



SPECIAL STEEL & ALLOY ROUND BARS

Strength. Precision. Traceability.

Stainless Steel | Duplex | Nickel Alloys |
Tool Steels | Aerospace Grades



AS9100D-Certified
Manufacturing Source



PREMIUM
QUALITY



MATERIAL
TRACEABILITY



PRECISION
CUTTING



USA Piping Solution LLC
www.usapipingsolution.com



YOUR RELIABLE SOURCE FOR ENGINEERING ROUND BARS

USA Piping Solution LLC supplies stainless steel, nickel alloy, duplex, tool steel and special engineering round bars for demanding industrial applications. Our range supports oil and gas, aerospace, power generation, marine engineering, chemical processing, defense, automotive manufacturing and precision engineering.

Through an established supply network, we help customers source standard and special grades in the required diameter, length, finish, heat-treatment condition and inspection level.

OUR SUPPLY CAPABILITIES

-  | Standard and special alloy grades
-  | Small and project-volume requirements
-  | Custom cut-to-length supply
-  | Close dimensional tolerances
-  | Heat-number traceability
-  | Mill test certificates
-  | Additional testing when required
-  | Domestic and export packaging
-  | Technical sourcing assistance



One Requirement. One Reliable Supply Partner.



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ROUND BARS ENGINEERED FOR DEMANDING APPLICATIONS

Our round bars are available for applications requiring corrosion resistance, mechanical strength, wear resistance, high-temperature stability, fatigue resistance and dimensional accuracy.



STAINLESS STEEL ROUND BARS

Excellent corrosion resistance, hygiene, and durability for a wide range of industrial and structural applications.



DUPLEX & SUPER DUPLEX ROUND BARS

Superior strength and corrosion resistance in aggressive environments, with high resistance to pitting and stress corrosion cracking.



SUPER-AUSTENITIC ROUND BARS

Enhanced resistance to extreme corrosion and oxidizing conditions, ideal for chemical processing and marine applications.



NICKEL ALLOY ROUND BARS

Outstanding resistance to heat, corrosion, and oxidation in the most demanding chemical and high-temperature environments.



TOOL & HIGH-SPEED STEEL BARS

High hardness, wear resistance, and toughness for precision tooling, cutting, and high-performance applications.



AEROSPACE & ENGINEERING ALLOY BARS

High-performance alloys designed for critical aerospace, defense, and advanced engineering solutions.



AVAILABLE TO
ASTM | AMS | AISI | UNS | GOST |
CUSTOMER SPECIFICATIONS



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TECHNICAL SUPPLY RANGE

 Diameter Range	0.8 mm to 400 mm
 Product Form	Round bars and forged rounds
 Finish	Black, peeled, turned, bright, ground or polished
 Tolerance	Standard commercial tolerance or close tolerance
 Precision Capability	Up to h7 on selected bright and ground bars
 Length	Mill length or custom cut length
 Condition	As rolled, forged, annealed, solution annealed, normalized, hardened and tempered, aged or precipitation hardened
 Testing	Standard mill testing or additional inspection
 Documentation	MTC, heat-number traceability and inspection records

CUSTOM REQUIREMENTS

- Customer drawings
- Special diameter tolerances
- Machining allowances
- Required hardness range
- Mechanical-property requirements
- Surface roughness requirements
- Heat-treatment condition
- Ultrasonic-testing criteria
- Special packing and marking instructions





DUPLEX & SUPER DUPLEX ROUND BARS

High-strength stainless steels developed for chloride-bearing, seawater, offshore and aggressive process environments.

GRADE	UNS DESIGNATION
329	S32900
F51	S31803
F60 / 2205	S32205
Ferralium 255	S32550
F53 / 2507	S32750
F55	S32760

TYPICAL APPLICATIONS



Offshore equipment



Seawater systems



Pump shafts



Valve components



Fasteners



Chemical processing



Desalination plants



Oil and gas equipment



Marine components



Pulp and paper equipment



Engineered for Strength. Built for Extremes.



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High-performance alloys designed for critical aerospace, defense, and advanced engineering solutions.



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CUSTOMER SPECIFICATIONS



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NICKEL-BASED SUPERALLOY ROUND BARS

Performance under heat, pressure and corrosion.

GRADE	UNS	TYPICAL APPLICATIONS
Hastelloy C-276	N10276	chemical processing, pollution control
Inconel 600	N06600	furnace components, chemical processing
Inconel 601	N06601	petrochemical equipment, industrial furnaces
Inconel 625	N06625	marine, offshore, aerospace
Incoloy 330	N08330	heat treatment equipment, baskets, muffles
Inconel 718	N07718	gas turbines, pumps, aerospace
Inconel X-750	N07750	gas turbines, nuclear reactors, rocket engines
Inconel 925	N09925	fasteners, pumps, oilfield parts
A-286	S66286	jet engine components, high-temperature fasteners



KEY PERFORMANCE CHARACTERISTICS



Elevated-temperature strength



Seawater resistance



Oxidation resistance



Chemical resistance



Creep resistance



Fatigue strength

High-Alloy Strength for **Critical Service.**





Nickel-Copper / Heat-Resistant Alloys and Controlled-Expansion Alloy

Specialized alloys for marine, thermal and electrical applications.

GRADE	UNS	TYPICAL APPLICATIONS
Incoloy 800	N08800	heat exchangers, carburizing equipment, heating-element sheathing
Alloy 36	K93600	standards of length, thermostat rods, laser components
Alloy 42	K94100	semiconductor lead frames, glass-to-metal seals
Monel 400	N04400	marine equipment, valves, pumps, heat exchangers
Monel 401	N04401	electrical contacts, resistor parts
Monel 450	N04450	seawater condensers, evaporators, distillers
Monel K-500	N05500	pump shafts, marine shafts, springs, fasteners

WHY THESE ALLOYS ARE SELECTED



seawater resistance



controlled thermal expansion



electrical reliability



hydrocarbon resistance



marine strength



long service life

Selected for Stability. Trusted in Service.



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PRECIPITATION-HARDENING STAINLESS STEEL BARS

High strength with stainless-steel corrosion resistance.

01 | 17-4PH — UNS S17400

Combines high strength, good corrosion resistance and dimensional stability after heat treatment.



TYPICAL APPLICATIONS



Offshore components



Fasteners



Pump shafts



Food-processing equipment



Valve stems



Aerospace components

02 | 15-5PH — UNS S15500

Offers high strength, good transverse toughness and consistent mechanical properties.



TYPICAL APPLICATIONS



Aircraft components



High-strength fasteners



Gears



Nuclear components



Shafts



Valve & pump parts



03 | ADDITIONAL HIGH-STRENGTH GRADES

Custom 450

Custom 465

Maraging 250

Maraging 350

Strength You Can **Heat Treat into Performance.**





HIGH-SPEED STEEL ROUND BARS

Designed for cutting performance and hot hardness.

GRADE	TYPICAL APPLICATIONS
T1	twist drills, screw-cutting tools, milling cutters
T4	lathe and planning tools
T5	heavy-duty lathe tools
T15	heavy-duty cutting tools
M2	broaches, twist drills, milling cutters
M15	high-wear cutting tools
M35	cobalt-alloyed drills and cutters
M42	taps, reamers, twist drills

AVAILABLE SUPPLY CONDITIONS



Annealed



Ground



Peeled



Machining Condition



Heat-Treated



Cut-to-Length Blanks

Tooling Performance **Starts with the Right Grade.**



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TOOL STEEL & MOULD STEEL ROUND BARS

Built for wear resistance, impact resistance and thermal cycling.

COLD-WORK TOOL STEELS

- | | | | |
|-----------|--|---|------------------------|
| D2 | |  | Cutting dies |
| D3 | |  | Punches |
| 01 | |  | Reamers |
| 02 | |  | Thread tools |
| 07 | |  | Wear-resistant tooling |



HOT-WORK TOOL STEELS

- | | | | |
|------------|--|---|------------------|
| H11 | |  | Forging dies |
| H12 | |  | Extrusion tools |
| H13 | |  | Die-casting dies |
| H21 | |  | Shear blades |



PLASTIC MOULD STEELS

- | | | | |
|---------------------|--|---|---------------------|
| P20 | |  | Injection moulds |
| P21 | |  | Compression moulds |
| P20 Modified | |  | Die-casting tooling |



From Dies to Moulds, Engineered for Precision.



ENGINEERING & AEROSPACE ALLOY GRADES

Special grades for critical components.

A STAINLESS STEEL GRADES

- | Stainless Steel 304
- | Stainless Steel 316
- | 420C
- | 440C

B HIGH-STRENGTH ALLOY STEELS

- | AISI 4340
- | 15CDV6
- | 16NCD13
- | 35NCD16

C HIGH-STRENGTH SPECIALTY GRADES

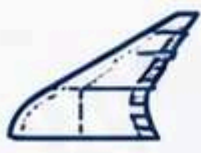
- | Custom 450
- | Custom 465
- | Maraging 250
- | Maraging 350



TYPICAL COMPONENTS



Landing-gear components



Aircraft structural parts



Shafts & axles



Gears



Fasteners



Defense equipment



Precision mechanical components

Critical Grades for **Critical Performance.**



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ROUND BAR SUPPLY FORMS

Round bars can be supplied in different production and finishing conditions according to the application.

01 BLACK BARS



Hot-rolled bars with natural oxide scale. Ideal for forging, heavy machining and structural applications where surface finish is not critical.

02 FORGED ROUNDS



Produced by forging for superior grain flow and mechanical properties. Suitable for high-strength, safety-critical and high-stress components.

03 PEELED OR TURNED BARS



Peeled or turned to tight diameter tolerance and improved surface finish. Excellent for precision machining and general engineering use.

04 BRIGHT BARS



Cold-drawn and accurately finished for enhanced dimensional accuracy and surface quality. Ideal for automotive and precision engineering applications.

05 CENTERLESS-GROUND BARS



Ground using centerless technology for excellent roundness, straightness and surface finish. Perfect for automated and high-precision assembly environments.

06 POLISHED BARS



Polished to a mirror finish for superior appearance and corrosion resistance. Used in decorative, medical, food-grade and high-end precision applications.

07 CUT-TO-LENGTH BARS



Material can be saw-cut according to customer drawings, machining allowances or project-specific lengths.



HOW SPECIAL ALLOY ROUND BARS ARE PRODUCED

Advanced metallurgical processes and strict quality control ensure superior performance, reliability and consistency in every bar.



01



Vacuum Induction Melting (VIM)

Used for critical and exotic alloys requiring tightly controlled chemistry.

BENEFITS

- ✓ Low gaseous impurities
- ✓ Controlled hydrogen/oxygen/nitrogen
- ✓ Close chemistry control
- ✓ Reduced non-metallic inclusions
- ✓ Improved micro-cleanliness



02



Argon-Oxygen Decarburization (AOD)

Helps control carbon content while maintaining essential alloying elements such as chromium and nickel.



03



Electro-Slag Remelting (ESR)

Improves cleanliness and internal integrity for critical alloys.

BENEFITS

- ✓ Reduction of inclusions
- ✓ Lower sulphur and oxygen
- ✓ Improved density and homogeneity
- ✓ Higher strength and toughness
- ✓ Improved hot ductility
- ✓ Uniform carbide distribution



Controlled
Processes



Consistent
Quality



Process
Traceability



Advanced Testing
& Inspection



Superior Round Bar
Performance



FORGING, HEAT TREATMENT & FINISHING

Controlled processing helps deliver the final mechanical and metallurgical performance of the alloy.



1. RADIAL FORGING

High integrity billets through controlled radial forging.

- ✓ Fine grain structure
- ✓ High material density
- ✓ Homogeneous internal structure
- ✓ Improved mechanical properties



2. HEAT TREATMENT

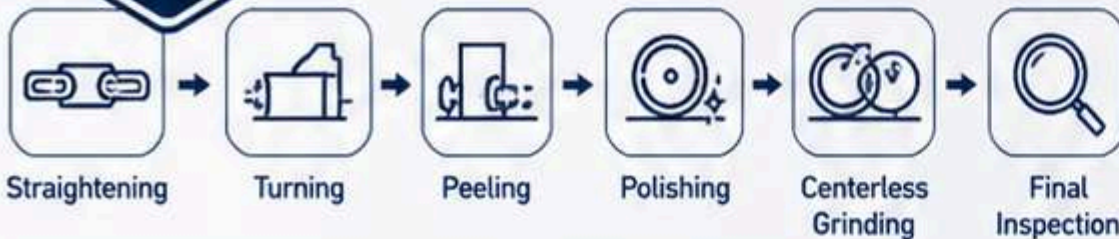
Precision heat treatment to achieve targeted properties.

- ✓ Normalizing
- ✓ Annealing
- ✓ Solution Annealing
- ✓ Hardening
- ✓ Tempering
- ✓ Age Hardening
- ✓ Precipitation Hardening



3. STRAIGHTENING & SURFACE FINISHING

Advanced finishing processes ensure superior surface quality and dimensional accuracy.



- ✓ Close dimensional control
- ✓ Low surface roughness
- ✓ Improved straightness
- ✓ Consistent diameter
- ✓ Machining-ready surfaces





QUALITY BUILT AROUND TRACEABILITY

Our round bars are supplied with inspection and documentation appropriate to the material grade, specification and customer requirement.



MATERIAL IDENTIFICATION

- Heat-number verification
- Grade confirmation
- Positive material identification
- Chemical-analysis review
- Marking and color coding



DIMENSIONAL INSPECTION

- Diameter measurement
- Length verification
- Straightness inspection
- Ovality checking
- Surface-finish examination
- Dimensional-tolerance verification



DOCUMENTATION

- Mill test certificate
- Chemical-composition results
- Mechanical-test results
- Heat-treatment condition
- Heat-number traceability
- Additional test reports
- Third-party inspection documents



ADDITIONAL INSPECTION

Testing can be arranged according to customer specifications, project requirements or applicable material standards.





TESTING & INSPECTION FACILITIES

We implement a comprehensive testing and inspection program to ensure our round bars meet the highest industry standards and customer specifications.



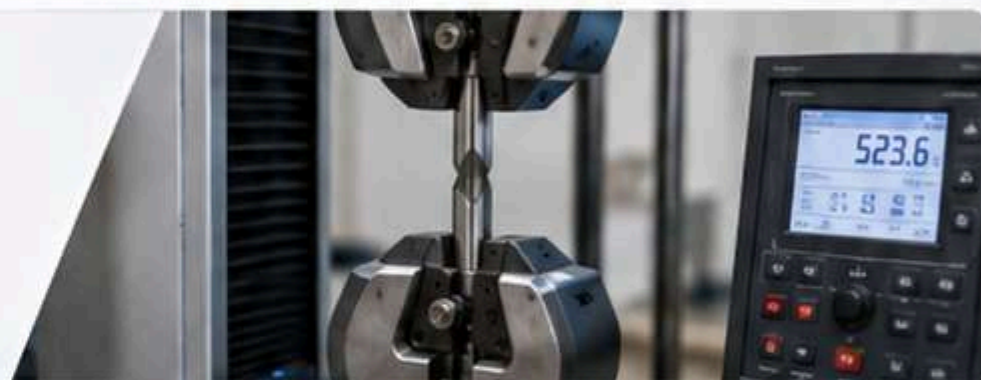
CHEMICAL ANALYSIS

- Optical Emission Spectrometry
- Carbon and Sulphur Analysis
- Positive Material Identification



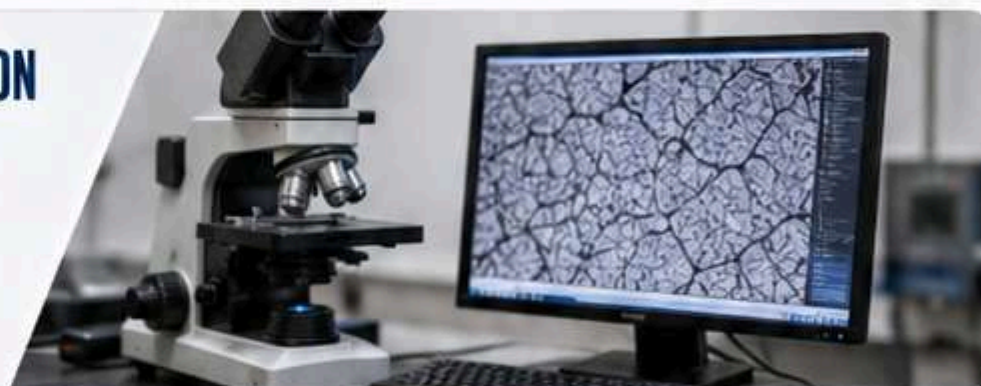
MECHANICAL TESTING

- Tensile Testing
- Hardness Testing
- Charpy Impact Testing



METALLURGICAL EXAMINATION

- Macrostructure examination
- Microstructure examination
- Grain-size evaluation
- Decarburization examination
- Carbide-distribution assessment



NON-DESTRUCTIVE EXAMINATION

- Ultrasonic Testing
- Magnetic Particle Inspection
- Surface visual inspection
- Additional NDT as specified



ACCURATE
RESULTS



QUALITY
ASSURANCE



COMPLIANT
TO STANDARDS



EXPERT
TECHNICIANS



RELIABLE
PERFORMANCE



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INDUSTRIES & APPLICATIONS

Supporting critical industries with engineered round bar solutions.



AEROSPACE

turbine parts, landing gear, engine components



DEFENSE

high-strength assemblies and vehicle parts



SPACE

rocket engine and structural components



OIL & GAS

pump shafts, wellhead and offshore equipment



POWER GENERATION

turbine parts and high-temperature fasteners



CHEMICAL PROCESSING

pump, valve and reactor components



MARINE & SHIPBUILDING

shafts, fasteners and seawater-system parts



AUTOMOTIVE

gears, shafts, tooling and engine components



Supplying Materials that **Power Industries Worldwide.**



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PACKAGING, MARKING & LOGISTICS

Protected from warehouse to installation.

1. IDENTIFICATION

-  Grade marking
-  Heat-number marking
-  Diameter & length identification
-  PO reference
-  Colour coding
-  Traceability tags



2. PROTECTION

-  End protection
-  Surface oiling when permitted
-  Waterproof wrapping
-  VCI protection
-  Wooden supports or crates
-  Steel-strapped bundles



3. DELIVERY SUPPORT

-  Custom cut lengths
-  Mixed-size project packages
-  Domestic delivery
-  Export documentation
-  Containerized shipments
-  Urgent material sourcing
-  Third-party inspection coordination



Packed Right. Marked Right. Delivered Right.





LET'S DISCUSS YOUR ROUND BAR REQUIREMENT

Share your material, size and documentation needs for a faster quotation.

- ✓ Material Grade or UNS Number
- ✓ Required Diameter
- ✓ Length or Cut Size
- ✓ Quantity
- ✓ Surface Finish
- ✓ Heat-Treatment Condition
- ✓ Dimensional Tolerance
- ✓ Testing Requirements
- ✓ Documentation Requirements
- ✓ Delivery Location



Reliable Material

Certified, traceable and ready for demanding applications.



Complete Documentation

Mill test certificates and supporting docs—clear, accurate and on time.



Responsive Supply

Fast quotations, on-time delivery and dependable service you can count on.

**Your Trusted Partner for Stainless Steel,
Special Alloy and Engineering Round Bars.**



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