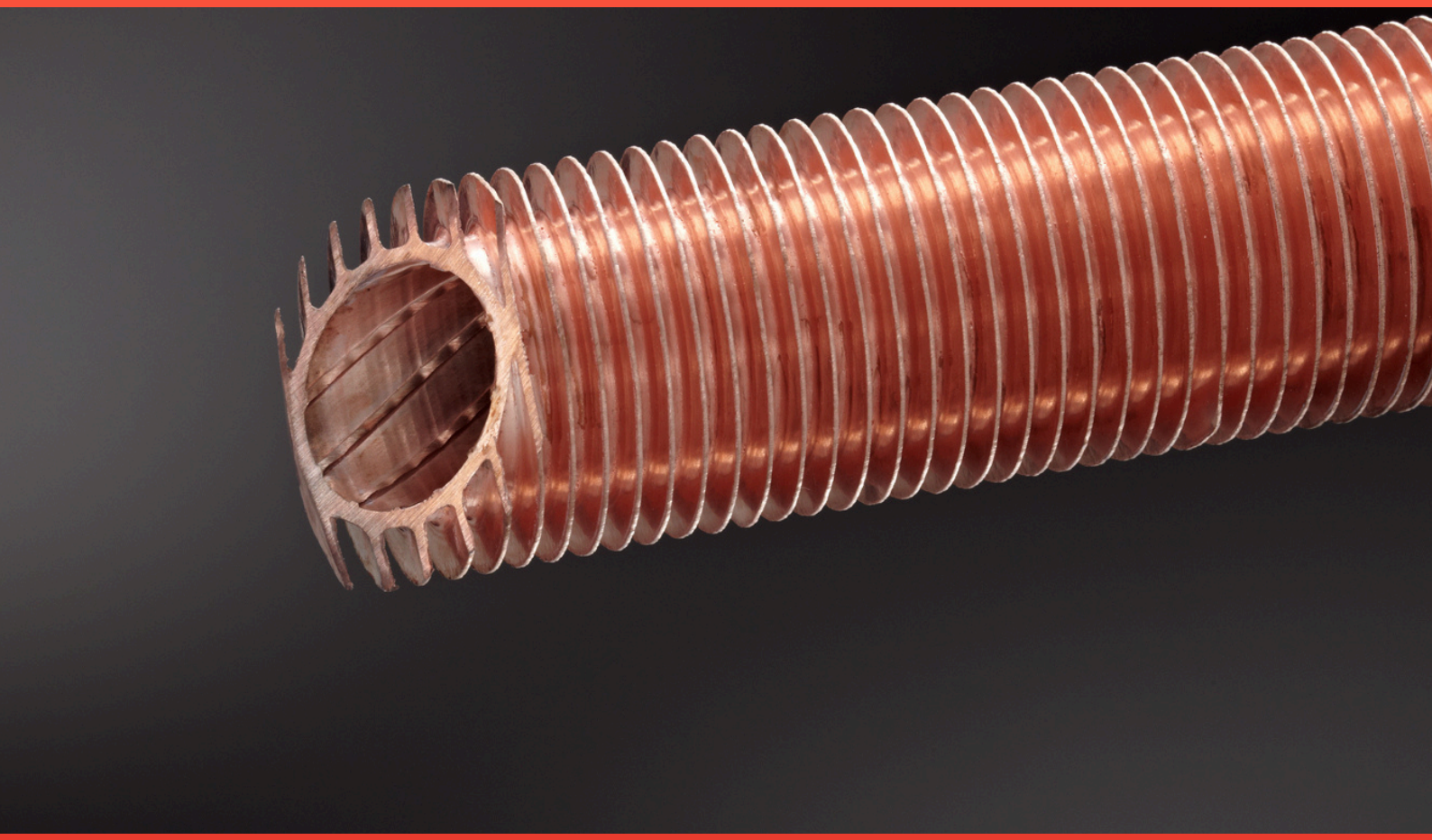
SCHMOELE



Trufin-Finned Tubes W/H and W/HT (Turbo-Chil) from Cu, CuNi, Al, Steel and Stainless Steel

- High thermal conductivity, the fins being rolled from the tube wall
- High heat transfer efficiency by optimal conical fin profile
- Good bending properties by stiffening effect of the fins
- The unfinned tube ends have a heavy gauge wall thickness which enables many kinds of joints to be easily made
- Suitable for rolling-in, the unfinned tube ends being soft annealed
- W/HT (Turbo-Chil) = High Performance design produces increased flow turbulance from additional inside ridges

Trufin-Finned Tubes W/H and W/HT (Turbo-Chil)

Application

Trufin Finned Tubes W/H and the High Performance Tubes Trufin W/HT (Turbo-Chil) produced by Schmöle are used in many branches of the industry. They are suitable for cooling and heating of liquids and gases as well as for condensing and evaporating refrigerants.

Long-term experience in the application of Trufin Finned Tubes W/H and W/HT has shown that their use considerably improves the price - performance ratio of heat exchangers.

The following table shows some examples of typical applications:

Heating industry

- Instantaneous domestic water heaters for boilers and buffer tanks
- Heating coils for domestic hot water tanks
- Tube coil condensers for heat pump hot water tanks
- Heat exchangers as thermal safety device against overheating
- Heat echangers for district heating systems
- Swimming pool water heaters
- Heat exchangers in solar installations
- Heat exchangers for condensing gas heaters

General and Automobile engineering

- Water cooled oil coolers
- Air cooled oil coolers
- Compressed air coolers
- Heat exchangers for air separation units
- Solvent coolers

Refrigeration and Air-conditioning industry

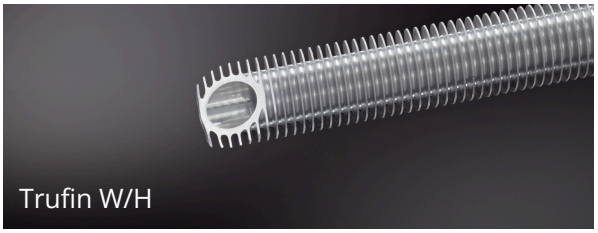
- Tube coil condensers
- Tube coil intermediate coolers for environment simulation installations

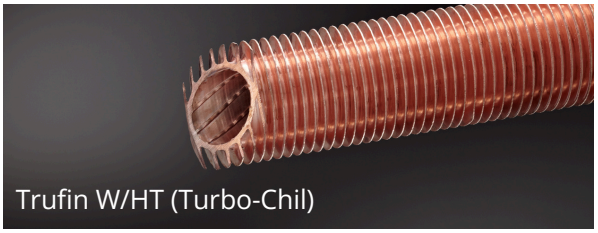
Description

Trufin Finned Tubes W/H and High Performance Finned Tubes Trufin W/HT (Turbo-Chil) are produced by a rolling process from seamless tubes. Because of their excellent bending properties they are particularly suitable for the manufacture of compact and efficient tube coil heat exchangers.

In comparison to Trufin W/H Finned Tubes, Trufin W/HT High Performance Finned Tubes (Turbo-Chil) have in addition helical inside ridges which provoke an increase of the flow turbulence of the inside fluid resulting in a considerable performance increase.

The excellent bending properties of the Trufin Finned Tubes W/H and High Performance Tubes Trufin W/HT (Turbo-Chil) permit the manufacture of special geometric forms of heat exchangers which - being optimally adapted to the application - can be supplied in economic lot of sizes.


Trufin W/H


Trufin W/HT (Turbo-Chil)

Materials

Trufin Finned Tubes W/H and W/HT are preferably manufactured in the materials indicated in the following table. The mechanical propertes mentioned in this table are valid for the unfinned tube ends at ambient temprature and shall serve the design engineer as a basis for calculation.

Other materials as well as materials to international and national standards such as ISO, EN, ASTM, ASME, BS, AFNOR are available on demand.

When selecting the type and material of the tubes the actual operating conditions of the individual application have to be considered.

Material designation DIN		Material No. DIN	Material standard	Schmöle Material code	Weight ratio G/G_{CU}
Cu-DHP	R250	2.0090	DIN EN 12451	01	1,00
CuNi10Fe1Mn	R290	2.0872	DIN EN 12451	53	1,00
EN AW-1050A	H111	3.0255	drawn DIN EN 754/pressed DIN EN 755	41	0,30
EN AW-3103	H111	3.0515	drawn DIN EN 754/pressed DIN EN 755	42	0,31
EN AW-5754	H111	3.3535	drawn DIN EN 754/pressed DIN EN 755	43	0,30

Other materials on request.

Trufin-Finned Tubes W/H

Fin pitch m = 2,3 mm
Fin thickness $\delta_R \approx$ 0,3 mm*

Schmöle Code No.	Schmöle Material code					Unfinned tube end		Finned tube section						approx. weight
	01	41	42	43	53	Outside-Ø d_1 mm	Wall thickness s_1 mm	Inside-Ø d_3 mm	Fin outside-Ø d_5 mm	Wall thickness s_2 mm	Inside sectional area q_i cm²	Outside surface area A_a m²/m	Surface area ratio A_a/A_i -	G_{cu} kg/m
Fin height h = 3,5 mm														
35-11 09 080	●	●	●	●		13,0	1,70	7,9	16,5	0,80	0,49	0,16	6,5	0,50
35-11 09 100	●	●	●	●	●	13,0	1,85	7,5	16,5	1,00	0,44	0,16	6,7	0,54
35-11 12 080	●	●	●	●		16,0	1,75	10,9	19,5	0,80	0,93	0,19	5,6	0,63
35-11 12 100	●	●	●	●	●	16,0	1,90	10,5	19,5	1,00	0,87	0,19	5,8	0,70
35-11 14 100	●	●	●	●		18,0	1,90	12,5	21,5	1,00	1,23	0,21	5,4	0,80
35-11 14 125	●	●	●	●	●	18,0	2,15	12,0	21,5	1,25	1,13	0,21	5,6	0,88
35-11 18 100	●	●	●	●		22,0	1,90	16,5	25,5	1,00	2,13	0,27	5,2	1,00
35-11 18 125	●	●	●	●	●	22,0	2,20	16,0	25,5	1,25	2,01	0,27	5,4	1,11
35-11 24 125	●	●	●	●		28,0	2,15	22,0	31,5	1,25	3,80	0,34	4,9	1,45
35-11 24 150	●	●	●	●	●	28,0	2,40	21,5	31,5	1,50	3,62	0,34	5,1	1,54
Fin height h = 4,5 mm														
45-11 09 080	●	●	●	●		13,0	2,00	7,9	18,5	0,80	0,49	0,22	8,8	0,56
45-11 09 100	●	●	●	●	●	13,0	2,20	7,5	18,5	1,00	0,44	0,22	9,3	0,61
45-11 12 080	●	●	●	●		16,0	2,10	10,9	21,5	0,80	0,93	0,25	7,3	0,75
45-11 12 100	●	●	●	●	●	16,0	2,25	10,5	21,5	1,00	0,87	0,25	7,6	0,81
45-11 14 100	●	●	●	●		18,0	2,25	12,5	23,5	1,00	1,23	0,28	7,1	0,93
45-11 14 125	●	●	●	●	●	18,0	2,50	12,0	23,5	1,25	1,13	0,28	7,4	1,01
45-11 18 100	●	●	●	●		22,0	2,20	16,5	27,5	1,00	2,13	0,35	6,7	1,17
45-11 18 125	●	●	●	●	●	22,0	2,40	16,0	27,5	1,25	2,01	0,35	7,0	1,28
45-11 24 125	●	●	●	●		28,0	2,40	22,0	33,5	1,25	3,80	0,41	6,0	1,68
45-11 24 150	●	●	●	●		28,0	2,80	21,5	33,5	1,50	3,62	0,41	6,1	1,82

Preferred dimensions!

* On request also supplied with fin thickness of approx. 0,4 mm

The dimensions indicated are valid for copper tubes.
For other tube materials small deviation are possible.

Other dimensions and dimensions for steel (fin height 3,5 mm) and stainless steel (fin height 2 mm) on request.

Trufin-Finned Tubes W/HT (Turbo-Chil)

Schmöle Code No.	Schmöle Material code					Unfinned tube end		Finned tube section							
	01	41	42	43	53	Outside-Ø d_1 mm	Wall thickness s_1 mm	Inside-Ø d_3 mm	Hydraulic Ø d_h mm	Fin outside-Ø d_5 mm	Wall thickness s_2 mm	Inside sectional area q_i cm²	Outside surface area A_a m²/m	Surface area ratio A_a/A_i -	approx. weight G_{cu} kg/m
Fin height h = 4,5 mm Ridge height ≈ 0,35 mm No. of inside ridges = 10															
**45-11 09 080 03	●	●	●	●		13,0	2,15	7,9	6,75	18,5	0,80	0,47	0,22	7,9	0,60
**45-11 09 100 03	●	●	●	●	●	13,0	2,20	7,5	6,33	18,5	1,00	0,42	0,22	8,3	0,65
45-11 12 080 13	●	●	●	●		16,0	2,10	10,9	9,10	21,5	0,80	0,89	0,25	6,4	0,81
45-11 12 100 13	●	●	●	●	●	16,0	2,30	10,5	8,69	21,5	1,00	0,83	0,25	6,7	0,87
45-11 14 080 13	●	●	●	●		18,0	2,15	12,9	11,14	23,5	0,80	1,26	0,28	6,2	0,94
45-11 14 100 13	●	●	●	●	●	18,0	2,30	12,5	10,74	23,5	1,00	1,19	0,28	6,4	1,00
45-11 14 125 13	●	●	●	●	●	18,0	2,50	12,0	10,22	23,5	1,25	1,08	0,28	6,6	1,06
45-11 18 100 13	●	●	●	●	●	22,0	2,40	16,5	14,80	27,5	1,00	2,09	0,35	6,2	1,26
45-11 18 125 13	●	●	●	●	●	22,0	2,65	16,0	14,29	27,5	1,25	1,97	0,35	6,4	1,34
45-11 24 125 13	●	●	●	●	●	28,0	2,60	22,0	20,35	33,5	1,25	3,76	0,41	5,6	1,77
45-11 24 150 13	●	●	●	●	●	28,0	3,00	21,5	19,85	33,5	1,50	3,58	0,41	5,7	1,96

** No. of inside ridges = 6

Preferred dimensions!

* On request also supplied with fin thickness of approx. 0,4 mm

The dimensions indicated are valid for copper tubes.
For other tube materials small deviation are possible.

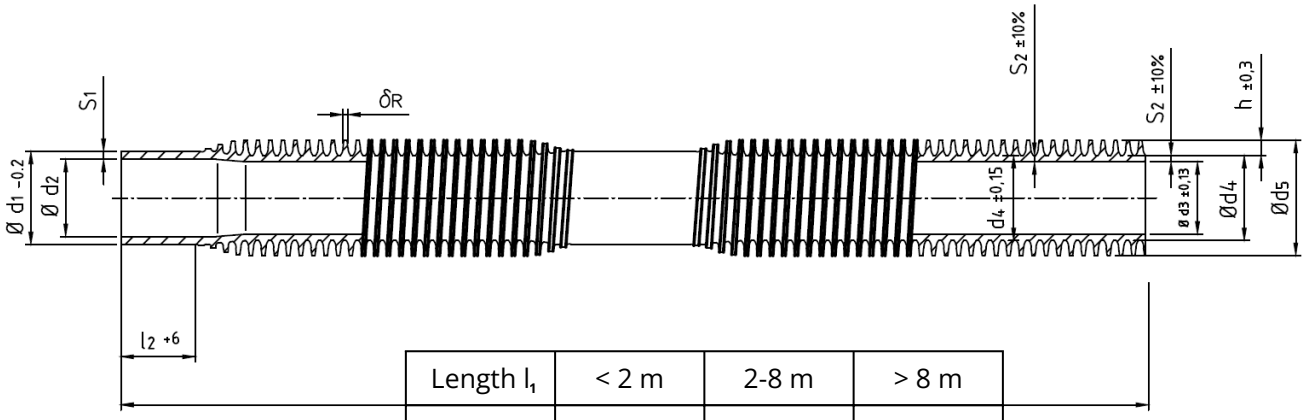
Other dimensions and dimensions for steel (fin height 3,5 mm)
and stainless steel (fin height 2 mm) on request.

d_3 = Inside-ø at the base of the inside ridges

d_h = Hydraulic diameter $(d_h = \frac{4\ q_i}{U})$

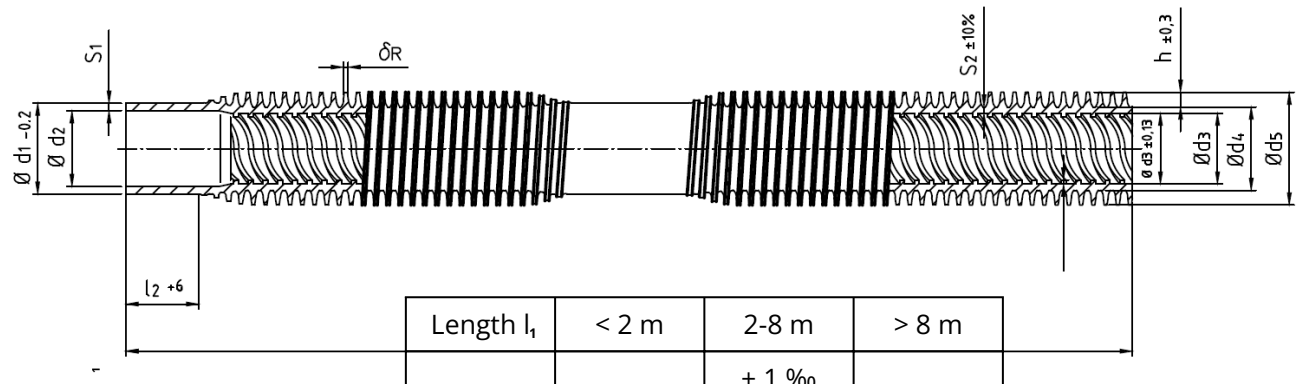
U = Circumference of the inside profile

Tolerances for Trufin-Finned Tubes W/H



Length l_1	< 2 m	2-8 m	> 8 m
Tolerance	+ 2 mm	+ 1 ‰ < 5 mm	+ 0,7 ‰

Tolerances for Trufin-Finned Tubes W/HT (Turbo-Chil)



Length l_1	< 2 m	2-8 m	> 8 m
Tolerance	+ 2 mm	+ 1 ‰ < 5 mm	+ 0,7 ‰

Forms of supply of straight finned tubes

- in length up to 20 m entirely finned
- with unfinned tube ends
- U-bent (hair pins)

Forms of supply of finned tube coils

- ready for installation, with fittings
- standard types or special designs according to your particular application
- finned tube coils of copper with electro-tinned outside surface and /or chemically tinned inside surface on request
- finned tube coils with special double-walled safety tubes “Trufin W/H plus inner tube“

Tube codification

Schmöle Code No. W/HT 45 - 11 12 080 13 - 01

- Tube type
- Fin height 4.5 mm
- Fin pitch 11 fins per inch
- Core outside diameter 12,7 mm
- Wall thickness under fin 0,80 mm
- 10 inside ridges, approx. 0,35 mm height
- Schmöle Material code for Cu-DHP

Trufin-Finned Tubes W/H und W/HT (Turbo-Chil)

Approvals

The production of finned tubes for pressure vessel applicatons has been verified and approved according to AD 2000 code of practice and PED 2014/68/EU. Schmöle supply Trufin Finned Tubes W/H of Cu-DHP according to VdTÜV-Werkstoffblatt 420/2.

Please, ask for the following leaflets:

- BW-Finned Tube Heating Coils for hot water tanks: Nr. 861 d
- SBW-Finned Tube Flow Type Heater for boilers and biffer storage: Nr. 864 d
- Finned Tubes (programm survey): Nr. 820 d
- Heat Exchanger (programm survey): Nr. 850 d

This product description is based on our own research and the relevant literature whch was applied with the necessary care.

Nevertheless, we strongly recommend testing the suitability of the product under your actual operating conditions. This refers particularly to the suitability of the material chosen for the intended application.

Our sales and technical departments are available for any further advice you my need. We reserve the right to make changes, especially if they improve the quality of the product, increase performance or simplify production.

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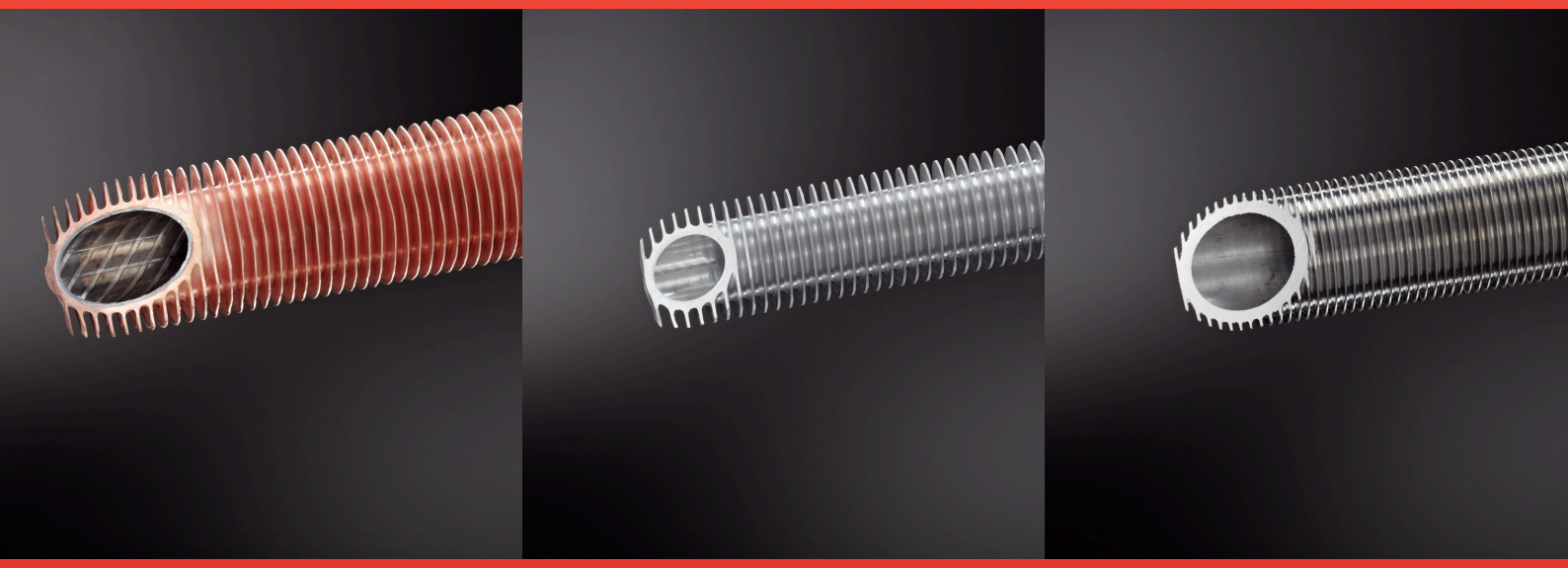

We are looking forward to advise you!

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A company of Surikate Group

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