

**Insulated Tubes
and Traced Tube Bundles**

Tube material

Copper

SF-Cu F22 nach DIN 1787
(BS 2871, ASTM B68, B75)

Dimensions and tolerances to
DIN 1754 Sheet 1.

Properties and technical
requirements to
DIN 17671 Part 1, 2

Cleanness of the inner surface
to DIN 8905

Tubes seamless and annealed

Stainless steel

No. 1.4571 -
X10CrNiMoTi1810 (AISI 316Ti)

longitudinally and orbitally welded as
well as calibrated or cold drawn
to EN 10217-7 (ASTM A269, but also
orbitally welded)
seamless to EN 10216-5 (ASTM A269)
annealed

Dimensions and tolerances:
longitudinally welded and seamless to
DIN EN ISO 1127,
tolerances according to D₃, T₄.
Properties and technical
specifications:
longitudinally welded to EN 10217-7
seamless EN 10216-5

PTFE (Teflon)

Other materials on special
inquiry

Electrically traced bundles

Manufacturing range see Table 1.
The bundles comprise fluid
tubes of stainless steel or
PTFE (Teflon) and electrical
heaters. The tubes in bundles
comprising more than two are
continuously numbered

throughout their length and stranded,
lapped with metal tape (heat transfer
aid) enclosing a tinned copper
grounding wire insulated with
several layers of thermofleece strip
(non-flammable fibreglass
fleece, on special inquiry)
and served with an extruded
seamless outer jacket of
plastics.

Electrical heaters

Available types of heater:

- self-regulating electrical
heater
- heater with constant
power duty (cpd)
- mineral insulated (MI)
heating cables

Careful selection of an appropriate
type of heater makes it
possible for fluids to be
maintained at up to 300 °C at
-20 °C ambient temperature.

Steam traced bundles

Manufacturing range see
Table 2.

The traced bundles comprise
fluid tubes of stainless steel or
PTFE (Teflon) and steam tubes
of copper or stainless steel. The
laid-up numbered tubes are
lapped with one layer of high-
temperature textile glass silk
tape, insulated with several
layers of thermofleece strip (non-
flammable fibreglass fleece, on
special inquiry) and served
with an extruded seamless
outer jacket of plastics.

Preinsulated tubes

Manufacturing range see
Table 2.

The tube is copper or stainless
steel. It is wrapped with several
layers of thermofleece strip (non-

flammable fibreglass fleece, on
special inquiry) and served
with an extruded seamless
outer jacket of plastics.

Length

Supplied on wooden reels in
lengths up to 250 m depen-
ding on the tube material.
Short lengths in coil form.
Greater lengths on special
inquiry.
Tube ends capped and sealed
against dust and moisture.

Jacket materials

Tubes and bundles are fur-
nished with a flame-retardant,
self-extinguishing outer jacket
of black **PVC YM4** to VDE
0209.

The following jacket materials
can be supplied on special
inquiry:

- **PE-LD 2YM2** to VDE 0207
Part 3, black or coloured
(halogen-free)
- **PE-LD** to VDE 0207 Part 3,
black, flame-retardant
- **PE-LD HM2** to VDE 0207
Part 24, black, flame-re-
tardant, self-extinguishing,
halogen-free
- **TPU**
black, flame-retardant,
halogen-free

**Installation of insulated
tubes and traced bundles**

Like electrical cables, tube
bundles can, for example, be
laid directly in the ground and
inside buildings.
Parallel runs of tubes or
traced bundles and insulated
individual tubes should be laid
at a minimum distance of
10-30 mm from each other.
Do not install in protecting
tubes or ducts.

Temperature limits for plastic jackets

Material	°C during installation		°C before and after installation	
	min	max	min	max
PVC YM4	-15	+50	-45	+100
LDPE	-20	+50	-60	+70
TPU	-20	+50	-60	+120

Minimum bending radius

Type	Permissible bending radius (nominal)
Bundles and insulated pipes	10 x O.D.

Manufacturing Range

Tab. 1: Electrically traced bundles

Number of tubes, dimensions ¹⁾ mm	Insulation thickness mm	Jacket thickness mm	Overall dia. ²⁾ mm	Bundle weight ²⁾	
				Stainless Steel tubes kg/km	PTFE tubes kg/km
1 x 6 x 1	10	2,0	42	835	745
2 x 6 x 1	10	2,0	47	1055	870
3 x 6 x 1	10	2,0	48	1195	920
4 x 6 x 1	10	2,0	49	1350	985
5 x 6 x 1	10	2,0	51	1505	1050
1 x 8 x 1	10	2,0	43	910	785
2 x 8 x 1	10	2,0	51	1265	1010
3 x 8 x 1	10	2,0	52	1420	1035
4 x 8 x 1	10	2,4	55	1710	1195
5 x 8 x 1	10	2,4	57	1930	1285
1 x 10 x 1	10	2,0	45	990	830
2 x 10 x 1	10	2,4	56	1520	1190
3 x 10 x 1	10	2,4	57	1725	1230
4 x 10 x 1	10	2,4	60	2000	1340
5 x 10 x 1	10	2,4	62	2300	1475
1 x 12 x 1	10	2,0	47	1075	880
2 x 12 x 1	10	2,4	60	1720	1315
3 x 12 x 1	10	2,4	61	1955	1350
4 x 12 x 1	10	2,4	64	2305	1495
5 x 12 x 1	10	2,4	68	2660	1650

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Tab. 2: Steam traced bundles; insulated tubes

Number of tubes, dimensions ¹⁾ mm	Insulation thickness ³⁾ mm	Jacket thickness mm	Overall dia. ²⁾ mm	Bundle weight ²⁾
				Cu tubes kg/km
1 x 6 x 1	10	2,0	32	486
2 x 6 x 1	10	2,0	39	750
3 x 6 x 1	10	2,0	40	910
4 x 6 x 1	10	2,0	41	1065
5 x 6 x 1	10	2,0	42	1235
1 x 8 x 1	10	2,0	34	588
2 x 8 x 1	10	2,0	42	960
3 x 8 x 1	10	2,0	43	1135
4 x 8 x 1	10	2,4	45	1370
5 x 8 x 1	10	2,4	48	1605
1 x 10 x 1	10	2,0	36	670
2 x 10 x 1	10	2,0	46	1145
3 x 10 x 1	10	2,0	48	1375
4 x 10 x 1	10	2,4	51	1750
5 x 10 x 1	10	2,4	54	2080
1 x 12 x 1	10	2,0	38	755
2 x 12 x 1	10	2,4	50	1345
3 x 12 x 1	10	2,4	52	1615
4 x 12 x 1	10	2,4	56	2075
5 x 12 x 1	10	2,4	60	2460

¹⁾ Tubes and bundles can be supplied with dimensions other than those listed and in standard inch sizes.

²⁾ Values given are nominal values within the limits of normal manufacturing tolerances.

³⁾ Other insulating thicknesses available on special inquiry.