

Commercial Supply Proposal

Titanium Wire and Welding Consumables

Global Supply Regions: North America (USA, Canada, Mexico), European Union & UK (Germany, France, Italy, Netherlands, Poland, Spain), Asia-Pacific (Japan, South Korea, Singapore, Australia, India), Middle East (UAE, Saudi Arabia, Qatar, Turkey), Latin America (Brazil, Argentina, Chile)

Target Industries: Marine & Shipbuilding, Aerospace, Medical Devices, Food Processing, Automotive, Chemical Process Equipment, Welding Fabrication, Jewelry, Additive Manufacturing (Metal 3D Printing / WAAM)

1. Product Description and Technical Parameters

Titanium wire is a semi-finished product of circular cross-section with diameters ranging from 0.8 mm to 7.0 mm (up to 12.0 mm in special specifications), manufactured by wire drawing with intermediate annealing. Wire is classified as general-purpose, welding (filler), spring, medical, and additive manufacturing (WAAM / DED) grades.

Leading global producers of titanium welding wire, including Nippon Steel Corporation, ATI, and VSMPO-AVISMA, achieve hydrogen content control at $\leq 0.008\%$ (below the standard 0.012% limit) and surface finish $Ra \leq 0.4 \mu m$, ensuring consistent weld pool behavior in automated TIG and MIG processes. Metal-Asia.pw sources from mills holding equivalent certifications with full AS9100 and NORSOK compliance.

1.1. Alloy Grades and Applications

Wire Grade	International Equivalent	Classification	Diameter, mm	Key Composition Limits	Application
VT1-00sv	ER Ti-1 (AWS A5.16)	Welding, High-Purity	0.8-7.0	O $\leq 0.10\%$, N $\leq 0.04\%$, H $\leq 0.008\%$	CP titanium welding, anode fabrication
VT2sv	ER Ti-2 (AWS A5.16)	Pd-Alloyed Welding	0.8-5.0	Pd 0.12-0.25%	Aggressive acid environments (hydrochloric acid)
PT-7Msv	ER Ti-7 type	High-Ductility Welding	0.8-7.0	Al 1.8-2.5%, Mn 1.8-2.5%	Complex structure welding, coiled tubing, piping
VT6sv	ER Ti-5 (AWS A5.16)	Structural Welding	0.8-5.0	Al 5.3-6.8%, V 3.5-4.5%	High-load joints, aerospace, marine
VT20-1sv	ER Ti-5 type mod.	Heat-Resistant Welding	1.0-4.0	Al 5.5-7.0%, V 0.8-2.0%	Engine components,

Wire Grade	International Equivalent	Classification	Diameter, mm	Key Composition Limits	Application
					combustor welding
VT20-2sv	ER Ti-5 type mod.	High-Fluidity Welding	1.0-4.0	Al 5.5-7.0%, V 0.8-2.0%, Fe ≤ 0.30%	Thin-wall structure welding
OT4-1sv	ER Ti-3 type	Medium-Alloy Welding	0.8-5.0	Al 2.5-3.5%, Mn 1.0-2.0%	Vessel welding, marine bulkheads
OT4sv	ER Ti-3 type mod.	Formable Welding	0.8-5.0	Al 2.0-3.5%, Mn 0.8-2.0%	General shipbuilding, piping
SPT-2	Custom	Special Filler	0.8-3.0	Al 2.0-3.0%, V 2.0-3.0%	PT-3V alloy welding
VT16	Ti-4Al-4Mo-2Sn type	Fastener Stock Wire	1.0-6.0	Al 2.2-3.5%, Mo 4.5-6.0%	Bolt head upsetting, stud welding
2V	Ti-0.2Pd type	Anodic Welding	0.8-5.0	Pd 0.12-0.25%	Cathodic protection, chemical industry

1.2. Classification by Application and Standard

Category	Diameter, mm	Grades	Standard	Key Features
General-purpose wire	1.0-7.0	VT1-00/Gr1, VT1-0/Gr2	ASTM B863, GOST 27265-87	Soft, half-hard, hard temper
Welding wire	0.8-7.0	VT1-00sv, PT-7Msv, VT6sv, OT4-1sv, VT20-1sv, VT20-2sv, 2V	AWS A5.16, AMS 4951, AMS 4954, GOST 27265-87, OST 1 90015-77	Vacuum annealed, acid-pickled, coils to 30 kg
Additive manufacturing wire (MIG/MAG, WAAM)	1.0-1.6	VT1-0/Gr2, VT6/Gr5, Ti-6Al-4V ELI	AMS 4954, AWS A5.16	Diameter tolerance +/- 0.02 mm, surface cleanliness
Spring wire	0.5-5.0	VT1-0/Gr2, VT6/Gr5	ASTM B863, TU 1-805-014	High elasticity, low stress relaxation
Medical wire	0.1-2.0	VT1-00/Gr1, Ti-6Al-7Nb, Ti-6Al-4V ELI	ASTM F67, ASTM F136, ISO 5832-2	Biocompatibility, electropolished finish

Category	Diameter, mm	Grades	Standard	Key Features
Mesh and filter wire	0.2-2.0	VT1-0/Gr2	ASTM B863, TU 1-92-117	Woven mesh, filter elements
Anodic protection wire	2.0-5.0	VT1-00/Gr1, 2V	ASTM B863, TU 1-805-178	Pipeline cathodic protection
ESR remelting electrode wire	2.0-5.0	VT1-0/Gr2, VT6/Gr5	ASTM B863, TU 1-805-178	Electrodes for vacuum arc remelting

1.3. Mechanical Properties in Delivery Condition

Grade	Temper	UTS (sigma_B), MPa	Elongation (delta), %	Bend Cycles (d=5t)
VT1-00 / Gr1	Soft	343-490	>= 25	>= 12
VT1-00 / Gr1	Half-hard	490-637	>= 15	>= 8
VT1-00 / Gr1	Hard	637-833	>= 5	>= 4
VT1-0 / Gr2	Soft	392-539	>= 20	>= 10
VT1-0 / Gr2	Half-hard	539-686	>= 12	>= 6
VT1-0 / Gr2	Hard	686-882	>= 4	>= 3
VT6 / Gr5	Soft	882-1079	>= 8	>= 4
VT6 / Gr5	Half-hard	1079-1275	>= 5	>= 2
PT-7M	Soft	490-637	>= 18	>= 10

1.4. Surface and Packaging Requirements

- Wire surface shall be bright, free from discoloration, dark or oily spots, and unwelded zones.
- Post-anneal waviness is not grounds for rejection if not exceeding 0.5% of length.
- Packaging: Coils up to 30 kg on wooden or plastic spools; vacuum-sealed with silica gel desiccant for ocean freight.

2. Supply Chain Pain Points: Direct China Procurement

Pain Point	Manifestation	Consequence
Diameter Inconsistency	Wire diameter fluctuates +/- 0.1 mm against specified +/- 0.02 mm, disrupting automated welding feed systems	Porosity in weld joint, lack of fusion, manual rework required
Surface Contamination	Oxide film residue, drawing lubricant remnants, abrasive particle entrapment	Argon-shield welding porosity, MIG bath contamination, 3D-

Pain Point	Manifestation	Consequence
		print defects
Improper Spooling	Cross-overs, kinks, twists on spool causing wire feed jamming	Automatic welding arc-out, equipment downtime, rejected weld seam
No Vacuum Anneal	Wire supplied in air-annealed condition with elevated surface oxygen	Weld joint embrittlement, requirement for additional pickling cycle
Incorrect Spool Labeling	Spool marked VT6sv but actual aluminum content below specification	Weld undermatching (under-strength), joint failure in service
Missing Welding Procedure Qualification	No radiographic test report of weld deposit made with subject wire	Unable to complete welding procedure qualification record (WPQR), QA rejection
Moisture Ingress in Transit	Damaged vacuum packaging allows moisture penetration, especially at transshipment ports	Hydrogen embrittlement, weld cracking, batch rejection

3. Metal-Asia.pw Solution for Wire Products

3.1. Wire Quality Control

- **Laser Diameter Monitoring:** 3-axis measurement across full spool length.
- **Eddy Current Surface Inspection:** Crack, cavity, and inclusion detection.
- **Tensile Testing:** Sample from every spool for UTS and elongation.
- **Weldability Testing:** Weld pool fluidity assessment, porosity screening, bead uniformity.
- **Medical wire:** Biocompatibility screening, ferromagnetic inclusion testing, electropolishing verification.

3.2. Packaging and Global Logistics

- Vacuum packaging with humidity indicator card.
- Flanged wooden spools for mechanical damage protection.
- Individual spool marking: heat number, spool number, alloy grade, diameter, manufacture date, net weight.
- Air freight available for urgent deliveries (10-day transit to major hubs).

3.3. Technical Support Services

- Welding parameter selection (current, voltage, wire feed speed, shielding gas) for specific alloy grades and material thicknesses.
- Additive manufacturing consulting: WAAM wire selection, deposition path optimization, interpass temperature control.
- WPS/PQR (Welding Procedure Specification / Procedure Qualification Record) support per ASME IX, EN ISO 15614.

4. Product Range: Titanium Wire

Product Description	Alloy Grades	Diameter, mm	Coil Weight, kg	Standard	Application
CP titanium welding wire	VT1-00sv, VT1-0sv	0.8, 1.0, 1.2, 1.6, 2.0, 2.5, 3.0, 4.0, 5.0, 6.0, 7.0	5-30	AWS A5.16, AMS 4951, GOST 27265-87	GTAW of CP titanium
Structural alloy welding wire	VT6sv, VT20-1sv, VT20-2sv	0.8, 1.0, 1.2, 1.6, 2.0, 2.5, 3.0, 4.0	5-25	AWS A5.16, AMS 4954, OST 1 90015-77	VT6/Gr5, VT20 welding, high-load joints
Marine welding wire	PT-7Msv, OT4-1sv, OT4sv, 2V	1.0, 1.2, 1.6, 2.0, 2.5, 3.0, 4.0	10-30	AWS A5.16, TU 1-809-273-81	Ship hulls, piping, bulkheads
Additive manufacturing wire (WAAM)	Ti-6Al-4V, VT1-0/Gr2	1.0, 1.2, 1.6	15-30	AMS 4954	Aerospace WAAM part production
Spring wire	VT1-0/Gr2, VT6/Gr5	0.5-5.0	up to 50	ASTM B863, TU 1-805-014	Springs, locking mechanisms
Medical wire	VT1-00/Gr1, Ti-6Al-7Nb	0.1-2.0	0.5-5	ASTM F67, ASTM F136, ISO 5832-2	Implants, dental, surgical
Mesh and filter wire	VT1-0/Gr2	0.2-2.0	10-30	ASTM B863, TU 1-92-117	Woven filters, separators
Anodic protection wire	VT1-00/Gr1, 2V	2.0-5.0	20-50	ASTM B863, TU 1-805-178	Pipeline CP systems
Fastener production wire	VT16	1.0-6.0	15-30	ASTM B348, OST 1-90202-75	Bolts, nuts, rivets
Pd-alloyed welding wire	VT2sv	1.0-3.0	10-20	ASTM B863, TU 1-805-042	Chemical processing, acids

5. Customs Classification and HS Codes

HS Code	Description	Duty Rate	VAT/GST	Notes
8108.90.30.10	Wire for aero-engines	0% with export license	Exempt	ITAR/EAR license

HS Code	Description	Duty Rate	VAT/GST	Notes
8108.90.30.80	Wire, other	Per destination tariff	Per local regulation	Conformance certificate
8108.20.00.50	Titanium powder (for thermal spray)	Standard rate	Per local regulation	Plasma spray applications

6. Application Recommendations

Welding with Wire:

- Polarity: DCEP for TIG, DCEN for MIG.
- Shielding gas: Argon 99.999% purity, flow rate 12-18 L/min.
- Wire feed speed: 2-8 m/min depending on diameter and material thickness.

3D Printing (WAAM):

- Ti-6Al-4V wire deposition at 1.2 mm diameter: 120-160 A, 18-22 V.
- Interpass temperature $\leq 150^{\circ}\text{C}$ to prevent macrosegregation.
- Post-build stress relief: 750°C vacuum anneal.

7. Terms of Supply and Contact Information

Standard Supply Terms:

- MOQ: 10 kg (stock items); 100 kg (mill production).
- Lead times: 7-15 days (stock); 30-60 days (mill production).
- Incoterms 2020: EXW, FCA, CIP, DAP, DDP (select destinations).

Contact Information:

- Client Services Department:
- WhatsApp: +86 132 50100874
- Telegram: @China_metal_supply
- Email: zakaz@metal-asia.pw
- Official Website: www.metal-asia.pw

Author: [Milosh Kovachevi](#) -- Technical Director for Metallurgical Procurement, Metal-Asia.pw.

Metal-Asia.pw provides integrated procurement of titanium alloy products from China, including RFQ/RFP response support for government and defense contracts, full Supply Chain Compliance management (ITAR/EAR/REACH/DFARS), Pre-Shipment Inspection (NDT, UT, chemical verification), and turnkey customs clearance. For a comprehensive overview of our service portfolio, visit www.metal-asia.pw.

This commercial supply proposal is provided for informational purposes and does not constitute a binding offer.