

Plymouth Tube Company

TUBING, EXTRUDED & COLD DRAWN SHAPES CATALOG



Carbon & Alloy Tubing

Specifications, Sizes & Grades at a Glance

Specifications	Grade		OD Range S = Seamless W = Welded		Wall Range A = Average Wall M = Minimum Wall		Max. Length	
			inches	mm	inches	mm	ft	m

Boiler and Pressure Tubing

-106 Seamless Carbon Steel Tubing for High Pressure Service	A B C	Cold Drawn Hot Finished	1.250 - 5.563 1.900 - 5.000	31.75 - 141.30 48.26 - 127.00	0.149 - 0.650 M 0.180 - 0.570 M	3.78 - 16.51 M 4.57 - 14.48 M	86 65	26 20
-179 Seamless Cold Drawn Low Carbon Steel Heat Exchanger & Condenser Tubing		Cold Drawn Hot Finished	1.250 - 5.563 1.900 - 5.000	31.75 - 141.30 48.26 - 127.00	0.149 - 0.650 M 0.180 - 0.570 M	3.78 - 16.51 M 4.57 - 14.48 M	86 65	26 20
-192 Seamless Carbon Steel Tubing for High Pressure Service		Cold Drawn Hot Finished	1.250 - 5.563 1.900 - 5.000	31.75 - 141.30 48.26 - 127.00	0.149 - 0.650 M 0.180 - 0.570 M	3.78 - 16.51 M 4.57 - 14.48 M	86 65	26 20
-209 Seamless Carbon-Molybdenum Alloy Steel Boiler & Superheater Tubing	T-1 T-1a T-1b	Cold Drawn Hot Finished	1.250 - 5.563 1.900 - 5.000	31.75 - 141.30 48.26 - 127.00	0.149 - 0.650 M 0.180 - 0.570 M	3.78 - 16.51 M 4.57 - 14.48 M	86 65	26 20
-210 Seamless Medium Carbon Steel Boiler & Superheater Tubing	A-1 C	Cold Drawn Hot Finished	1.250 - 5.563 1.900 - 5.000	31.75 - 141.30 48.26 - 127.00	0.149 - 0.650 M 0.180 - 0.570 M	3.78 - 16.51 M 4.57 - 14.48 M	86 65	26 20
-213 Seamless Alloy Steel Boiler & Superheater Tubing	T-2 T-5 T-11 T-12 T-22	Cold Drawn Hot Finished	1.250 - 5.563 1.900 - 5.000	31.75 - 141.30 48.26 - 127.00	0.149 - 0.650 M 0.220 - 0.570 M	3.78 - 16.51 M 5.59 - 14.48 M	86 65	26 20

Mechanical Tubing (Special Shape OD/ID Combinations Available in Cold Drawn Seamless)

-513 Electric Resistance Welded Carbon Steel Tubing (DOM Type 5 & 6)	Carbon: 1010 to 1020 (other grades upon request)		0.250 - 1.750	6.35 - 44.45	0.028 - 0.120 A	0.71 - 3.05 A	26	8
-519 Seamless Carbon & Alloy Steel Tubing	Carbon: 1008 to 1070, 1500 Alloy: 4100 5100 8600 series	Cold Drawn Hot Finished	0.125 - 5.563 1.875 - 5.000	3.18 - 141.30 47.63 - 127.00	0.020 - 0.750 A 0.200 - 0.950 A	0.51 - 19.05 A 5.08 - 24.13 A	86 65	26 20
MIL-T 6736 B (Condition A or N) & AMS 6360, 6371, 6381 Cold Drawn Seamless Aircraft Quality 4130 Tubing	4130		0.125 - 5.563	3.18 - 141.30	0.020 - 0.750 A	0.51 - 19.05 A	86	26

Hydraulic Fluid Line Tubing

SAE J-525 Electric Resistance-Welded Cold-Drawn Low Carbon Hydraulic Tubing HYDRABRITE® Bright annealed suitable for bending, flaring and other special applications	1010		0.250 - 1.375	6.35 - 34.93	0.028 - 0.120 A	0.71 - 3.05 A	26	8
SAE J-2467 Electric Resistance-Welded Cold-Drawn Low Carbon Hydraulic Tubing Bright annealed suitable for high pressure applications Available upon request pending raw material availability	1021		0.250 - 1.375	6.35 - 34.93	0.028 - 0.120 A	0.71 - 3.05 A	26	8

Special Shape Tubing

Shapes include: rounds, squares, rectangles, triangles, hexagons, streamline/teardrops, symmetrical and non-symmetrical, custom OD/ID shape combinations	Up to 40% carbon steel, chrome-moly and heat treatable alloys		0.250 - 5.000	6.35 - 127.00	0.020 - 0.500	0.51 - 12.70	72	22
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Value added capabilities: cutting and end finishing available upon request.

Other sizes, grades and specifications available upon request.



Corporate Headquarters
29W150 Warrenville Rd., Warrenville, Illinois 60555
<http://www.plymouth.com>

To receive technical information, obtain a quote or place an order:
CALL 1-800-323-9506 or 1-630-393-3550
FAX: 1-630-393-3551 • E-MAIL: carbon_alloy@plymouth.com



Stainless Tubing

Specifications, Sizes & Grades at a Glance

Specifications	Grade	OD Range		Wall Range		Max. Length	
		S = Seamless W = Welded		A = Average Wall M = Minimum Wall			
		inches	mm	inches	mm	ft	m

Pressure Tubing ASTM A and ASME SA Specifications

-213 Seamless Austenitic Alloy Steel Boiler, Superheater and Heat Exchanger Tubes U-Bending Available	TP304 TP304L TP316	TP316L TP317 TP317L	TP321 TP347	0.125 - 1.500	3.18 - 38.10	0.016 A - 0.148 A	0.41 A - 3.76 A	130	39
-249 Welded Austenitic Steel Boiler Superheater and Heat Exchanger Tubes U-Bending Available	TP304 TP304L TP316	TP316L TP317 TP317L	TP321 TP347	0.125 - 2.000	3.18 - 50.80	0.016 A - 0.120 M	0.41 A - 3.05 M	130	39
Above grades also available in H and N grades.									
-268 Seamless and Welded Ferritic and Martensitic Stainless Steel Tubing for General Service U-Bending available	TP430 TP430Ti TP439	S44627 S44660 S44735	SEA-CURE® AL29-4C® E-BRITE®	0.500 - 2.000	12.70 - 50.80	0.016 A - 0.134 A	0.40 A - 3.40 A	130	40
-269 Seamless and Welded Austenitic Stainless Steel General Service Tubes U-Bending Available	TP304 TP304L TP316	TP316L TP317 TP317L	TP321 TP347	S: 0.125 - 1.500 W: 0.125 - 2.000	S: 3.18 - 38.10 W: 3.18 - 50.80	S: 0.016 A - 0.148 A W: 0.016 A - 0.148 A	S: 0.41 A - 3.76 A W: 0.41 A - 3.76 A	130	39
-270 Seamless and Welded Austenitic Stainless Steel Sanitary Tubing	TP304 TP304L	TP316 TP316L		S: 0.125 - 1.250 W: 0.125 - 1.250	S: 3.18 - 31.75 W: 3.18 - 31.75	S: 0.016 A - 0.065 M W: 0.016 A - 0.049 M	S: 0.41 A - 1.65 M W: 0.41 A - 1.24 M	60	18
-632 Seamless and Welded Austenitic Stainless Steel Tubing (Small Diameter) for General Service	TP304 TP304L TP304N	TP304LN TP316 TP316L	TP316N TP316LN TP321	S: 0.125 - 0.500 W: 0.125 - 0.500	S: 3.18 - 12.70 W: 3.18 - 12.70	S: 0.016 A - 0.065 M W: 0.016 A - 0.049 M	S: 0.41 A - 1.65 M W: 0.41 A - 1.24 M	130	39
-789 Welded Ferritic/Austenitic Stainless Steel Tubing for General Service	TP2205 Alloy 2003			W: 0.625 - 2.000	W: 15.88 - 50.80	W: 0.016 A - 0.109 A	W: 0.40 A - 2.77 A	130	39

Feedwater Heater Tubing ASTM A and ASME SA Specifications

-688 XtraLowStress™ Welded Stainless Steel Feedwater Heater Tubes U-Bending Available	TP304 TP304L TP304N	TP304LN TP316 TP316L	TP316N TP316LN	0.625 - 1.000	15.88 - 25.40	0.028 A - 0.134 A	0.71 A - 3.40 A	130	39
-803 Welded Ferritic Stainless Steel Feedwater Heater Tubes U-Bending Available	TP439 S44735 S44627	S44660 AL29-4C®	SEA-CURE® E-BRITE®	0.625 - 1.000	15.88 - 25.40	0.028 A - 0.109 A	0.71 A - 2.77 A	130	40

Commercial Instrumentation Tubing ASTM A and ASME SA Specifications

-213 Seamless Austenitic Alloy Steel Boiler, Superheater and Heat Exchanger Tubes	TP304 TP304L	TP316 TP316L		0.125 - 1.00	3.18 - 25.40	0.016 A - 0.109 M	0.41 M - 2.77 M	140	43
-269 Seamless and Welded Austenitic Stainless Steel General Service Tubes	TP304 TP304L	TP316 TP316L		0.125 - 1.00	3.18 - 25.40	0.016 A - 0.109 M	0.41 M - 2.77 M	140	43

Nuclear Instrumentation Tubing ASTM A and ASME SA Specifications

-213 ASME Section III - Class 1 & 2 See ASTM B and ASME SB 163 and 167 for Alloy 600	TP304 TP304L	TP316 TP316L		0.125 - 1.00	3.18 - 25.40	0.016 A - 0.109 M	0.41 M - 2.77 M	140	43
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Mechanical Tubing ASTM A and ASME SA Specifications

-511 Seamless Stainless Steel	TP304 TP304L	TP316 TP316L	TP317 TP317L	TP321 TP347	0.125 - 1.500	3.18 - 38.10	0.020 A - 0.148 A	0.51 A - 3.76 A	130	39
-554 Welded Stainless Steel Mechanical Tubing	TP304 TP304L	TP316 TP316L	TP317 TP317L	TP321 TP347	0.125 - 2.000	3.18 - 50.80	0.020 A - 0.120	M 0.51 A - 3.05 M	130	39

Pressure Tubing ASTM B and ASME SB Specifications Other corrosion resistant nickel based alloys available upon request.

-163 Seamless Nickel and Alloy Condenser and Heat Exchanger Tubes	Alloy 600			0.125 - 1.000	3.18 - 25.40	0.016 A - 0.065 M	0.41 A - 1.65 M	130	39
-676 UNS N08367 Welded Tube U-Bending Available	AL6XN®			0.500 - 2.000	12.70 - 50.80	0.016 A - 0.134 A	0.40 A - 3.40 A	130	40

Aircraft Specifications All specifications to Latest Revision

				(Includes all intermediate sizes)				ft	m		
AMS 5560	AMS 5566	CVA1-404	MIL-T 8504	TP304	TP304L	inches	mm	inches	mm	50	15
AMS 5563	AMS 5567	DMS 1578	MIL-T 8506								
AMS 5564	AMS 5569	MIL-T 5695	MMS-261	0.250	6.35	0.016 A - 0.049 A	0.41 A - 1.24 A				
AMS 5565	AMS-T-6845	MIL-T 6845	MMS-296	0.375	9.53	0.016 A - 0.065 A	0.41 A - 1.65 A				
MIL-T 8973				TP316L		0.500	12.70	0.016 A - 0.065 A	0.41 A - 1.65 A		
AMS 5557	AMS 5576	MIL-T 8606	MIL-T 8973	TP321		0.625	15.88	0.016 A - 0.065 A	0.41 A - 1.65 A		
AMS 5570	AMS 5896	MIL-T 8808				0.750	19.05	0.016 A - 0.065 A	0.41 A - 1.65 A		
AMS 5546	AMS 5571	MIL-T 8606	MIL-T 8973	TP347		1.000	25.40	0.028 A - 0.065 A	0.71 A - 1.65 A		
AMS 5556	AMS 5580	MIL-T 8808						0.028 A - 0.065 A	0.71 A - 1.65 A		
AMS 5580	AMS 5581			Alloy 600	Alloy 625						



PLYMOUTH TUBE CO USA
Corporate Headquarters
 29W150 Warrenville Rd., Warrenville, Illinois 60555
<http://www.plymouth.com>

Information contained in these charts may change without notice. Contact Plymouth Tube Sales for current information or for requirements outside of the capabilities described above.

To receive technical information, obtain a quote or place an order:
CALL 1-800-323-9506 or 1-630-393-3550
 FAX: 1-630-393-3551 • E-MAIL: whitesls@plymouth.com



Extruded & Cold Drawn Shape Information

Flexibility:

- Wide variety of shapes and sizes
- Solid and hollow net and near-net shapes
- Easy die change versus roll changes in conventional hot rolling
- Faster deliveries for extrusions versus rigid rolling schedules

Cost Saving Extrusions:

There are savings, often dramatic, that can be made compared to weldments, forgings, brake forming, machining and other fabricating methods.

No Rolled-In Scale:

- Final form in one operation starting from a completely conditioned billet
- Better surface as extruded
- Easier finishing when ground, buffed or mechanically finished surface

Short Run Practicality:

- Relatively small quantities are feasible and economical
- Minimum quantities depend upon material

Minimum Run, Typical:

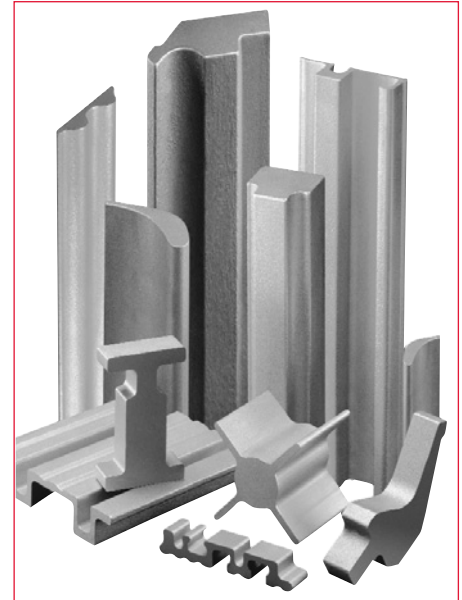
Carbon Steel	2,000 pounds (900 kg)
Stainless Steel	1,000 pounds (450 kg)
Titanium	250 pounds (110 kg)

Design Help:

Work with Plymouth Extruded Shapes at the design stage to take full advantage of the versatile extrusion process.

Plymouth Quality:

Plymouth has earned an international reputation for quality and consistent attention to detail. In addition to being approved by all major aircraft manufacturers, we are ISO 14001, ISO 9001 and AS9100B certified, and a TUV approved supplier. Ask to see our mill and audit our quality system.



Extruded	Net & Near-Net Shape Cross-Section Must Fit Within a Diameter:		Maximum Length	Minimum Thickness	
		Carbon and Alloy Steel Stainless Steel Titanium Hollow Bar	6.0 inch (150 mm) 5.5 inch (140 mm) 6.0 inch (150 mm) 1.0 - 4.375 inch (25 - 110 mm)	Depends on the size and cross-section of the shape. Up to 34 ft. (10 m) have been supplied.	0.187 inch (4.75 mm) Typical* 0.125 inch - 1.0 inch (3.2 mm - 25.4 mm)
Cold Drawn	Solid Shape Cross-Section Must Fit Within a Diameter:		Shape	Dimension	Size Range (inches)
		Carbon, Alloy & Nickel Alloy Titanium Stainless Steel	6.0 inch (150 mm) 6.0 inch (150 mm) 5.5 inch (140 mm)	Round Hexagon Rectangle / Square Max Circle Fit Special Shapes Min. Circle Fit Max. Circle Fit	Size - OD Across the Flats Area (Min. - Max) Must fit within a 5.75" Circle Area (Min. - Max.) Larger than a 1" Circle Must fit within a 5.75" Circle

Carbon & Alloy Steel Grades								Specifications Where Applicable		
1018	1030	1050	12L14	4340	8630	A588 Grade A		AMS 6382	AMS-S-6758	ASTM A 322
1020	1035	1060	4130	6150	8640			AMS 6415	ASTM A 36	ASTM A 576
1025	1040	10L18	4140	8620	9310			AMS-S-5000	ASTM A 105	ASTM A 588
1029	1045	1215	4150	86L20	A36					

Stainless Steel Grades								Specifications Where Applicable			
303	310	321	410	430	Jethete	AMS 5610	AMS 5629	AMS 5646	ASTM A 479	B50AF934	
304	316	330	416	13-8 Mo	Nitronic 33	AMS 5613	AMS 5639	AMS 5648	ASTM A 511	MSRR6506	
304L	316L	347	418	15-5 ph	2507**	AMS 5616	AMS 5640	AMS 5651	B50A365	MSRR6621	
304S	316S	403	420	17-4 ph	254SMO**	AMS 5621	AMS 5643	AMS 5659	B50A947	QQ-S-763	
309	316LS	405	422 Modified	Alloy 20	**Cold draw only	AMS 5627	AMS 5645	ASTM A 276	B50AF920		

Nickel Alloy Grades				Specifications Where Applicable			
Alloy 400	Alloy 600	A-286		AMS 5665	ASTM B 164	ASTM B 166	QQ-N-281
Alloy 405	Alloy 800	INVAR-36		AMS 5732	ASTM B 165	ASTM B 167	

Titanium Grades*			Specifications Where Applicable			
6AL-4V	6AL-6V-2SN	Commercially Pure Titanium	AMS 4935	DMS 1650	MIL-T-81556	MMS 1202

All specifications are to the latest revision.

*Actual minimum thickness allowed will be determined by material and overall width of the part.

INVAR-36 is a registered trademark of Carpenter Technology Corporation.
Information contained in these charts may change without notice.
Contact Plymouth for current information.



PLYMOUTH ENGINEERED SHAPES

A Member of Plymouth Tube Co.

201 Commerce Court, Hopkinsville, Kentucky 42240
http://www.plymouth.com/EngShapes

For Extruded and Cold Drawn Shapes:

CALL 1-800-718-7590 or 1-270-886-6631

FAX: 1-270-886-6662 • E-MAIL: EngShapes@plymouth.com



Shapes: For Value-Added Technical and Manufacturing Solutions

No other manufacturer in North America offers so much experience in special shape technology, or provides so many value-added options to meet your product specifications.

If your products or components require high quality precision shapes combined with high strength, tight tolerances, and superior physical and mechanical properties, consider Plymouth's shaped products. Solid Drawn shapes available in Alloy/Carbon, Stainless Steel, and Titanium, and Shaped Tubing available in Alloy/Carbon.

Cold Drawn Shapes – Solids

		Capability Range
Round	Size - OD	0.875 inch - 5.0 inch
Hexagon	Across the Flats	0.812 inch - 3.625 inch
Rectangle/Square	Area (Min. - Max.)	0.62 sq.inch - 11.00 sq.inch
Special Shapes	Area (Min. - Max.) Min. Circle Fit	0.62 sq.inch - 11.00 sq.inch Larger than a 1 inch circle
Carbon & Alloy Steel, Titanium		Typically must fit within a 6 inch (150 mm) circle
Stainless Steel, Nickel Alloy		Typically must fit within a 5.5 inch (140 mm) circle

Special Shape Tubing

- Shapes include: rounds, squares, rectangles, triangles, hexagons, streamline/teardrops, symmetrical and non-symmetrical, custom OD/ID shape combinations
- 0.250 inch - 5.00 inch OD, 0.020 inch - .500 inch Walls*
- Grades: up to 40% carbon steel, chrome-moly and heat treatable alloys

Solid and Hollow Extruded Hot Finished Shapes

- Carbon and Alloy Steel, Titanium: cross-section must fit within a 6.00 inch (150 mm) diameter circle
- Stainless Steel, Nickel Alloy: cross-section must fit within a 5.50 inch (140 mm) diameter circle

In addition to providing cost-effective product solutions, Plymouth shapes can also help you speed up and streamline manufacturing processes in the following ways:

- Reduced handling and labor costs
- Faster, more productive cycle times for on-time delivery and better customer service
- Net or near-net shape or pre-form results in fewer process steps with less waste.

To obtain more information on how Plymouth shapes can help you save time and money while reducing process steps, please call us. We ask that you provide the following information:

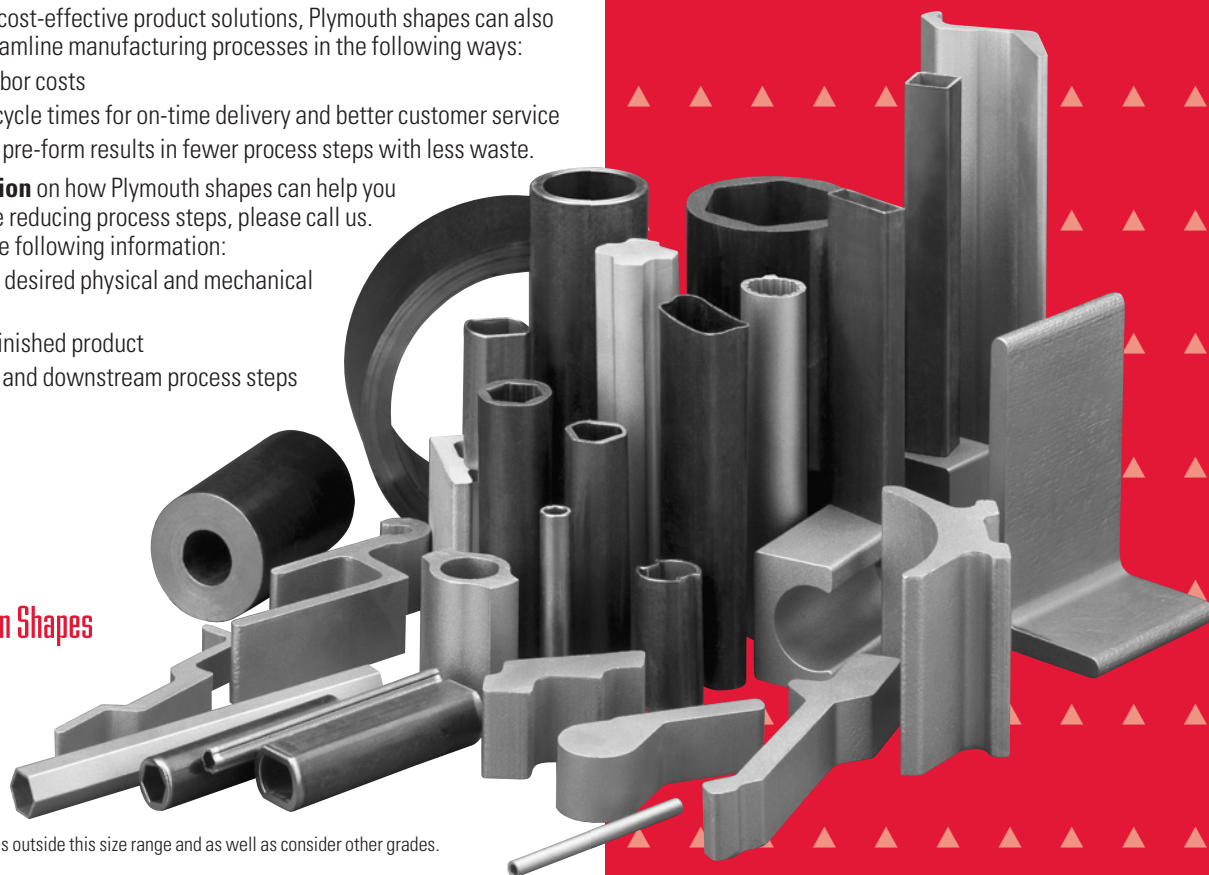
- Product print, grade, and desired physical and mechanical properties
- Dimensions of part and finished product
- Product/part application and downstream process steps
- Any other requirements

Special Tube Shapes

Phone: 800-323-9506 or
630-393-3550
Fax: 630-393-3551

Extruded and Cold Drawn Shapes

Phone: 800-718-7590 or
270-886-6631
Fax: 270-886-6662



*Plymouth Tube will evaluate shapes outside this size range and as well as consider other grades.

Plymouth Tube Company

General Information and Reference Data

Plymouth Tube Company, a privately held international supplier of specialty steel tubing, extruded and cold drawn steel products, was established in 1924 in Plymouth, Michigan. From our beginning as a one-plant, 15,000 square foot (1,394 square meter) operation, we have grown to eight manufacturing facilities in the United States. These plants comprise more than 1,600,000 square feet (148,645 square meters) of production capacity.

Our experience spans the era from the Spirit of St. Louis to modern day jet aircraft; from the air rifle to sophisticated NATO ordinance; continuous long length (150 feet or 45.7 meters) tubes for power plants to short cut lengths for automotive applications. Our experience and continuing commitment to innovative techniques for production of high quality products will meet or exceed your expectations.

Mill Locations

Locations: **Eupora, MS; Streator, IL;** and 2 mills in **Winamac, IN:** Cold Draw and Hot Mill. Cold drawn seamless carbon & alloy steel tubing is produced at the Winamac Cold Draw and Streator facilities for mechanical, boiler, and pressure applications. Specialty cold drawn tubing shapes produced in a variety of OD/ID combinations are available. ERW (Electric Resistance Welded) Drawn Over Mandrel (DOM) mechanical tubing is produced at Eupora. Seamless hot finished carbon & alloy steel tubing is manufactured at the Winamac Hot Mill for boiler, mechanical, and bearing applications. Our plant in Eupora, MS produces HYDRABRITE® J525 Welded and Drawn Hydraulic Fluid Line tubing. Value added capabilities such as cutting and end finishing are available upon request.

Our two stainless steel tube mills located in **West Monroe, LA** and **Salisbury, MD** produce seamless, as-welded, and welded cold drawn tubing for aircraft, heat exchanger, high purity gas systems, mechanical, pharmaceutical, instrumentation, and pressure applications where consistent high quality and cleanliness are essential. Our **East Troy, WI** facility produces SEA-CURE® super-ferritic stainless steel welded tubing and specialty alloys for condensers, feedwater heaters, heat recovery steam generators (HRSGs), heat exchangers, pool heaters, and desalination applications.

Extruded and Cold Drawn Shapes: Our **Hopkinsville, KY** facility operates a 2,000 ton extrusion press designed to produce extruded shapes and hollow products, and draw benches to produce drawn shapes in carbon steel, alloy steel, stainless steel, nickel alloy and titanium.

Sales Contact Information by Product

Carbon and Alloy Tubing	Stainless Steel Tubing	Extruded & Cold Drawn Shapes
For outside diameters: 0.125 – 5.563 inch 3.175 – 140 mm Plymouth Tube Company Carbon & Alloy Tubing 29W150 Warrenville Road Warrenville, Illinois 60555 Phones: Toll Free 1-800-323-9506 Local 1-630-393-3550 FAX 1-630-393-3551 e-mail: carbon_alloy@plymouth.com	For outside diameters: 0.125 – 2.000 inch 3.175 – 50.80 mm Plymouth Tube Company Stainless Tubing 29W150 Warrenville Road Warrenville, Illinois 60555 Phones: Toll Free 1-800-323-9506 Local 1-630-393-3550 FAX 1-630-393-3551 e-mail: whitesls@plymouth.com	Must fit in circle diameter: Up to 6 inch Up to 150 mm Plymouth Engineered Shapes 201 Commerce Court Hopkinsville, Kentucky 42240 Phones: Toll Free 1-800-718-7590 Local 1-270-886-6631 FAX 1-270-886-6662 e-mail: EngShapes@plymouth.com

Please Note: Information contained in this brochure is subject to change and therefore should be considered for reference purposes only. We welcome all inquires and questions.

