm
Type: Electrolytic / Rolled

2. BRONZE

2.1. Bronze Ingots

CuSn-based casting alloys used as primary raw material for foundries and semi-finished production. Applications: Rod and bar production, Bushings and bearings, Machinery components, Foundries

Technical Features

Grades: CuSn6, CuSn8, CuSn10, CuSn12
Form: ingots
Production: casting
Homogeneous chemical composition
High castability

2.2. Phosphor Bronze Ingots

CuSnP alloys with improved elasticity, wear and fatigue resistance. Applications: Electrical contacts, Springs, Precision components

Features

High elasticity
Low friction
High fatigue resistance

2.3. Bronze Rods / Bars

CuSn6 / CuSn8 (Standard Tin Bronze)

Medium-high strength
Good machinability
High wear resistance

Size: Ø8 – 200 mm
Applications: CNC, hydraulics, bearings

CuSn10 / CuSn12 (High Tin Bronze)

Very high wear resistance
Heavy load applications
Size: Ø20 – 250 mm
Applications: Marine, heavy machinery

CuAl10Ni5Fe4 (Aluminium Bronze)

Excellent seawater resistance
High mechanical strength
Applications: Marine, pumps, valves, propellers

CuBe (Beryllium Copper)

Very high elasticity
Non-sparking
High hardness
Applications: Defense, springs, tooling

2.4. Bronze Wires

Bronze wires are drawn copper-based alloy wires, primarily produced from tin bronze (CuSn) and phosphor bronze (CuSnP) alloys.

They are designed for applications requiring:

High elasticity
Excellent fatigue resistance
Good wear resistance
Stable mechanical performance

Material Grades

Phosphor Bronze (Main Group)

CuSn4 (CW450K)
CuSn5 (CW451K)
CuSn6 (CW452K)
CuSn8 (CW453K)

Phosphorus addition improves:

Spring performance
Wear resistance
Fatigue strength

Tin Bronze

CuSn6
CuSn8
CuSn10

Used where higher strength and wear resistance are required

Special Bronze Wires (Optional)

CuAl (Aluminium bronze wire) → corrosion resistant
CuNiSn (Nickel-tin bronze) → high performance
CuBe (Beryllium copper) → very high elasticity (premium segment)

Technical Specifications

Diameter Range

Ø 0.05 mm – Ø 10.00 mm

Standard Sizes

Fine wire: 0.05 – 0.50 mm
Medium: 0.50 – 3.00 mm

Heavy wire: 3.00 – 10.00 mm

Tolerances

Typically: ±0.01 – ±0.03 mm

Mechanical Properties

Property	*Description*
High fatigue resistance	Suitable for repeated stress
Excellent elasticity	Ideal for springs
Good wear resistance	Long service life
Stable tensile strength	Process reliability

Temper Conditions

Temper	*Description*	*Application*
Soft (Annealed)	High ductility	Forming
½ Hard	Balanced strength	General use
Hard	High strength	Springs
Spring Temper	Maximum elasticity	Precision springs

Surface Condition

Bright and smooth
Oxide-free
Free from defects
Suitable for forming and stamping

Product Forms

Coils (standard)
Spools (DIN / BS type)
Straight lengths (on request)

Applications

Electrical & Electronics

Electrical contacts
Connectors
Switch components

Spring Industry

Compression springs
Contact springs
Precision springs

Automotive

Sensor components
Electrical terminals

Industrial Applications

Fasteners
Wire forming
Mechanical components

Marine & Special

Corrosion-resistant wires
High-performance applications

2.5. Bronze Bushings / Sleeves

The most profitable segment in bronze trading. Applications; Hydraulic systems, Injection molding, Heavy machinery, Cranes and presses

Types:

Centrifugal cast,

Continuous cast,
Solid,
Flanged,
Graphite plugged (self-lubricating)

2.6. Bronze Plates / Sheets

Grades: CuSn6 / CuSn8 / CuSn12
Thickness: 5 – 120 mm
High wear resistance
Applications: friction plates, bearings

2.7. Bronze Strips / Foils

Bronze strips and foils are cold rolled flat products, primarily produced from phosphor bronze (CuSnP alloys).

They are designed for applications requiring:

High elasticity
Excellent fatigue resistance
Good electrical conductivity
Precision forming capability

Material Grades

Phosphor Bronze (Main Group)

CuSn4 / CuSn5 / CuSn6 / CuSn8 + P (CuSnP)

Phosphorus improves:

Wear resistance
Fatigue strength
Spring performance

Alternative Bronze Grades (on request)

CuSn3 (higher formability)
CuSn10 (higher strength, lower ductility)

Technical Specifications

Thickness Range
Foils: 0.02 mm – 0.10 mm
Strips: 0.10 mm – 3.00 mm

Width Range

Typically: 10 mm – 600 mm (depending on mill capability)

Temper Conditions

Temper	Description	Application
Soft (Annealed)	Maximum formability	Deep forming
½ Hard	Balanced strength	General use
Hard	High strength	Springs
Spring Temper	Maximum elasticity	Electrical contacts

Mechanical Properties

High fatigue resistance
Excellent spring properties
Good wear resistance
Stable mechanical behavior under repeated stress

Electrical Properties

Moderate to good conductivity
Stable contact performance

Surface Condition

Bright rolled surface
Clean and oxide-free
Suitable for stamping and forming

Product Forms

Coils (standard)
Slit coils
Cut-to-length sheets

Applications

Electrical & Electronics

Electrical contacts
Connectors
Switch components
Relay parts

Spring Industry

Precision springs
Contact springs
Elastic components

Automotive

Terminals
Sensor components
Electronic connectors

Precision Engineering

Stamped parts
Micro components
Fine mechanical systems

2.8. Bronze Tubes

Bronze tubes are seamless or cast tubular products manufactured from copper-tin (CuSn) and special bronze alloys. Seamless or cast. High strength. Applications; hydraulic systems, marine

They are designed for applications requiring:

High wear resistance
Low friction
High load capacity
Corrosion resistance

Manufacturing Methods

Seamless Tubes

Produced by extrusion and drawing
High dimensional accuracy
Smooth internal and external surface

Cast Tubes

Produced by centrifugal or continuous casting
Thicker walls possible
Better for heavy-duty applications

Material Grades

Tin Bronze

CuSn6
CuSn8
CuSn10
CuSn12

Phosphor Bronze

CuSnP

Aluminium Bronze (Special)

CuAl10Ni5Fe4

Technical Specifications

Dimensions

Outer diameter (OD): Ø20 mm – Ø500 mm
Inner diameter (ID): as per requirement
Wall thickness: 5 mm – 100 mm+

Mechanical Properties

High compressive strength
Excellent wear resistance
Good fatigue performance
Anti-seizing properties

Surface Condition

Machined or as-cast surface
Smooth internal bore (critical for bushings)

Applications

Hydraulic Systems

Cylinder sleeves
Hydraulic bushings
Pump components

Marine Industry

Propeller shaft bushings
Bearings exposed to seawater
Ship machinery

Heavy Industry

Mining equipment
Press machines
Steel industry machinery

Bearing & Sliding Systems

Plain bearings
Wear rings
Guide bushings

3. BRASS

3.1. Brass Product Forms

3.1.1. Brass Billets

Brass billets are semi-finished casting products used as the primary raw material for extrusion, hot forging, and machining processes. Applications: Extrusion plants, Forging facilities, CNC machining production, Valve & fittings manufacturing

They serve as the starting input for: Brass rods and bars, Profiles, Forged components
Standards: EN 1982, EN 12165

Key Grades

CW614N (CuZn39Pb3) → Free-cutting brass
CW617N (CuZn40Pb2) → Hot forging brass
CW612N (CuZn39Pb2) → Machining & forging application

Technical Characteristics

Production: Continuous casting / static casting

Homogeneous microstructure
Controlled grain size
Excellent hot workability
Good machinability (lead-containing alloys)

3.1.2. Brass Rods / Bars

Solid extruded or drawn products.
Standards: EN 12163 (general rods), EN 12164 (free-machining rods)
Tolerance: EN standard (H9 / H11)

Types:

Round bars	→	Extruded (Ø 10 mm – Ø 200 mm), Drawn (Ø 3 mm – Ø 60 mm)
Hex bars	→	Extruded (AF 10 mm – 80 mm), Drawn (AF 5 mm – 50 mm (across flats))
Square bars	→	Extruded (10 mm X 10 mm – 100 mm X 100 mm), Drawn (4 mm X 4 mm – 60 mm X 60 mm)
Flat bars	→	Extruded (Thickness: 5 mm – 50 mm, Width: 15 mm – 150 mm)
		Drawn (Thickness: 3 mm – 25 mm, Width: 10 mm – 80 mm)
Special Bars	→	Star, spline, custom profiles

3.1.3. Brass Wire

Drawn brass wire used in mechanical, electrical, and decorative applications. Applications: Springs, Fasteners, Wire forming, Accessories.

Technical Specifications

Diameter: Ø0.30 mm – Ø8.00 mm
Grades: CuZn30, CuZn37, CuZn40
Temper: Soft / Half Hard / Hard
Standard: EN 12166

Properties

Good formability
Moderate conductivity
High surface quality

3.1.4. EDM Brass Wire (Electrical Discharge Machining Wire)

EDM brass wire is a high-precision drawn wire specifically designed for Electrical Discharge Machining (Wire EDM) processes.

It is used as an electrode to cut conductive materials through controlled electrical discharges.

Key Features

High electrical conductivity
Controlled tensile strength
Excellent straightness
Uniform diameter tolerance
Stable spark performance
Low wire breakage rate
High cutting speed efficiency

Material Grades

Standard Brass EDM Wire

CuZn37 (CW508L) → most common
CuZn36 / CuZn40 → alternative compositions

Advanced EDM Wires (Optional Upgrade Segment)

Zn-coated brass wire (Diffused / Gamma phase)
High zinc content brass (CuZn40+)
Coated wires (for high-speed cutting)

These provide:

Faster cutting speed

Better flushing
Higher precision

Technical Specifications

Standard Sizes; 0,25 mm, 0,30 mm

Tolerances

Typically: ±0.001 mm – ±0.002 mm

Mechanical Properties

Tensile strength: 800 – 1200 MPa (depending on type)
Controlled elongation
High wire stability under tension

Surface Condition

Clean and smooth surface
Free from defects
Uniform coating (if coated type)

Spool / Packaging

Plastic spool (DIN / P-type)
Weight: 5 kg – 20 kg per spool
Vacuum packed / sealed packaging (optional)

Applications

Wire EDM Machines
Precision mold cutting
Tool & die manufacturing
Aerospace components
Automotive precision parts

3.1.5. Brass Coil Rods

Brass coil rods are cold drawn brass products supplied in coil form, available in round, hexagonal, and square cross-sections.
They are widely used in: CNC machining, Fastener production, Electrical components, Precision turned parts

Product Types

Round Coil Rods

Diameter range: Ø 2.00 mm – Ø 8.00 mm. Typical sizes: Ø 3 mm, Ø 4 mm, Ø 5 mm, Ø 6 mm, Ø 8 mm

Hexagon Coil Rods

Across flats (AF): 3 mm – 8 mm. Typical sizes: AF 3 mm, AF 4 mm, AF 5 mm, AF 6 mm

Square Coil Rods

Sizes: 4 mm × 4 mm, 5 mm × 5 mm, 6 mm × 6 mm

Material Grades (EN)

Grade	EN Symbol	Description
CW614N	CuZn39Pb3	Free cutting brass (best machinability)
CW606N	CuZn38Pb2	Good machinability + formability
CW603N	CuZn36Pb3	Improved ductility
CW508L	CuZn37	Formable brass (spring / semi-hard)
CW507L	CuZn36	General wire
CW509L	CuZn40	Lead-free alternative

Mechanical Properties (Temper)

Temper	Description	Typical Use
Soft (Annealed)	High ductility	Forming
¼ Hard	Medium strength	CNC + forming
½ Hard	Increased strength	Precision parts

Hard High strength Fasteners
Standard: EN 12166 / EN 12164

Typical tolerance:

Round: ±0.01 – ±0.03 mm
Hex / Square: tight tolerance on flats
Example: Ø 6.34 mm / 6.36 mm, 3.97 mm / 3.99 mm AF

Coil Specifications

Coil weight: 50 – 80 kg (standard)
Coil type: compact / layer wound
Inner diameter: standard industrial coils

3.1.6. Brass Profiles

Extruded custom cross-section brass products. Applications: Valve bodies, Electrical components, Architectural systems, CNC preforms

Production: Extrusion / drawing
High precision tolerances
Custom geometries

3.1.7. Brass Hollow Rods (Hollow Bars)

Used for machining hollow parts.
Applications; bushings, valve bodies, connectors
Material saving up to 25–30% compared to solid bars
Standard: EN 12168

3.1.8. Brass Tubes (Seamless / Welded)

Brass tubes produced in both seamless and welded forms. Applications: HVAC systems, Engineering applications, Decorative installations

Types:
Capillary tubes
Condenser tubes
Cartridge brass tubes (CuZn30)
Typical alloys: CW508L, CW505L, CW501L

Technical Specifications

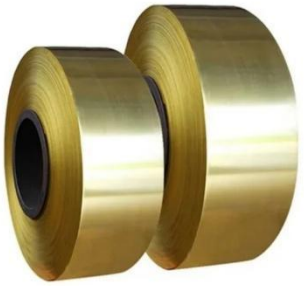
Thin wall / thick wall options
High dimensional accuracy

Properties

Good corrosion resistance
Good machinability
Decorative appearance

3.1.9. Brass Strips / Foils

Flat rolled brass products used in precision and electronic industries. Applications: Electrical connectors, Automotive terminals, Electronic components



Technical Specifications

Thickness: 0.10 mm – 3.00 mm
Grades: CuZn15, CW505L (CuZn30), CW508L (CuZn37),
CW501L (CuZn10), CW611N / CW612N

Properties

High formability
Good corrosion resistance
Suitable for stamping

3.1.10. Brass Forged Parts

Hot forged brass components produced mainly from CW617N / CW602N alloys. Applications: Valves, Plumbing, fittings, Gas systems

3.2. Alloy Classification (Full EN System)

3.2.1. Free-Machining Brasses

The most widely used brass alloy in the global market for CNC machining. Designed for high-speed automatic machining.

CW614N (CuZn39Pb3)
Key Feature: Industry benchmark for machinability (~100%)
Pb Content: ~3%
Mechanical: Medium strength, low cold ductility
Processing: Turning, milling, drilling (high-speed CNC)
Applications: connectors, fittings, automotive parts, electrical pins
Commercial Note: Highest volume brass grade globally

CW603N (CuZn36Pb3)

Key Feature: Better cold ductility vs CW614N
Processing: CNC + limited forming
Applications: threaded parts, fittings
Advantage: More formability without losing machinability

CW602N (CuZn36Pb2As) → DZR

Key Feature: Dezincification resistance (As addition)
Processing: machining + forging
Applications: plumbing, valves, potable water systems
Regulatory: Mandatory in EU water applications

CW612N (CuZn39Pb2)

Key Feature: Balanced machinability + ductility
Processing: machining + light forming
Applications: fittings, medium complexity parts

CW617N (CuZn40Pb2)

Key Feature: Dual-purpose alloy (machining + forging)
Processing: hot forging + machining
Applications: valves, gas fittings, plumbing components

Size Range

Diameter: Ø3 mm – Ø80 mm
Forms: round, hexagonal, square, flat, star, special

3.2.2. Hot Stamping (Forging) Brasses

Designed specifically for hot forging and pressing operations.

CW617N (CuZn40Pb2)

Best-in-class forging alloy
Excellent hot workability
Good post-machining capability
Used for complex shapes

CW509L (CuZn40) → Lead-Free

Lead-free alternative
High ductility
Lower machinability
Used in eco-compliant applications

CW602N (CuZn36Pb2As) → DZR

DZR + forging capability
Used in water fittings

Size Range

Diameter: Ø10 mm – Ø80 mm
Forms: round, hexagonal, square, flat, star, special

3.2.3. Lead-Free & DZR Brasses

A special brass alloy resistant to dezincification corrosion, required by European water regulations. Applications: Plumbing systems, Water valves, Pump components, Commercial Insight

CW511L (CuZn38As)

Lead-free
DZR capable
Used in potable water

CW602N (CuZn36Pb2As) → DZR

Standard DZR alloy
Widely used in plumbing

CW509L → low lead / lead-free

Lead-free / low-lead
Used as alternative to CW617N

High corrosion resistance in water systems. Long service life. Approved for potable water

3.2.4. Cold Working Brasses

Designed for cold forming operations such as deep drawing, bending, stamping and rolling.

CW505L (CuZn30) → 70/30 Brass

Excellent cold ductility
Best for deep drawing
Applications: cartridges, heat exchangers

CW508L (CuZn37)

General purpose forming alloy
Moderate strength
Used in sheets, strips

CW501L (CuZn10) → Gilding Metal

High copper content
Excellent corrosion resistance
Used in decorative + electrical

CW703R (CuZn20Al2As)

Aluminium brass
Excellent seawater corrosion resistance
Used in marine & condenser tubes

3.2.5. Casting Brasses

Brass alloys designed for casting processes such as sand casting, die casting and centrifugal casting.

CC750S → general casting

General purpose casting
Good machinability

CC754S → die casting

Most common die casting brass
Fine grain structure

CC752S → DZR casting

Improved corrosion resistance
Used in water fittings

CC765S → high strength

High strength + corrosion resistance
Used in heavy engineering

3.2.6. High Tensile Brasses

Engineered for high mechanical load, wear resistance and durability.

CW721R / CW722R

High strength + corrosion resistance
Used in railway, valves, marine

CW705R

High strength aluminium brass
Good corrosion resistance

CW713R

Silicon addition → improved wear resistance
Used in gears and moving parts

3.2.7. Electrical & Elastic Brasses

Used where electrical conductivity + spring properties are required.

CW501L / CW505L / CW508L

Good conductivity
Used in terminals, connectors, springs

CW614N / CW617N

Used in machined electrical parts
Nickel Silver: CW403J, CW409J
White appearance
High corrosion resistance

Used in electronics, decorative

3.3. Manufacturing Routes & Alloy Matching

3.3.1. Extruded Products (Hot Pressed)

Extrusion is performed at elevated temperatures (~650–750°C), allowing the material to flow through a die to form rods, bars, and profiles.

Extruded → cost-effective, large sections

Suitable for complex cross-sections. High productivity. Good mechanical strength. Uniform grain structure. Lower dimensional precision compared to drawing.

Typical Alloys & Characteristics

Alloy	Key Feature	Typical Use
CW617N	Excellent hot workability	Valves, fittings
CW608N	Good machinability + forging	General engineering
CW611N	Improved machinability	Extruded rods
CW612N	Balanced machining/forming	General purpose
CW613N	Improved hot forming	Forged parts
CW616N	Aluminium-added brass	Corrosion resistance
CW625N / CW626N	Arsenic-containing	DZR / corrosion resistant
CW713R	Silicon + Mn → wear resistance	Gears, heavy duty
CW720R	High tensile manganese brass	Marine, mining

3.3.2. Drawn Products

Cold drawing improves dimensional accuracy, surface finish, and mechanical properties.
Drawn → precision, CNC applications

Tight tolerances (H9 / H11 possible). Smooth surface finish. Improved strength due to cold work. Ideal for CNC machining.

Typical Alloys

Alloy	Key Feature	Application
CW600N	General purpose	Machining
CW602N	DZR	Plumbing
CW603N	Improved ductility	Fittings
CW605N / CW606N	Cold forming capability	Rivets, connectors
CW608N	Balanced alloy	Machining
CW612N	Medium machinability	CNC parts
CW614N	Best machinability	High-speed CNC
CW617N	Dual-purpose	Machining + forging

3.3.3. Hollow Bars

Produced via extrusion + drilling or direct hollow extrusion.
Hollow → material saving & machining efficiency
Material saving (less machining waste). Reduced machining time. Ideal for internal geometries

Typical Alloys

Alloy	Feature	Application
CW602N	DZR	Valve bodies
CW603N	Machinability	Bushings
CW605N / CW606N	Formability	Connectors
CW612N / CW614N	CNC optimized	Precision parts
CW617N	Forging + machining	Heavy fittings

3.3.4. Wire Alloys

Cold drawing of brass rod into fine diameters.
Temper: Soft / Half Hard / Hard
Standard: EN 12166
Typical diameter range: 0.10 mm – 8.00 mm
High ductility. Controlled tensile strength. Good surface quality

Typical Alloys

Alloy	Feature	Application
CW507L (CuZn36)	General wire	Fasteners
CW508L (CuZn37)	Formability	Springs
CW509L	Lead-free	Eco applications
CW601N / CW603N	Machinability	Electrical parts
CW606N / CW608N	Strength	Mechanical wire
CW612N / CW614N	Hard drawn	Connectors

3.3.5. Strip Alloys

Cold rolling of brass into thin strip form. Excellent formability. Good conductivity. High surface quality

Typical Alloys

Alloy	Feature	Application
CW611N	Balanced properties	Connectors
CW612N	Strength + machinability	Terminals
CW505L (CuZn30)		
CW508L (CuZn37)		
CW501L (CuZn10)		

3.4. Special Brasses

3.4.1. Naval Brass / Aluminium Brass

Applications: Marine systems, Heat exchangers, Condenser tubes
Alloys; CuZn20Al2As (CW703R), CuZn20Al2
Excellent seawater corrosion resistance. Anti-dezincification behavior. Good strength.

3.4.2. Nickel Silver (CuNiZn)

Applications: Decorative components, Electrical connectors, Instrument parts
Alloys: CW403J / CW409J
Silver-like appearance. High corrosion resistance. Good electrical performance.

3.4.3. High Strength / Manganese Brass

Applications: Heavy machinery, Marine components, Mining equipment, Gear systems
Alloys: CW720R / CW721R / CW722R / CuZn21Si3P (CW724R)
High tensile strength. Excellent wear resistance. Good corrosion resistance.

3.4.4. Silicon Brass

Lead-free, high machinability, corrosion resistant
Used as alternative to CW614N / CW602N

3.5. Sector Applications

Automotive; Radiators, Sensors, Connectors
Industrial; Valves, Gears, Bearings
Plumbing / Hydro Sanitary; Faucets, Pipe fittings, Valves
Marine; Propellers, Pump components
Refrigeration; Heat exchangers, Compressors
Medical; Equipment parts

4. ALUMINUM

4.1. Aluminum Wire Rods

Aluminum wire rods are the primary raw material to produce electrical conductors and cables. Manufactured in continuous casting and rolling lines, they provide high electrical conductivity and excellent drawability.

Alloy Grades

EC Grade Aluminum (EN AW-1370)
AA 1370
AA 6101 / 6201 (for AAAC conductors)
Standards; EN 1715 / EN 573, ASTM B233 / B398, IEC Standards (for conductor applications)

Dimensions

Diameter: 9.5 mm / 12 mm
Coil weight: 1.5 – 2.5 MT

Mechanical & Electrical Properties

Electrical Conductivity: ≥ 61% IACS (1370)
Tensile Strength: 90 – 150 MPa (depending on temper)
Elongation: ≥ 10%

Applications

AAC / AAAC / ACSR conductors
Power transmission lines
Cable manufacturing

4.2. Aluminum Rods / Bars

Aluminum rods and bars are widely used in machining, automotive, and industrial applications due to their excellent machinability, corrosion resistance, and strength-to-weight ratio.

Alloy Grades

EN AW-6061
EN AW-6082
EN AW-2011 / 2014 (free machining options)
Standards; EN 573 / EN 754, ASTM B221

Forms

Round bars
Square bars
Flat bars (busbar / lama)

Dimensions

Diameter: 6 mm – 300 mm
Length: 3 – 6 meters (custom cut available)

Mechanical Properties

Tensile Strength: 180 – 310 MPa
Good corrosion resistance
Excellent machinability

Applications

CNC machining
Automotive parts
Machinery components
Structural applications

4.3. Aluminum Coils

Aluminum coils are lightweight, corrosion-resistant materials used in construction, cladding, and industrial applications. Available in mill finish or coated surfaces.

Alloy Grades

1xxx (pure aluminum)
3xxx (Al-Mn alloys)
5xxx (Al-Mg alloys)
Standards; EN 485, ASTM B209

Dimensions

Thickness: 0.2 – 6.0 mm
Width: up to 2000 mm
Coil weight: up to 10 MT

Surface Types

Mill finish
Color coated (PE / PVDF)
Stucco embossed

Applications

Roofing & façade systems
Sandwich panels
HVAC applications
Insulation systems

4.4. Aluminum Profiles

Extruded aluminum profiles are used in industrial, construction, and renewable energy sectors. They offer flexibility in design and high strength with low weight.

Alloy Grades

EN AW-6063
EN AW-6061
EN AW-6082
Standards; EN 12020 / EN 755, ASTM B221
Surface Treatments; Anodized, Powder coated, Mill finish

Types

Industrial profiles (T-slot, machine frames),
Solar mounting profiles,
Custom-designed sections

Applications

Solar energy systems
Automation & machinery

Construction structures

4.5. Aluminum Tubes

Aluminum tubes are produced as seamless or extruded and are widely used in HVAC, automotive, and industrial systems due to their corrosion resistance and thermal conductivity.

Alloy Grades

EN AW-3003
EN AW-6060 / 6063
EN AW-6082
Standards; EN 12735 (HVAC tubes), ASTM B210 / B241
Types: Seamless tubes, Extruded tubes, Pancake coils

Dimensions

Diameter: 6 mm – 200 mm
Wall thickness: 0,5 mm – 10 mm

Applications

Air conditioning systems
Heat exchangers
Automotive components

4.6. Aluminum Mono Wires

Aluminum mono wires are single solid conductors used in electrical and communication cables. They can be supplied in hard drawn or annealed conditions.

Alloy Grades

EC Grade Aluminum (1370)
Standards; ASTM B230, IEC standards

Dimensions

Diameter: 1.0 mm – 5.0 mm

Packing

Wooden reels (600 – 2400 mm)
Coil packing

Mechanical Properties

Hard drawn / annealed options
High conductivity

Applications

Power cables
Data cables
OPGW systems

4.7. Aluminum Stranded Conductors (AAC / AAAC / ACSR / ACAR)

Stranded aluminum conductors are used in overhead power transmission and distribution lines. They consist of multiple wires stranded together to improve flexibility and strength.

Types

AAC (All Aluminum Conductor)
AAAC (All Aluminum Alloy Conductor)
ACSR (Aluminum Conductor Steel Reinforced)
ACAR (Aluminum Conductor Alloy Reinforced)
Standards; IEC 61089, ASTM B231 / B232 / B399

Structure

7 / 19 / 37 wire configurations
Custom designs available

Properties

High conductivity
High tensile strength (especially ACSR)
Lightweight

Applications

Overhead transmission lines
Power distribution networks

5. STEEL

5.1. Steel Wire Rods

Steel wire rods are one of the most widely used semi-finished steel products, serving as the primary raw material for wire, fasteners, springs, and reinforcement applications.

Grades & Types

Low Carbon Wire Rods

Grades: SAE1006, SAE1008, SAE1010
Properties: Excellent ductility and drawability
Applications: Wire drawing, mesh, binding wire, nails

Medium Carbon Wire Rods

Grades: SAE1020 – SAE1040
Applications: Automotive parts, general engineering

High Carbon Wire Rods

Grades: SAE1070, SAE1080, SAE1090
Properties: High tensile strength, wear resistance
Applications: Springs, steel cords, ropes

CHQ Wire Rods (Cold Heading Quality)

Grades: SAE1008, SAE1010, 10B21, 20MnB4
Properties: Controlled chemistry, excellent cold formability
Applications: Bolts, nuts, screws, fasteners
Standards; EN 10016, ASTM A510, DIN standards

Dimensions

Diameter: 5.5 mm – 16 mm
Coil weight: 1.5 – 2.5 MT

5.2. Steel Bars (Cold Drawn & Alloy Steel)

Steel bars are used in machining, automotive, and mechanical industries. Cold drawn bars provide tight tolerances and superior surface quality.

Cold Drawn Steel Bars

Grades

11SMn30 / 11SMn37
12L14 (Lead added – free cutting)
C45 / SAE1045

Properties

High dimensional accuracy
Excellent machinability
Improved surface finish
Forms; Round, hexagonal, square

Applications

CNC machining
Hydraulic components
Automotive parts

Alloy Steel Bars

Grades

42CrMo4 (AISI 4140)
34CrNiMo6 (AISI 4340)
16MnCr5 / 20MnCr5

Properties

High strength and toughness
Heat treatable
Wear resistance

Applications

Gears
Shafts
Transmission components
Heavy machinery

5.3. Special Steels

Special steels are engineered for specific high-performance applications requiring enhanced mechanical properties and durability.

Bearing Steel

Grades

100Cr6 (AISI 52100 / SUJ2)

Properties

High hardness
Excellent wear resistance
Fatigue resistance

Applications

Bearings
Rollers
Precision components

Automotive Steels

Types

Micro-alloyed steels
Case hardening steels

Applications

OEM and Tier 1 automotive supply chain
Structural and safety components

5.4. Stainless Steel

Stainless steels provide excellent corrosion resistance and are widely used across industrial and architectural applications.

Types

Austenitic Stainless Steel

Grades: 304, 316, 316L
Properties: Corrosion resistance, formability

Ferritic Stainless Steel

Grades: 409, 430
Applications: Automotive exhaust systems

Martensitic Stainless Steel

Grades: 420, 431
Properties: High strength, hardness

Duplex Stainless Steel

Grades: 2205, 2507
Properties: High strength + corrosion resistance

Forms

Sheet / Coil
Tube / Pipe
Round Bar
Wire
Standards; EN 10088, ASTM A240 / A276

5.5. Steel Coils

Steel coils are flat-rolled products widely used in construction, automotive, and manufacturing industries.

Types

Hot Rolled (HR)

Structural applications
Thickness: 1.5 – 20 mm

Cold Rolled (CR)

Smooth surface
Precision applications

Galvanized Steel (GI)

Zinc coated for corrosion protection

Pre-Painted Steel (PPGI / PPGF)

Color coated for roofing and façade
Standards; EN 10130 / EN 10346, ASTM A653

Applications

Construction
White goods
HVAC systems

5.6. Spring Steel

Spring steels are high carbon or alloy steels designed for high elasticity and fatigue resistance.

Grades

55Cr3
60SiCr7
65Mn

Properties

High yield strength
Fatigue resistance
Elasticity

Applications

Suspension systems
Industrial springs
Automotive components

5.7. Tool Steel

Tool steels are used in manufacturing tools and dies requiring high hardness, wear resistance, and thermal stability.

Grades

Cold Work Tool Steel

D2, D3
High wear resistance

Hot Work Tool Steel

H13
Thermal resistance

Oil Hardening Steel

O1

High Speed Steel (HSS)

High cutting performance

Applications

Cutting tools
Molds and dies
Forging tools

6. GRP & HDPE PIPE SYSTEMS

6.1. GRP (Glass Reinforced Plastic) Pipes & Fittings

6.1.1. GRP Pipes

GRP pipes are composite pipes made of glass fiber reinforced polyester or epoxy resins, designed for high corrosion resistance and long service life in aggressive environments.

Production Methods

Filament Winding
Centrifugal Casting

Standards

EN 1796 / EN 14364
ISO 10639 / ISO 10467
AWWA C950

Dimensions

Diameter: DN 25 – DN 4000
Pressure Classes: PN 1 – PN 32

Properties

Excellent corrosion resistance
Lightweight and easy installation
High mechanical strength
Long service life (50+ years)

Applications

Water and wastewater systems
Industrial pipelines (chemical, acid lines)
Irrigation systems
Power plants

6.1.2. GRP Pipe Fittings

GRP fittings ensure complete system integrity and are designed to match the pipe system's pressure and chemical resistance.

Types

Elbows (30°, 45°, 90°)
Tees
Reducers
Flanges
Bends and special fittings

Applications

Pipeline connections
Direction changes
Diameter transitions

6.1.3. GRP Couplings

GRP couplings are used to connect pipe sections, allowing flexibility and easy installation.

Types

Double bell couplings

Mechanical couplings

Features
Leak-proof sealing
Easy assembly
High durability

6.2. Fiber-Optic Cable Protection Solutions

6.2.1. Easy Fiber Microducts

Microduct systems designed for fiber optic cable installation using air-blown technology.

Features

Low friction inner surface
UV resistant
Multi-channel configurations available

Applications

FTTH (Fiber to the Home)
Telecom infrastructure

6.2.2. Easy Fiber Flat Duct

Flat duct systems for organized fiber optic cable routing in urban infrastructure.

Applications

Underground fiber networks
City installations

6.2.3. Easy Fiber Flat Flex Duct

Flexible flat ducts designed for complex routing and limited space installations.

Applications

Dense urban areas
Retrofit projects

6.2.4. Easy Fiber Duct

Standard HDPE-based ducts for fiber optic cable protection.

Features

High impact resistance
Long-term durability

6.2.5. Easy Fiber Indoor LSZH

Low Smoke Zero Halogen ducts designed for indoor fiber optic installations.

Features

Flame retardant
Low toxicity
Safe for indoor environments

6.3. HDPE Pipes & Fittings

6.3.1. PE100 Pipes

High-density polyethylene pipes with superior strength and pressure resistance.
Standards; EN 12201, ISO 4427

Pressure Classes; PN 6 – PN 25

Applications

Drinking water
Gas distribution
Infrastructure projects

6.3.2. PE100 Coil Pipes

Flexible PE100 pipes supplied in coils for easy transportation and installation.

Applications

Irrigation systems
Rural water supply

6.3.3. HDPE Corrugated Pipes

Double-wall corrugated pipes designed for drainage and sewer systems.

Properties

High ring stiffness
Lightweight
Chemical resistance

Applications

Stormwater drainage
Sewer systems

6.3.4. HDPE Corrugated Fittings

Types

Couplings
Elbows
Junctions

Applications

Drainage systems
Sewer connections

6.3.5. HDPE Spiral Corrugated Pipes

Large diameter pipes produced by spiral winding technology.
Diameter Range; Up to DN 3000

Applications

Large-scale infrastructure
Industrial drainage

6.3.6. PE32 Pipes

Low-density polyethylene pipes used for low-pressure applications.

Applications

Irrigation
Agricultural systems

6.3.7. PE40 Pipes

Medium-density polyethylene pipes with improved strength over PE32.

Applications

Water distribution
Low-pressure systems

6.3.8. PE80 Coil Pipes

Medium-density polyethylene pipes with good pressure resistance.

Applications

Water supply
Gas distribution