

MILL PRODUCTS / FABRICATED PRODUCTS / SHOP & FIELD REPAIR / WELD WIRE



**TITANIUM / TANTALUM / ZIRCONIUM / HASTELLOY® / INCONEL® / MONEL®
NICKEL / DUPLEX STAINLESS STEEL / AUSTENITIC STAINLESS STEEL**



Who We Are

TRICOR INDUSTRIAL is a globally recognized group of companies focused on distribution of mill products, equipment manufacturing and repair of titanium, zirconium, tantalum, high nickel alloys and stainless steels. Our products are shipped worldwide to support the industries that utilize the materials that we specialize in.

TRICOR INDUSTRIAL BRANDS



BUSINESS DIVISIONS OF TRICOR



Industrial Metals Distribution



Fabricated Equipment



Field Services / Fabrication



**Aerospace / Medical
Metals Distribution**



Weld Wire



Custom Forgings



One of Four Manufacturing Bays at Tricor Metals Wooster, OH Facility

TRICOR METALS LOCATIONS



Tricor Metals – Ohio Division

Headquarters, Manufacturing & Distribution
 Wooster, OH
 150,000 Sq. Ft.

Located 60 Miles South of Cleveland, OH
 Access to the Port of Baltimore, MD



Tricor Metals –Texas Division

Manufacturing & Distribution
 Conroe, TX
 49,000 Sq. Ft.

Located 40 Miles North of Houston, TX
 Access to the Port Of Houston, TX

Service Center

Tricor Metals has one of the world's most complete inventories of titanium, titanium alloy, zirconium 702 and tantalum mill products in ASTM and AMS grades including sheet, plate, pipe, forgings, fittings, bar, billet, wire, tubing, and fasteners. We offer advanced processing including water jet cutting, saw cutting, and shearing. We provide custom parts manufacturing and just-in-time inventory for 'blanket' order processing.



COMMONLY STOCKED MATERIALS / PRODUCTS

Form	Titanium Grade 1	Titanium Grade 2	Titanium Grade 4	Titanium Grade 5	Titanium Grade 7	Titanium Grade 12	Titanium Grade 23	Zirconium 702	Tantalum	Tantalum w 2.5% Tungsten
Sheet	.016" - .125"	.008" - .157"	.010" - .125"	.016" - .125"	.040" - .125"			.040" - .125"	.015" - .050"	.015" - .125"
Plate	.188" - .625"	.188" - 4.00		.187" - 4.00"	.188" - 1.50"	.188" - 1.50"		.188" - 1.50"		.25"
Tube		1/8" - 2.0"			3/4" - 1.0"			1/2" - 2.0"		1/2" / 3/4" / 1.0" / 1 1/4" / 2.0"
Pipe		1/8" - 12" Sch 10 / 40 / 80			3/4" - 6" Sch 10 / 40	Build to Order		1/2" - 8 Sch 10 / 40	N/A	N/A
Stub Ends		1/2" - 12" Sch 10 / 40 / 80			3/4" - 4"	Build to Order		1/2" - 8 Sch 10 / 40 / 80	N/A	N/A
Flanges		1/2" to 8" 150# / 300# RFSO / WN / BLIND			3/4" to 6" 150# / 300# RFSO / WN / BLIND	Build to Order		1/2" to 8" 150# / 300# RFSO / WN / BLIND	N/A	N/A
90° Elbows		1/2" - 12" Sch 10 / 40 / 80			3/4" - 6" Sch 10 / 40	Build to Order		1" - 8" Sch 10 / 40	N/A	N/A
Tees		1/2" - 12" Sch 10 / 40 / 80			3/4" - 6" Sch 10 / 40	Build to Order		3/4" - 8" Sch 10 / 40	N/A	N/A
Reducers		3/4" - 8" Sch 10 / 40			3/4" - 6" Sch 10 / 40	Build to Order		3/4" - 8" Sch 10 / 40	N/A	N/A
Couplings		1/8" - 2" 3000# NPT			3/4" - 2" 3000# NPT	Build to Order		1/2" - 2" 3000# NPT	N/A	N/A
Fasteners		1/4" - 5/8"							1/4" - 1/2"	1/4" - 1/2"
Round Bar		1/8" - 13"	1.0" - 6"	1/16" - 14"	1/4" - 11"	1.0" - 13"	3/32" - 4"	1/4" - 13"	1/4" - 2.5"	1/4" - 2"
Square Bar		1/2" - 1.0"								
Custom Forgings		YES	YES	YES	YES	YES	YES	YES		
Welding Wire	3/32"	.045" - 1/8"	.045" - .125"	.045" - .125"	1/16" - 1/8"	.045" - 1/8"	3/32" -	.045" - 1/8"		

Tricor Metals can order or make any materials / products listed above to your project requirements. ***For additional options of butt weld pipe fittings please feel free to send an inquiry. Please contact Tricor Metals Sales Department for more information at 1-800-421-5141 Ext. 2208 or via email at sales@tricormetals.com.



Fabricated Products

Manufacturing Capabilities

Tricor Metals has two fabrication facilities strategically located in the United States — Our headquarters located in Wooster, OH sixty miles south of Cleveland, OH and another in Conroe, TX 40 miles north of Houston.

Our in house design and fabrication capabilities are:

- **Diameter - 15 Feet**
- **Length - 150 Feet**
- **Weight - 100,000 Lbs**

Tricor Metals has a multidisciplinary engineering staff that is capable of thermal and mechanical design of heat exchangers, pressure vessels, tanks, columns, piping system and accessory equipment to the following design codes.

Design Codes:

- ASME Section VIII Division 1
- ASME Section VIII Division 2
- CRN (Canadian Registration)
- PED (Pressure Equipment Directive)
- TEMA
- API
- AWS

Tricor Metals utilizes the most updated computer software in the design of the equipment it manufactures listed below:

- PV Elite
- Autocad
- HTRI
- Aspen Heat Exchanger Design and Rating

In house welding procedures include:

- FCAW (Flux Core Arc Welding)
- SMAW (Submerged Arc Welding)
- GMAW (MIG)
- PAW (Plasma Arc Welding)
- GTAW (TIG)
- KTig

Common testing and inspection procedures available at **Tricor Metals** are:

- Material Traceability
- Visual Inspection
- PMI
- Dimensional Inspection
- Dye Penetrant Testing
- Ultrasonic Testing
- Mag Particle Testing
- Eddy Current Testing
- X-Ray Testing
- Helium Leak Testing
- Hydrostatic Testing



18 FT X 1.0" THICK HYDRAULIC PLATE SHEAR



350 TON X 12 FOOT LONG PRESS



2.25" THICK X 10 FT WIDE ROLLING CAPABILITIES



10 FT SEMI AUTOMATIC PLATE SEAM WELDER



MANUAL TIG TITANIUM WELD



MANUAL TIG 316L STAINLESS STEEL WELD



QUICK MILL HIGH SPEED DRILLING CAPABILITES



10 FT SEMI AUTOMATIC PIPE WELDER



TITANIUM TUBE WELDING



IN HOUSE TUBESHEET / BONNET FACING



CLEAN ROOM FOR TANTALUM / NIOBIUM WELDING

Fabricated Products

Materials / Products Offered

Tricor Metals has decades of experience in the design and fabrication of a large variety of corrosion resistant alloys including:

- Titanium
- Tantalum
- Zirconium 702
- Niobium
- Hastelloy C®
- Hastelloy B®
- Nickel
- Inconel®
- Monel®
- Super Duplex Stainless Steel
- Duplex Stainless Steel
- Austenitic Stainless Steel
- Explosion Clad

Equipment Offered:

- Pressure Vessels
- Tanks
- Columns
- Heat Exchangers
- Condensers
- Falling Film Evaporators
- Vaporizers
- Pipe Spooling
- Ducts
- Dip Pipes
- Build To Print Fabrications
- Reactors
- Crystallizers
- Strippers
- Scrubbers

Construction Types Offered:

- Solid
- Loose Lined
- Explosion Clad
- Weld Overlay



TITANIUM GRADE 1 EXPLOSION CLAD REACTOR



AL6XN SCRUBBER COLUMN



TITANIUM GRADE 2 COLUMN

SOLID



TITANIUM GRADE 2 HEAT EXCHANGER



TITANIUM GRADE 2 PIPE / FITTINGS



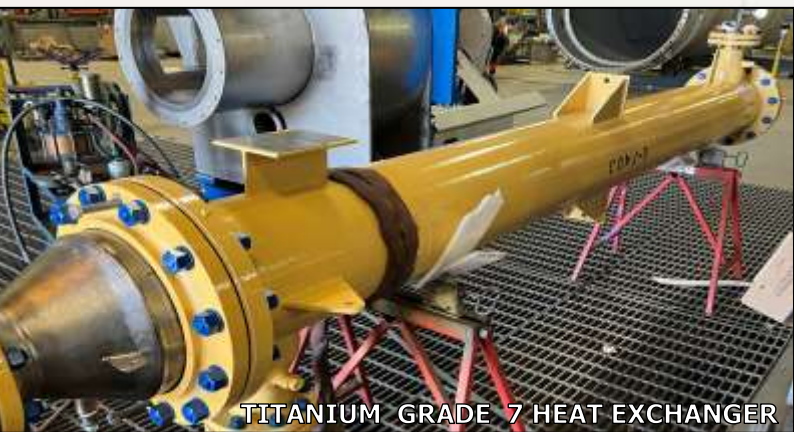
TANTALUM HEAT EXCHANGER



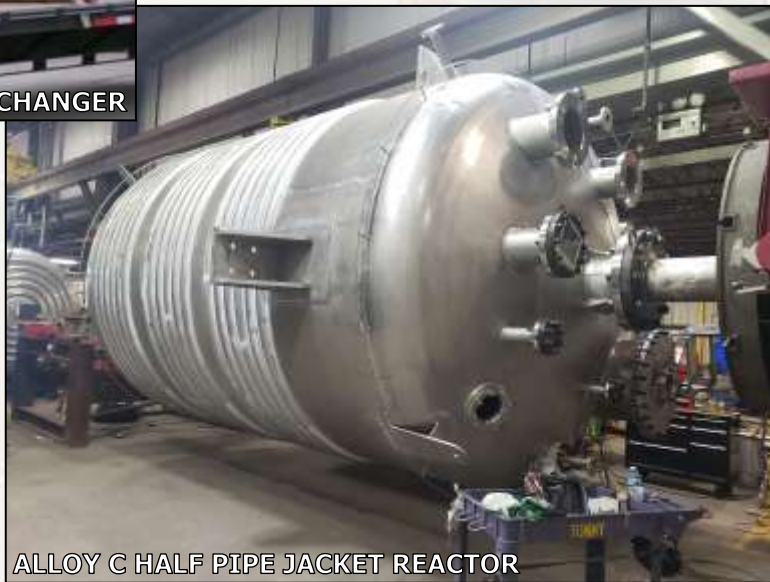
ZIRCONIUM 702 HEAT EXCHANGER



TITANIUM GRADE 16 HEAT EXCHANGERS



TITANIUM GRADE 7 HEAT EXCHANGER



ALLOY C HALF PIPE JACKET REACTOR

Fabricated Products

Build To Print Manufacturing

Tricor Metals lends its materials and fabrication expertise to many globally recognized technology and OEM equipment suppliers in manufacturing their products in the materials that we specialize in. Some of the products that we fabricate regularly are listed below:

- Dip Pipes
- Gas Spargers
- Spray Nozzles
- Acid Feed Lances
- Mixing Pipes
- Static Mixers
- Fan Wheels
- Filter Housings
- Venturi Mixers
- Liquid Distributors
- Column Internals
- Nozzle Liners
- Coils
- Augers
- Agitators
- Autoclave Internals



TITANIUM GRADE 2 FAN WHEEL



TANTALUM ACID SPARGER



TITANIUM GRADE 2 SEGMENTED WALL



TITANIUM AGITATOR HUB ASSEMBLY



TITANIUM GRADE 7 EDUCTOR



TITANIUM GRADE 2 DIP PIPES



TITANIUM GRADE 2 FILTER HOUSINGS



316L STAINLESS STEEL REACTOR MANWAY COVERS



TITANIUM AUTOCLAVE WALLS

Site / Shop Services

Repair / Alteration / Field Builds

Tricor Metals offers a full range of shop and field repair, alteration and fabrication services. Tricor Metals has a dedicated field crew ready to perform those critical tasks, 24 hours a day, 7 days a week regardless of the original manufacturer. Our crew is available for projects anywhere in the world.

Services commonly offered:

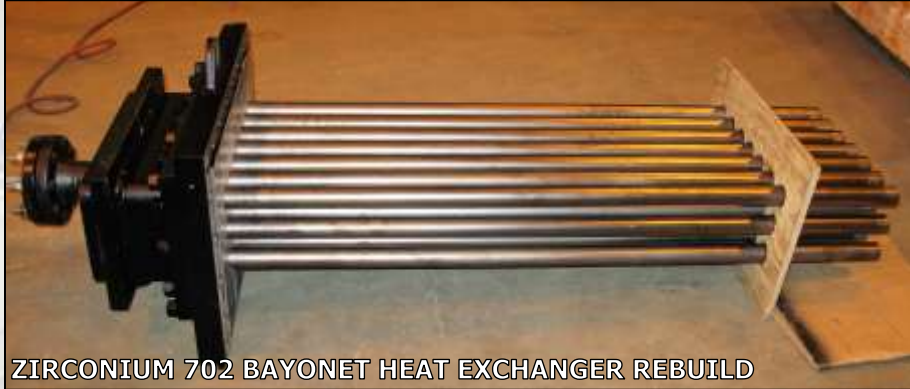
- Repairs / Alterations of Solid, Lined and Explosion Clad Pressure Vessels
- Repair / Alterations of Mining Autoclaves
- Heat Exchanger Cleaning / Refurbishment
- Field Fabricated Tanks
- Field Welding of Piping



ZIRCONIUM LINED PRESSURE VESSEL REPAIR



TANTALUM LINE



ZIRCONIUM 702 BAYONET HEAT EXCHANGER REBUILD



TANTALUM HEAT EXCHANGER REBUILD



TANTALUM HEAT EXCHANGERS FOR CLEANING AND REFURBISHMENT



TANTALUM LINED BONNET REPAIR



D BONNET REPAIR



TANTALUM BAYONET HEAT EXCHANGER



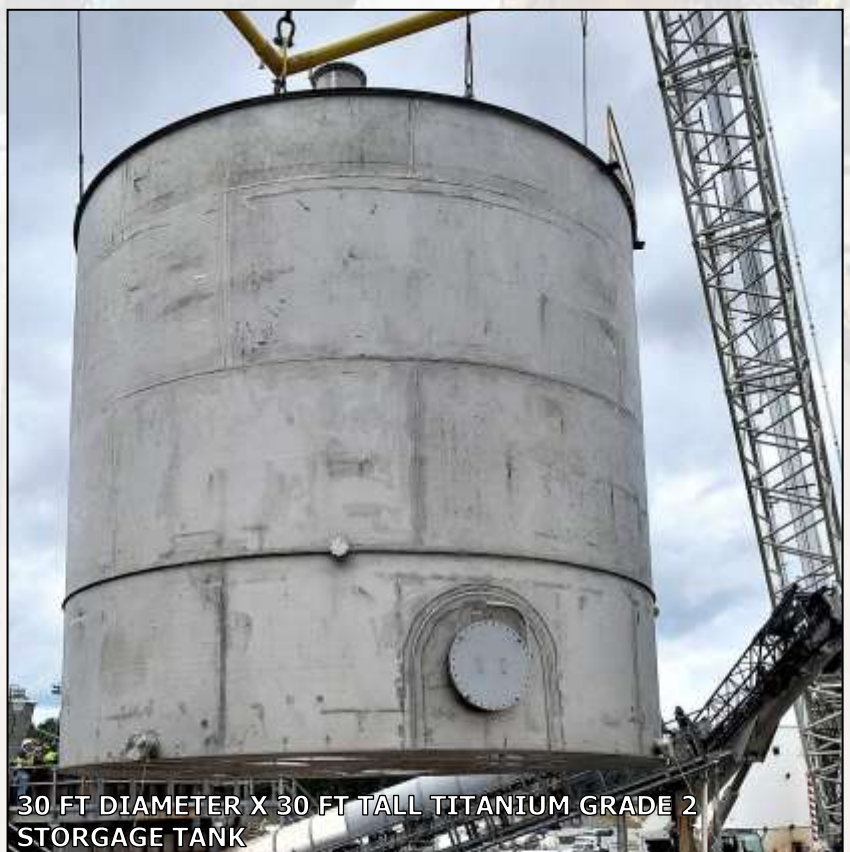
TANTALUM LINED CARBON STEEL DIP PIPE REPAIR



TANTALUM HEAT EXCHANGER REBUILT



ZIRCONIUM LINED PRESSURE VESSEL REPAIR



30 FT DIAMETER X 30 FT TALL TITANIUM GRADE 2 STORAGE TANK

Fabricated Products

Plate & Frame Heat Exchangers

Tricor Metals designs and builds bolted and gasketed plate heat exchangers (PHEs) for many industries including Chemical, Refinery, Power Generation, Metal Processing, Lube Oil Cooling, and many more.

We stock components including SS316 and Titanium plates for speedy plate heat exchanger building and fulfillment. Our goal is to be the most responsive PHE supplier for you.

We offer spare parts and refurbishing services for nearly all brands of PHEs. Contact us to learn more our plate and frame heat exchanger offerings.

Plate Materials:

- SS316
- SS304
- Titanium
- 254SMO
- Others Upon Request

Gasket Materials:

- NBR
- EPDM
- Viton

Industries Served:

- Power Generation
- Food / Dairy
- Hydraulic Oil Coolers
- Chemical
- HVAC
- Pulp & Paper
- Pharmaceutical
- Refinery
- Off-Shore Technology
- Water Purification
- Food & Beverage Industry
- Water Treatment



Astrolite Alloys

High Performance welding wire for aerospace, power, commercial applications

AMS	AWS	OMAT	ALLOY
4180	A5.10 ER1100		Astrolite® 1100 Aluminum
4181	A5.10 R-A356.0		Astrolite® 356 & 4008 Aluminum
4184	A5.10 ER4145	337	Astrolite® 4145 Aluminum
4189	A5.10 ER4643		Astrolite® 4643 Aluminum
4190	A5.10 ER4043	310	Astrolite® 4043 Aluminum
4191	A5.10 ER2319	3/264	Astrolite® 2319 Aluminum
4246	A5.10 R-A 357.0		Astrolite® 357 & 4011 Aluminum
4395	A5.19 ER AZ92A	308	Astrolite® AZ92A Magnesium
4396	A5.19 EREZ33A		Astrolite® EZ33A Magnesium
--	A5.16 ERTI-1		Astrolite® CP Ti - ERTI 1
4951	A5.16 ERTI-2	366	Astrolite® CP Ti - ERTI 2
4952	--	3/250	Astrolite® Ti 6-2-4-2
--	A5.16 ERTI-7		Astrolite® TiPd - ERTI 7
4954	A5.16 ERTI-5	3/145	Astrolite® Ti 6AL-4V
4956	A5.16 ERTI-23		Astrolite® Ti 6AL-4V ELI
--	A5.24 ERZR2		Astrolite® Ti 15-3-3-3 (BMS7-331)
5680	A5.9 ER347		Astrolite® ZR 702
5683	--		Astrolite® 347 Stainless
5687	--		Astrolite® Alloy 42
5689	--		Astrolite® Alloy I-600
5690	A5.9 ER316		Astrolite® 321 Stainless
--	A5.9ER316L		Astrolite® 316 Stainless
--	A5.9 ER308		Astrolite® 316L Stainless
--	A5.9 ER308L		Astrolite® 308 Stainless
5694	A5.9 ER310	3/104	Astrolite® 308L Stainless
5697	--		Astrolite® 310 Stainless
5776	A5.9ER410		Astrolite® 304 Stainless
5778	--	3/167	Astrolite® 410 Stainless
5784	A5.9 ER312	3/163	Astrolite® Alloy 69/X750
5786	A5.14 ERNIMO-3	333	Astrolite® 312 Stainless (29-9)
5789	--	3/83	Astrolite® Alloy H-W
5794	--	3/166	Astrolite® Alloy 31
5796	--	3/64	Astrolite® Alloy N-155 (Multimet)
5798	A5.14 ERNICRMO-2	3/165	Astrolite® Alloy L-605 (H-25)
5800	--		Astrolite® Alloy H-X
5801	--		Astrolite® René 41
5804	--		Astrolite® H-188
5817	--		Astrolite® A286 Stainless (STD)
5821	--		Astrolite® Greek Ascology
5823	--	3/54	Astrolite® 410 MOD
5825	--		Astrolite® Jethete M190
5828	--	3/99	Astrolite® 17-4 Stainless
5832	A5.14 ERNIFECR-2	3/206	Astrolite® Waspaloy
5836	A5.14 ERNICR-3	3/170	Astrolite® Alloy 718
5837	A5.14 ERNICRMO-3	3/172	ATI 718Plus®
5838	--		Astrolite® Alloy 82
5839	A5.14 ERNICRMO-1		Astrolite® Alloy 625
5966	--	3/62	Astrolite® H-5
6457	--		Astrolite® Alloy 230W
6458	--		Astrolite® C-263
--	AWS A5.14 ERNI-CL		Haynes® 282® alloy
--	AWS A5.14 ERNI-1		Astrolite® 4130VM
--	AWS A5.9 ER430		Astrolite® 17-22VM
PWA 694, GE B50TF55,MSRR.9500-226		3/82	Astrolite® Nickel 200
			Astrolite® Nickel 61
			Astrolite® 430 Stainless
			Astrolite® Alloy 694

Corrosion Alloys Available

--	AWS A5.14 ERNIMO-10	Haynes™ B-3
--	AWS A5.14 ERNICRMO-10	Haynes™ C-22
--	AWS A5.14 ERNICRMO-4	Haynes™ C-276
--	AWS A5.14 ERNICRMO-17	Haynes™ C-2000
--	AWS A5.14 ERNICRMO-11	Haynes™ G-30
--	AWS A5.14 ERNICRCOMO-1	Astrolite® Alloy 617

New Alloys

-- ATI718Plus®
 -- Haynes®282®

MS20995C & ASTM A580
 MS20995N & AMS 5687
 MS9226
 MS20995NC & AMS 4730
 Alloy M-400 Lockwire

Alloy 694
 302/304 Lockwire
 I-600 Lockwire
 Oxidized 600 Lockwire

Straight lengths, spools, special identifications, DFARS-compliant, exclusive Astrolite® cleaning and packaging options are available for the highest commercial cleanliness standards available for welding wire.

Thermoelectric testing, PMI & XRF testing, with precise processing to insure our welding wires are accurate each time and every time.

ISO 9001:2008 QUALITY MANAGEMENT SYSTEM REG TM OF HAYNES INT'L REG TM OF ATI



www.tricormetals.com

www.astrolite.com

www.tricoralloys.com

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NICKEL / DUPLEX STAINLESS STEEL / AUSTENITIC STAINLESS STEEL**



Our Locations

Tricor Metals - Ohio Division Headquarters

3225 West Old Lincoln Way
Wooster, OH 44691

Toll Free: 1-800-421-5141
www.tricormetals.com

Tricor Metals Texas Division

3517 North Loop 336 West
Conroe, TX 77304

Toll Free: 1-888-987-4267
www.tricormetals.com

Tricor Metals Michigan Division

44696 Helm Street
Plymouth, MI

Toll Free: 1-800-421-5141
www.tricormetals.com

Tricor Alloys / Astrolite Alloys

201 Bernoulli Circle
Unit B & C
Oxnard, CA 93030

Toll Free: 1-800-235-5935
www.astrolite.com