

Steel Finned Tubes

S/T Trufin[®] and Turbo-Chil[®]

Wieland has developed an array of finned tubes in a variety of welded and/or seamless ferrous alloys with surface enhancements on the outside only or outside and inside surfaces.

If other alloys are required, please contact the Wieland Sales Department.

External Standards

S/T Trufin and Turbo-Chil supplied in ferrous alloys are produced from plain surface tube material purchased to one of the following ASTM and/or ASME standards mentioned in alloy group table.

The elimination of nonstraightened tubes in the ASME standard is the only difference between the standards.

S/T Trufin and Turbo-Chil that meets the requirements of Paragraph UG-8(b), ASME Boiler and Pressure Vessel Code, Section VIII, are made to an average wall in the finned area. When a minimum wall is required, the next heavier wall size should be used. Steel S/T Trufin is also governed by ASTM A498.

U-BEND

Supply of tubes in U-bend shape is possible for all ferrous alloys, including nondestructive tests and annealing of bent section.

Plain Sections

Plain end lengths 1" (25.4mm) and over are supplied as standard. If plain ends less than 1" (25.4 mm) are required, contact the Wieland Sales Department.

Land Lengths 1" (25.4mm) and over are supplied as standard. If land

lengths down to 5/8" (15.9 mm) minimum are required, contact the Wieland Sales Department.

Distances of 18" (457.2 mm) and over between lands are supplied as standard.

For spacing between lands less than 18" (457.2 mm), contact the Wieland Sales Department.

Temper

All Steel S/T Trufin and Turbo-Chil are supplied in the "as finned" condition. Plain ends and lands are supplied in the condition as described by the governing plain tube ASTM or ASME standard. Contact Wieland Sales Department for heat treatment possibilities.

Steel Finned Tubes

S/T Trufin® Enhanced Surface Tubes

Catalog Number	Plain Ends		Finnend Section			Area		Weight per Unit Length lbs/ft (kg/m)
	Outside Diameter inch (mm)	Wall Thickness inch (mm)	Min. Wall Under Fins inch (mm)	Finned Section Nom. Root Diam. inch (mm)	Nominal Inside Diameter inch (mm)	Actual Outside Surface ft ² /ft (m ² /m)	Ratio Actual Outside/Nominal Inside	

11 Fins per inch – Alloy Group III

67-115091	3/4 (19.05)	0.109 (2.77)	0.081 (2.057)	0.625 (15.88)	0.443 (11.25)	0.386 (0.118)	3.34	0.769 (1.144)
67-115095	3/4 (19.05)	0.112 (2.85)	0.085 (2.169)	0.625 (15.88)	0.435 (11.06)	0.386 (0.118)	3.39	0.788 (1.172)
67-115106	3/4 (19.05)	0.120 (3.05)	0.095 (2.430)	0.625 (15.88)	0.413 (10.50)	0.386 (0.118)	3.57	0.843 (1.254)
67-115109	3/4 (19.05)	0.125 (3.18)	0.097 (2.464)	0.625 (15.88)	0.407 (10.34)	0.386 (0.118)	3.64	0.828 (1.232)
67-117083	1 (25.40)	0.100 (2.54)	0.074 (1.879)	0.875 (22.23)	0.709 (18.00)	0.526 (0.160)	2.84	0.930 (1.384)
67-117091	1 (25.40)	0.109 (2.77)	0.081 (2.057)	0.875 (22.23)	0.693 (17.60)	0.526 (0.160)	2.91	1.039 (1.546)
67-117102	1 (25.40)	0.115 (2.92)	0.091 (2.311)	0.875 (22.23)	0.671 (17.04)	0.526 (0.160)	3.01	1.080 (1.607)
67-117103	1 (25.40)	0.120 (3.05)	0.092 (2.337)	0.875 (22.23)	0.669 (16.99)	0.526 (0.160)	3.00	1.116 (1.660)
67-117106	1 (25.40)	0.122 (3.10)	0.095 (2.413)	0.875 (22.23)	0.663 (16.84)	0.526 (0.160)	3.04	1.142 (1.699)

For S/T Trufin® 11 FPI, the average fin height is 0.059" (1.500 mm) and the average fin width is 0.035" (0.889 mm)

16 Fins per inch – Alloy Groups I & III

60-163049	1/2 (12.70)	0.065 (1.65)	0.044 (1.118)	0.375 (09.53)	0.277 (07.04)	0.261 (0.080)	3.60	0.288 (0.428)
60-164065	5/8 (15.88)	0.085 (2.16)	0.058 (1.473)	0.500 (12.70)	0.370 (09.40)	0.340 (0.104)	3.51	0.481 (0.716)
60-165065	3/4 (19.05)	0.085 (2.16)	0.058 (1.473)	0.625 (15.88)	0.495 (12.57)	0.418 (0.127)	3.23	0.595 (0.885)
60-165072	3/4 (19.05)	0.092 (2.34)	0.065 (1.651)	0.625 (15.88)	0.481 (12.22)	0.418 (0.127)	3.32	0.610 (0.908)
60-165083	3/4 (19.05)	0.095 (2.41)	0.074 (1.880)	0.625 (15.88)	0.459 (11.66)	0.418 (0.127)	3.48	0.666 (0.990)
60-166065	7/8 (22.23)	0.085 (2.16)	0.058 (1.473)	0.750 (19.05)	0.620 (15.75)	0.496 (0.151)	3.06	0.681 (1.013)
60-166083	7/8 (22.23)	0.095 (2.41)	0.074 (1.880)	0.750 (19.05)	0.584 (14.83)	0.496 (0.151)	3.24	0.791 (1.176)
60-167065	1 (25.40)	0.085 (2.16)	0.058 (1.473)	0.875 (22.23)	0.745 (18.92)	0.574 (0.175)	2.94	0.796 (1.184)
60-167083	1 (25.40)	0.095 (2.41)	0.074 (1.880)	0.875 (22.23)	0.709 (18.01)	0.574 (0.175)	3.09	0.912 (1.357)

For S/T Trufin® 16 FPI, the average fin height is 0.053" (1.346 mm) and the average fin width is 0.010" (0.254 mm)

19 Fins per inch – Alloy Group III

60-193042	1/2 (12.70)	0.060 (1.52)	0.037 (0.940)	0.375 (09.53)	0.291 (07.39)	0.319 (0.097)	4.19	0.239 (0.355)
60-193049	1/2 (12.70)	0.065 (1.65)	0.044 (1.118)	0.375 (09.53)	0.277 (07.04)	0.319 (0.097)	4.40	0.284 (0.423)
60-193058	1/2 (12.70)	0.072 (1.83)	0.049 (1.245)	0.375 (09.53)	0.259 (06.58)	0.319 (0.097)	4.71	0.286 (0.425)
60-194049	5/8 (15.88)	0.065 (1.65)	0.044 (1.118)	0.500 (12.70)	0.402 (10.21)	0.414 (0.126)	3.94	0.362 (0.538)
60-194058	5/8 (15.88)	0.072 (1.83)	0.049 (1.245)	0.500 (12.70)	0.384 (09.75)	0.414 (0.126)	4.12	0.396 (0.589)
60-194065	5/8 (15.88)	0.085 (2.16)	0.058 (1.473)	0.500 (12.70)	0.370 (09.40)	0.414 (0.126)	4.27	0.456 (0.679)
60-194072	5/8 (15.88)	0.086 (2.18)	0.065 (1.651)	0.500 (12.70)	0.356 (09.04)	0.414 (0.126)	4.44	0.480 (0.714)
60-195049	3/4 (19.05)	0.065 (1.65)	0.044 (1.118)	0.625 (15.88)	0.527 (13.39)	0.507 (0.155)	3.67	0.447 (0.665)
60-195058	3/4 (19.05)	0.075 (1.83)	0.049 (1.245)	0.625 (15.88)	0.509 (12.93)	0.507 (0.155)	3.80	0.485 (0.722)
60-195065	3/4 (19.05)	0.085 (2.16)	0.058 (1.473)	0.625 (15.88)	0.495 (12.57)	0.507 (0.155)	3.91	0.568 (0.845)
60-195072	3/4 (19.05)	0.086 (2.18)	0.065 (1.651)	0.625 (15.88)	0.481 (12.22)	0.507 (0.155)	4.03	0.592 (0.881)
60-195083	3/4 (19.05)	0.095 (2.41)	0.074 (1.880)	0.625 (15.88)	0.459 (11.66)	0.507 (0.155)	4.22	0.618 (0.920)
60-195095	3/4 (19.05)	0.110 (2.79)	0.084 (2.134)	0.625 (15.88)	0.435 (11.05)	0.507 (0.155)	4.45	0.708 (1.053)
60-196058	7/8 (22.23)	0.072 (1.83)	0.049 (1.245)	0.750 (19.05)	0.634 (16.10)	0.588 (0.179)	3.54	0.595 (0.885)
60-196065	7/8 (22.23)	0.085 (2.16)	0.058 (1.473)	0.750 (19.05)	0.620 (15.75)	0.588 (0.179)	3.62	0.675 (1.004)
60-196072	7/8 (22.23)	0.086 (2.18)	0.065 (1.651)	0.750 (19.05)	0.606 (15.39)	0.588 (0.179)	3.71	0.689 (1.024)
60-196083	7/8 (22.23)	0.095 (2.41)	0.074 (1.880)	0.750 (19.05)	0.584 (14.83)	0.588 (0.179)	3.85	0.762 (1.134)
60-196095	7/8 (22.23)	0.110 (2.79)	0.084 (2.134)	0.750 (19.05)	0.560 (14.22)	0.588 (0.179)	4.01	0.835 (1.243)

Steel Finned Tubes

S/T Trufin® Enhanced Surface Tubes

Catalog Number	Plain Ends		Finnend Section			Area		Weight per Unit Length lbs/ft (kg/m)
	Outside Diameter	Wall Thickness inch (mm)	Min. Wall Under Fins inch (mm)	Finned Section Nom. Root Diam. inch (mm)	Nominal Inside Diameter inch (mm)	Actual Outside Surface ft ² /ft (m ² /m)	Ratio Actual Outside/Nominal Inside	
60-197058	1 (25.40)	0.072 (1.83)	0.049 (1.245)	0.875 (22.23)	0.759 (19.28)	0.695 (0.212)	3.50	0.697 (1.037)
60-197065	1 (25.40)	0.085 (2.16)	0.058 (1.473)	0.875 (22.23)	0.745 (18.92)	0.695 (0.212)	3.56	0.796 (1.184)
60-197072	1 (25.40)	0.086 (2.18)	0.065 (1.651)	0.875 (22.23)	0.731 (18.57)	0.695 (0.212)	3.63	0.813 (1.210)
60-197083	1 (25.40)	0.095 (2.41)	0.074 (1.880)	0.875 (22.23)	0.709 (18.01)	0.695 (0.212)	3.74	0.873 (1.299)
60-197095	1 (25.40)	0.110 (2.79)	0.084 (2.134)	0.875 (22.23)	0.685 (17.40)	0.695 (0.212)	3.88	0.988 (1.471)
60-197106	1 (25.40)	0.115 (2.92)	0.095 (2.413)	0.875 (22.23)	0.663 (16.84)	0.695 (0.212)	4.00	1.053 (1.567)
60-197109	1 (25.40)	0.125 (3.18)	0.097 (2.464)	0.875 (22.23)	0.657 (16.69)	0.695 (0.212)	4.04	1.135 (1.688)

For S/T Trufin® 19 FPI, the average fin height is 0.053" (1.346 mm) and the average fin width is 0.011" (0.279 mm)

26 Fins per inch – Alloy Group II & III

65-264049	5/8 (15.88)	0.072 (1.83)	0.044 (1.118)	0.500 (12.70)	0.402 (10.22)	0.546 (0.166)	5.17	0.369 (0.549)
65-265035	3/4 (19.05)	0.055 (1.40)	0.031 (0.787)	0.640 (16.26)	0.570 (14.48)	0.651 (0.198)	4.30	0.367 (0.546)
65-265042	3/4 (19.05)	0.065 (1.65)	0.037 (0.940)	0.640 (16.26)	0.556 (14.12)	0.651 (0.198)	4.46	0.409 (0.607)
65-265049	3/4 (19.05)	0.075 (1.91)	0.044 (1.118)	0.640 (16.26)	0.542 (13.77)	0.651 (0.198)	4.58	0.450 (0.670)
65-265058	3/4 (19.05)	0.075 (1.91)	0.049 (1.245)	0.640 (16.26)	0.524 (13.32)	0.651 (0.198)	4.75	0.518 (0.771)
65-265065	3/4 (19.05)	0.083 (2.11)	0.058 (1.473)	0.640 (16.26)	0.510 (12.95)	0.651 (0.198)	4.86	0.592 (0.881)
65-265072	3/4 (19.05)	0.090 (2.29)	0.065 (1.651)	0.640 (16.26)	0.496 (12.60)	0.651 (0.198)	5.01	0.637 (0.948)
65-265075	3/4 (19.05)	0.092 (2.34)	0.067 (1.714)	0.640 (16.26)	0.490 (12.44)	0.651 (0.198)	5.07	0.649 (0.966)
65-265083	3/4 (19.05)	0.100 (2.54)	0.074 (1.880)	0.640 (16.26)	0.474 (12.04)	0.651 (0.198)	5.25	0.696 (1.036)
65-265095	3/4 (19.05)	0.109 (2.77)	0.083 (2.108)	0.640 (16.26)	0.450 (11.44)	0.651 (0.198)	5.53	0.715 (1.065)
65-265106	3/4 (19.05)	0.120 (3.05)	0.094 (2.388)	0.640 (16.26)	0.428 (10.88)	0.651 (0.198)	5.81	0.774 (1.152)
65-266065	7/8 (22.23)	0.083 (2.11)	0.058 (1.473)	0.750 (19.05)	0.620 (15.75)	0.766 (0.233)	4.70	0.637 (0.948)
65-267035	1 (25.40)	0.055 (1.40)	0.031 (0.787)	0.890 (22.61)	0.820 (20.83)	0.885 (0.270)	4.12	0.632 (0.940)
65-267042	1 (25.40)	0.065 (1.65)	0.037 (0.940)	0.890 (22.61)	0.806 (20.47)	0.885 (0.270)	4.19	0.714 (1.062)
65-267072	1 (25.40)	0.090 (2.29)	0.065 (1.650)	0.890 (22.61)	0.746 (18.95)	0.885 (0.270)	4.54	0.850 (1.265)
65-267083	1 (25.40)	0.101 (2.57)	0.074 (1.880)	0.890 (22.61)	0.724 (18.39)	0.885 (0.270)	4.67	0.939 (1.398)
65-267095	1 (25.40)	0.109 (2.77)	0.084 (2.134)	0.890 (22.61)	0.701 (17.81)	0.885 (0.270)	4.82	1.026 (1.527)

For S/T Trufin® 26 FPI, the average fin height is 0.052" (1.320 mm) and the average fin width is 0.014" (0.357 mm)

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About Wieland Thermal Solutions?**

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Steel Finned Tubes

S/T Trufin® Enhanced Surface Tubes

Catalog Number	Plain Ends		Finnend Section			Area		Weight per Unit Length lbs/ft (kg/m)
	Outside Diameter inch (mm)	Wall Thickness inch (mm)	Min. Wall Under Fins inch (mm)	Finned Section Nom. Root Diam. inch (mm)	Nominal Inside Diameter inch (mm)	Actual Outside Surface ft ² /ft (m ² /m)	Ratio Actual Outside/ Nominal Inside	

28 Fins per inch – Alloy Group I & IV

65-284072	5/8 (15.88)	0.090 (2.29)	0.065 (1.650)	0.546 (13.87)	0.402 (10.21)	0.429 (0.131)	4.08	0.498 (0.741)
65-285028	3/4 (19.05)	0.050 (1.27)	0.025 (0.635)	0.672 (17.07)	0.616 (15.65)	0.514 (0.157)	3.19	0.363 (0.540)
65-285035	3/4 (19.05)	0.055 (1.40)	0.031 (0.787)	0.672 (17.07)	0.602 (15.29)	0.514 (0.157)	3.26	0.396 (0.590)
65-285042	3/4 (19.05)	0.065 (1.65)	0.037 (0.940)	0.672 (17.07)	0.588 (14.94)	0.514 (0.157)	3.34	0.460 (0.684)
65-285049	3/4 (19.05)	0.070 (1.78)	0.044 (1.118)	0.672 (17.07)	0.574 (14.58)	0.514 (0.157)	3.42	0.493 (0.734)
65-285065	3/4 (19.05)	0.085 (2.16)	0.058 (1.473)	0.672 (17.07)	0.542 (13.77)	0.514 (0.157)	3.62	0.591 (0.879)
65-285083	3/4 (19.05)	0.095 (2.41)	0.074 (1.880)	0.672 (17.07)	0.506 (12.85)	0.514 (0.157)	3.88	0.666 (0.991)
65-285095	3/4 (19.05)	0.109 (2.77)	0.084 (2.134)	0.672 (17.07)	0.482 (12.25)	0.514 (0.157)	4.07	0.745 (1.109)
65-286028	7/8 (22.23)	0.050 (1.27)	0.025 (0.635)	0.797 (20.24)	0.741 (18.82)	0.605 (0.184)	3.12	0.345 (0.513)
65-286035	7/8 (22.23)	0.055 (1.40)	0.031 (0.787)	0.797 (20.24)	0.727 (18.47)	0.605 (0.184)	3.18	0.402 (0.598)
65-286042	7/8 (22.23)	0.065 (1.65)	0.037 (0.940)	0.797 (20.24)	0.713 (18.11)	0.605 (0.184)	3.24	0.458 (0.682)
65-286049	7/8 (22.23)	0.070 (1.78)	0.044 (1.118)	0.797 (20.24)	0.699 (17.75)	0.605 (0.184)	3.31	0.514 (0.765)
65-286065	7/8 (22.23)	0.085 (2.16)	0.058 (1.473)	0.797 (20.24)	0.667 (16.94)	0.605 (0.184)	3.47	0.637 (0.947)
65-286083	7/8 (22.23)	0.095 (2.41)	0.074 (1.880)	0.797 (20.24)	0.631 (16.03)	0.605 (0.184)	3.66	0.767 (1.141)
65-287028	1 (25.40)	0.050 (1.27)	0.025 (0.635)	0.922 (23.42)	0.866 (22.00)	0.696 (0.212)	3.07	0.399 (0.593)
65-287035	1 (25.40)	0.058 (1.47)	0.028 (0.711)	0.922 (23.42)	0.852 (21.64)	0.696 (0.212)	3.13	0.573 (0.852)
65-287042	1 (25.40)	0.065 (1.65)	0.037 (0.940)	0.922 (23.42)	0.838 (21.28)	0.696 (0.212)	3.18	0.623 (0.928)
65-287049	1 (25.40)	0.070 (1.78)	0.044 (1.118)	0.922 (23.42)	0.824 (20.93)	0.696 (0.212)	3.24	0.653 (0.972)
65-287065	1 (25.40)	0.083 (2.11)	0.058 (1.473)	0.922 (23.42)	0.792 (20.12)	0.696 (0.212)	3.37	0.787 (1.171)
65-287083	1 (25.40)	0.095 (2.41)	0.074 (1.880)	0.922 (23.42)	0.756 (19.20)	0.696 (0.212)	3.53	0.889 (1.323)

For S/T Trufin® 28 FPI, the average fin height is 0.037" (0.940 mm) and the average fin width is 0.011" (0.279 mm)

S/T Turbo-Chil® Double Enhanced Surface Tubes

Catalog Number	Plain Ends		Finnend Section			Area		Weight per Unit Length lbs/ft (kg/m)
	Outside Diameter inch (mm)	Wall Thickness inch (mm)	Min. Wall Under Fins inch (mm)	Finned Section Nom. Root Diam. inch (mm)	Nominal Inside Diameter inch (mm)	Actual Outside Surface ft ² /ft (m ² /m)	Ratio Actual Outside/ Nominal Inside	

19 Fins per inch – Alloy Group III

56-1952542	3/4 (19.05)	0.072 (1.83)	0.037 (0.940)	0.678 (17.22)	0.594 (15.09)	0.359 (0.109)	2.30	0.428 (0.637)
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For S/T Turbo-Chil® 19 FPI, the average fin height is 0.032" (0.813 mm) and the average fin width is 0.015" (0.381 mm)

28 Fins per inch – Alloy Group I

56-2850628	3/4 (19.05)	0.053 (1.35)	0.025 (0.635)	0.668 (16.97)	0.612 (15.54)	0.496 (0.151)	3.10	0.305 (0.454)
56-2850635	3/4 (19.05)	0.059 (1.50)	0.031 (0.787)	0.668 (16.97)	0.598 (15.19)	0.496 (0.151)	3.16	0.366 (0.545)

For S/T Turbo-Chil® 28 FPI, the average fin height is 0.037" (0.940 mm) and the average fin width is 0.011" (0.279 mm)

Steel Finned Tubes

Alloy Groups

UNS Nomenclature	Common Industry Name	*ASTM Spec Number Welded (Seamless)	Tensile Strength Minimum ksi (MPa)	Yield Strength Minimum ksi (MPa)	Hardness Maximum
Alloy Group I – Austenitic Stainless Steel					
S30400	TP 304 Welded (Seamless)	A249 (A213)	75 (517)	30 (205)	90 HRB
S30403	TP 304L Welded (Seamless)	A249 (A213)	70 (485)	25 (170)	90 HRB
S31600	TP 316 Welded (Seamless)	A249 (A213)	75 (517)	30 (205)	90 HRB
S31603	TP 316L Welded (Seamless)	A249 (A213)	70 (485)	25 (170)	90 HRB
S31700	TP 317 Welded (Seamless)	A249 (A213)	75 (515)	30 (205)	90 HRB
S31703	TP 317L Welded (Seamless)	A249 (A213)	75 (515)	30 (205)	90 HRB
S32100	TP 321 Welded (Seamless)	A249 (A213)	75 (515)	30 (205)	90 HRB
S34700	TP 347 Welded (Seamless)	A249 (A213)	75 (515)	30 (205)	90 HRB
Alloy Group II – Ferritic Stainless Steel					
S43035	TP 439 Welded (Seamless)	A268	60 (415)	30 (205)	90 HRB
Alloy Group III – Carbon Steel and Alloy-Steel					
K01200	Seamless Low Carbon	A179	60 (414)	30 (207)	72 HRB
K02707	Seamless Medium Carbon	A210	60 (415)	37 (255)	79 HRB
K03008	Seamless Grade 1	A334	55 (380)	30 (205)	85 HRB
K31918	Seamless Grade 3	A334	65 (450)	35 (240)	90 HRB
K03006	Seamless Grade 6	A334	60 (415)	35 (240)	90 HRB
K41545	T5 Seamless	A213	60 (415)	30 (205)	85 HRB
K11597	T11 Seamless	A213	60 (415)	30 (205)	85 HRB
K21590	T22 Seamless	A213	60 (415)	30 (205)	85 HRB
Alloy Group IV – Duplex Stainless Steel					
S31803	Welded (Seamless)	A789	90 (620)	65 (450)	30 HRC
S32101	Welded (Seamless)	A789	101 (700)	77 (530)	290 HBW
S32205	Welded (Seamless)	A789	95 (655)	70 (485)	30 HRC

* For equivalent ASME specification, mechanical property data is identical.

For further information please contact:

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