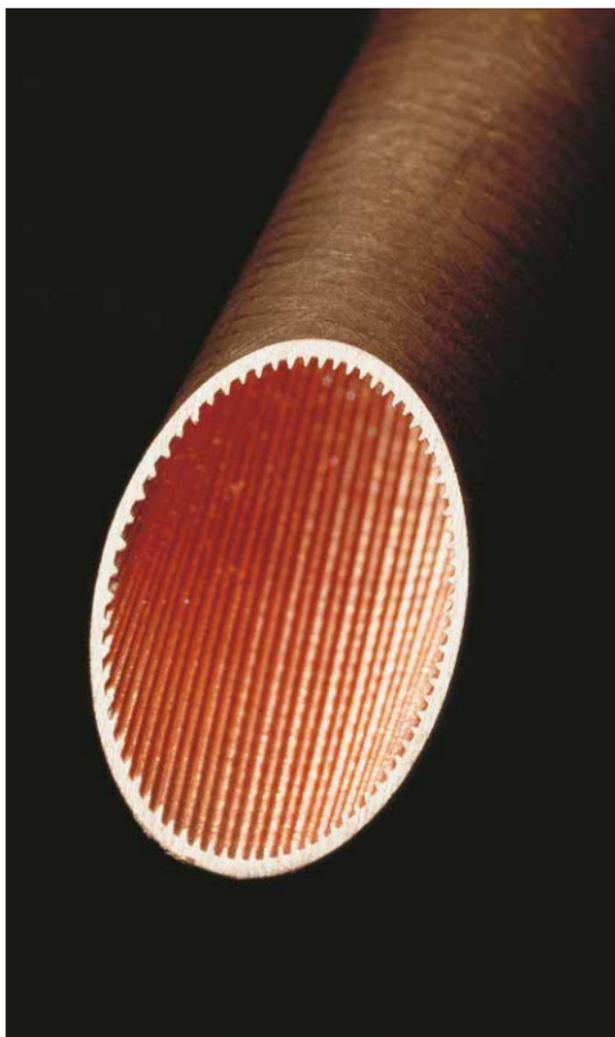


TECTUBE®_fin

Inner-grooved tubes

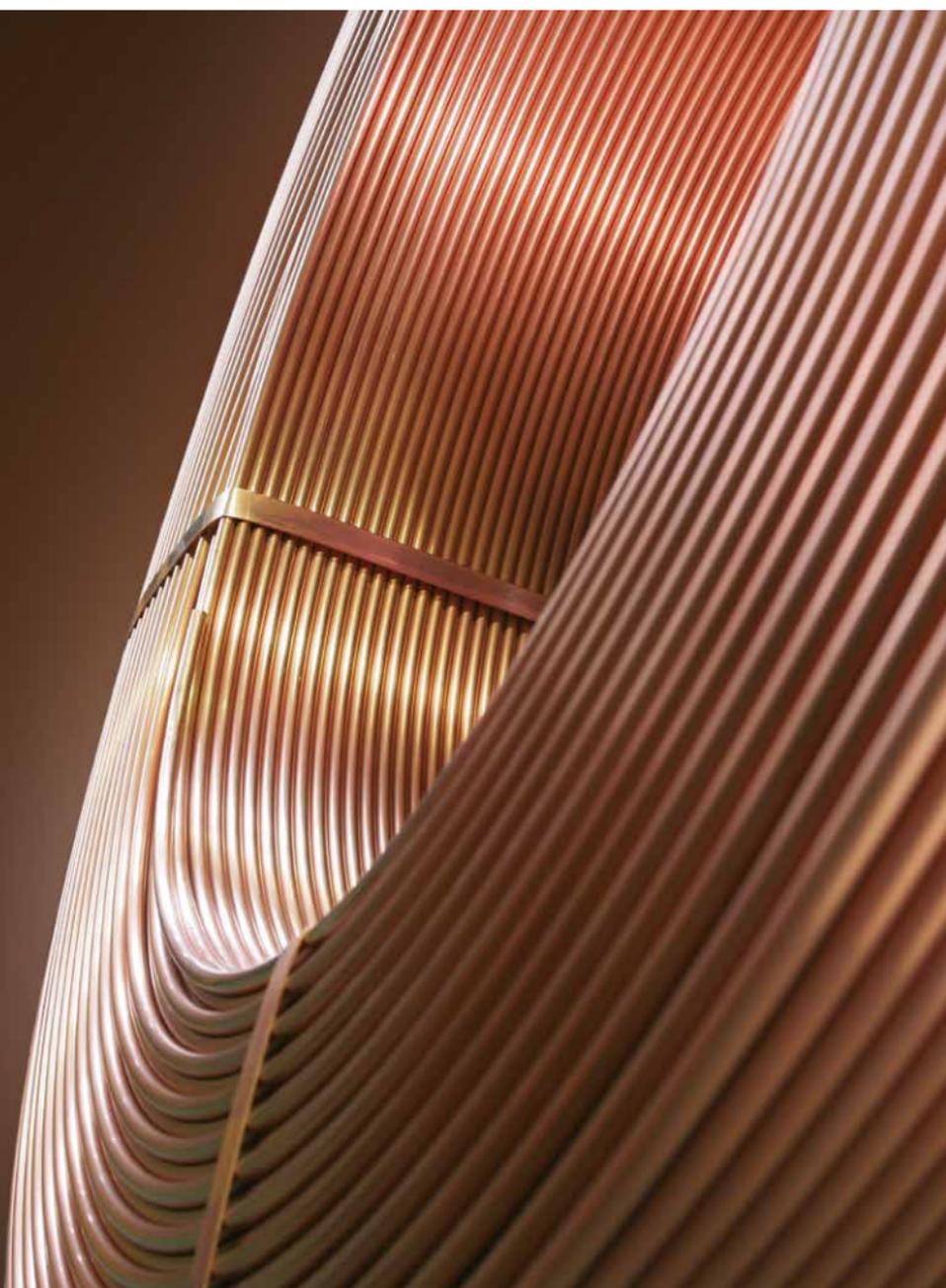
Thermal performance test laboratory

KME Germany GmbH & Co. KG
TECTUBE®_fin
[GB]



TECTUBE®_fin

Inner-grooved tubes based
on evolutive IGT profiles
(V,CV,CVS,VA,HVA,HVA-L,SVA)

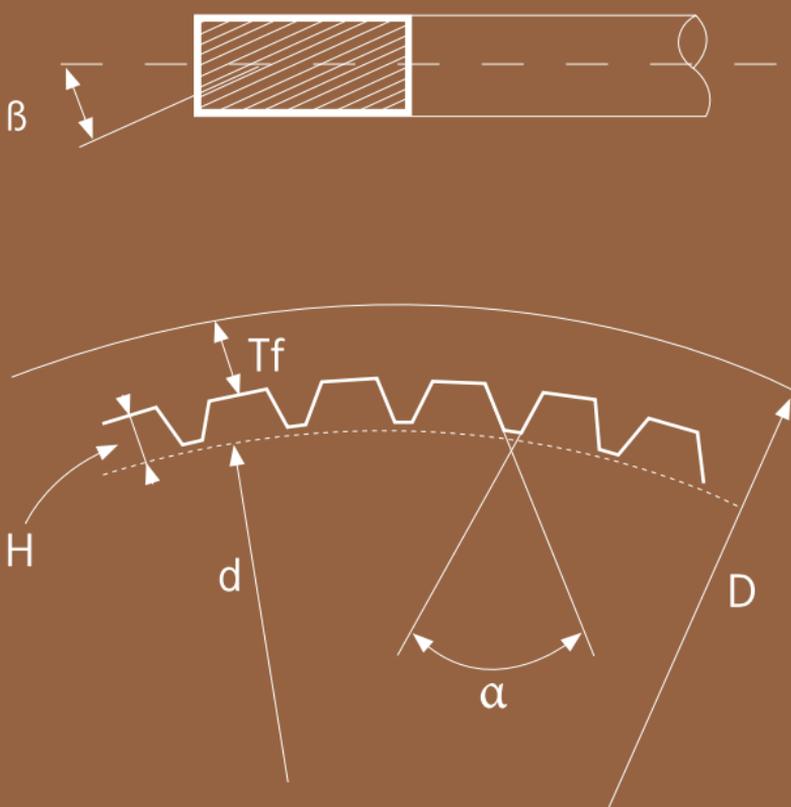


TECTUBE[®]_fin is the KME brand name for inner-grooved tubes designed for heat-exchangers (finned coils and shell&tubes) used in the equipments of air-conditioning and refrigeration.

These copper tubes are inside anticipated and outside sophisticated owing to the development of evolutive inner profiles and outstanding properties for the manufacturing process of the heat-exchangers.

Quality standard are EN 12735-2 and TECTUBE-01 (KME special tolerances) shall be delivered in level wound coils of 133 Kg and Jumbo coils of 200 Kg for certain sizes.

They are fully compatible with classical decoilers and adapted to eye to sky or central decoiling.



eg 95230 HVA 30/66A

952 >>> 100* OD = 9,52 mm

30 >>> 100* T_f = 0,30 mm

HVA >>> profile type

30 >>> apex angle = α

66 >>> groove number

A >>> helix angle = β

A 18°/B 20°/C 25°/D 30°

TECTUBE®_fin V, CV are standard inner-grooved tubes used for general applications for the equipment of air-conditioning and refrigeration.

TECTUBE®_fin CVS is an inner-grooved tube designed mainly for condensers using HFC's refrigerants.

TECTUBE®_fin VA, HVA, HVA-L (HVA-Light), and latter SVA are KME patented profiles with alternate fin heights having outstanding properties in expansion ability and high thermal performance in evaporation and condensation using HFC's refrigerants (*R134a, R404A, R407C, R410A*).

The characteristics of the grooves for CVS, HVA-L and SVA are based on the reduction of apex angle with or without an increase of helix angle to reach very low weight-meter typically *min. 6% less than normal inner-grooved tubes* which gives a significant cost reduction.

The inside surface area is dramatically increased with a ratio S/SO (related to smooth) from **1,4 to 2,3**.

Tab.1. Tube sizes TECTUBE®_fin V, CV

Dimensions (OD X Tf X H)	Profile designation	Weight-meter Wm (g/m)
7 X 0,25 X 0,18	70025V40/50I	55
7,94 X 0,26 X 0,18	79426V40/50A	64
9,52 X 0,28 X 0,15	95228V30/70A	82
12,7 X 0,36 X 0,25	12736CV50/65D	147
15 X 0,40 X 0,25	15040V40/75A	189
15,87 X 0,40 X 0,30	15841V60/75B	230

Tab.2. Tube sizes TECTUBE®_fin VA, HVA, HVA-L, SVA / A = alternate fin heights

Dimensions (OD X Tf X H)	Profile designation	Weight-meter Wm (g/m)
7,2 X 0,25 X 0,18	72025HVA40/64A	59
7,94 X 0,30 X 0,20	79430VA40/46A	71
9,52 X 0,30 X 0,20	95230HVA30/66A	88 (-6%)
12 X 0,33 X 0,20	12033HVA40/98B	125 (-4%)
12,7 X 0,34 X 0,22	12734HVA40/98B	138 (-6%)

Tab.3. Tube sizes TECTUBE®_fin CVS

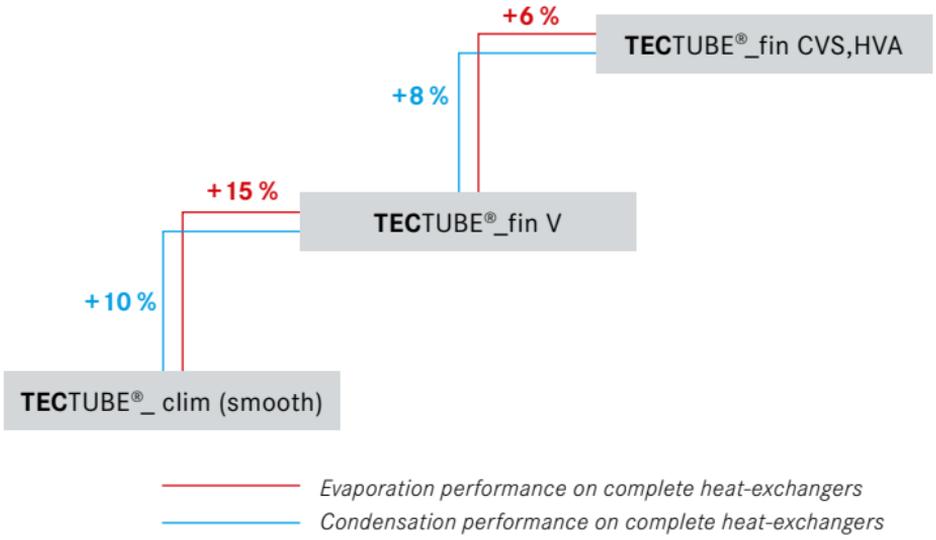
Dimensions (OD X Tf X H)	Profile designation	Wm* (weight reduction)
9,52 X 0,28 X 0,2	95228CVS25/66C	89
9,52 X 0,40 X 0,2	95240CVS20/74B	116 (-14%)
12 X 0,32 X 0,23	12032CVS15/70D	122 (-6%)

* Refers to weight reduction from standard inner-grooved tubes

** Refers to inside surface (S/SO enhancement factor from smooth reference)

*** Refers to temper light annealed -calculated with 3,5 safety factor acc. to AD specification

Thermal performance of TECTUBE®_fin



Sexch** (dm ² /m) (S/SO)	Maxi working pressure *** (bars)
3,22 (1,56)	48
3,35 (1,51)	44
4,39 (1,56)	40
5,83 (1,55)	38
5,94 (1,38)	36
6,50 (1,38)	34

Sexch** (dm ² /m) (S/SO)	Maxi working pressure *** (bars)
3,41 (1,62)	47
3,39 (1,47)	51
4,68 (1,67)	42
5,97 (1,68)	37
6,18 (1,68)	36

Sexch** (dm ² /m) (S/SO)	Maxi working pressure *** (bars)
5,22 (1,85)	40
5,37 (1,96)	57
7,14 (2,00)	35

Presentation of KME thermal test laboratory

Recently implemented KME test lab is dedicated to R&D on new IGT profiles and is oriented towards thermal tests on heat-exchangers for ACR customers.

It is located within KME Plant Givet specialized in the production of ACR tubes (smooth and IGT)

It features *4 main thermal loops* (2 for single tubes and 2 for heat-exchangers) which feature complete refrigerant circuits (compressors/evaporators/condensers) and fully control of the thermal parameters (flow rate, humidity, temperature, pressure drops, thermal capacity):

1. one for testing of air-coolers with max. size of 400x400 mm² (capacity 10 – 15 kW)
2. second for testing of air-condensers with max. size of 600x600 mm² (capacity 10 – 15 kW)



The test protocol follows the requirement of European standards like ENV 327 & ENV 328. Main refrigerants in use are *R404A*, *R410A* and *R407C* or new blends. This is a valuable technical support for the study of the influence of:

- Type of internal tube and/or external fins and evaluation of contact resistance
- Test conditions : air inlet temperature, superheating, air flow (available range 1 to 4 m/s)

KME brand name **TECTUBE®_fin** is quite sophisticated seamless inner-grooved tubes supplied in LWC.

Product benefits :

- Lower weight-meter
- Very high thermal performance in both evaporation/condensation
- Excellent ability during bending/expansion
- Constant KME brand quality

KME thermal laboratory offers an outstanding advantage to ACR customers for the testing of heat-exchangers in real and fully controlled test conditions.



TECTUBE®_fin

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Industrial Tubes



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The colours in this brochure are print colours and represent an approach to reality.