

Low Thermal Conductivity Wall Ties

Helping to deliver sustainable, energy-efficient buildings



Featured product brands:

Ancon



We imagine, model and make engineered products and innovative construction solutions that help turn architectural visions into reality and enable our construction partners to build better, safer, stronger and faster.

Leviat is a world leader in connecting, fixing, lifting and anchoring technology.

From the build of new schools, hospitals, homes and infrastructure, to the repair and maintenance of heritage structures, our engineering skills are making a difference around the world.

We provide technical design assistance at every stage of a project, from initial planning to installation and beyond.

Our technical support services range from simple product selection through to the development of a fully customised project-specific design solution.

Every promise we make locally, has the commitment and dedication of our global team behind it. We employ almost 3,000 people at 60 locations across North America, Europe and Asia-Pacific, providing an agile and responsive service worldwide.

Leviat, a CRH company, is part of the world's leading building materials business.

Leviat is the home of:



Stainless steel support and restraint fixings for masonry cladding, engineered concrete connections and reinforcement continuity systems.



Innovative concrete connections including lean, high strength steel-concrete composite columns and a comprehensive range of acoustic products.



Dowel and continuous-pour jointing systems for slab-on-ground applications, such as pavements and industrial concrete floors.



Comprehensive range of anchoring, reinforcing, framing and façade fixing technology, for both construction and industrial applications.



Innovative helical wall ties, fixings and masonry repair systems offering concealed, non-disruptive installation techniques.



Superior jointing systems for industrial concrete floors typically featuring armoured edge protection to reduce maintenance in high traffic areas.



Comprehensive portfolio of engineered construction accessories and safety products for the precast, tilt-up and cast-in place concrete industries.



Wide selection of mechanical rebar splicing technology, precast accessories and post-tensioning systems.



Engineered masonry and concrete connections, plus reusable and lost formwork solutions and building site accessories.



Insulation systems for use in precast, tilt-up and cast-in-place concrete building envelopes, designed for enhanced energy-efficiency and thermal performance.

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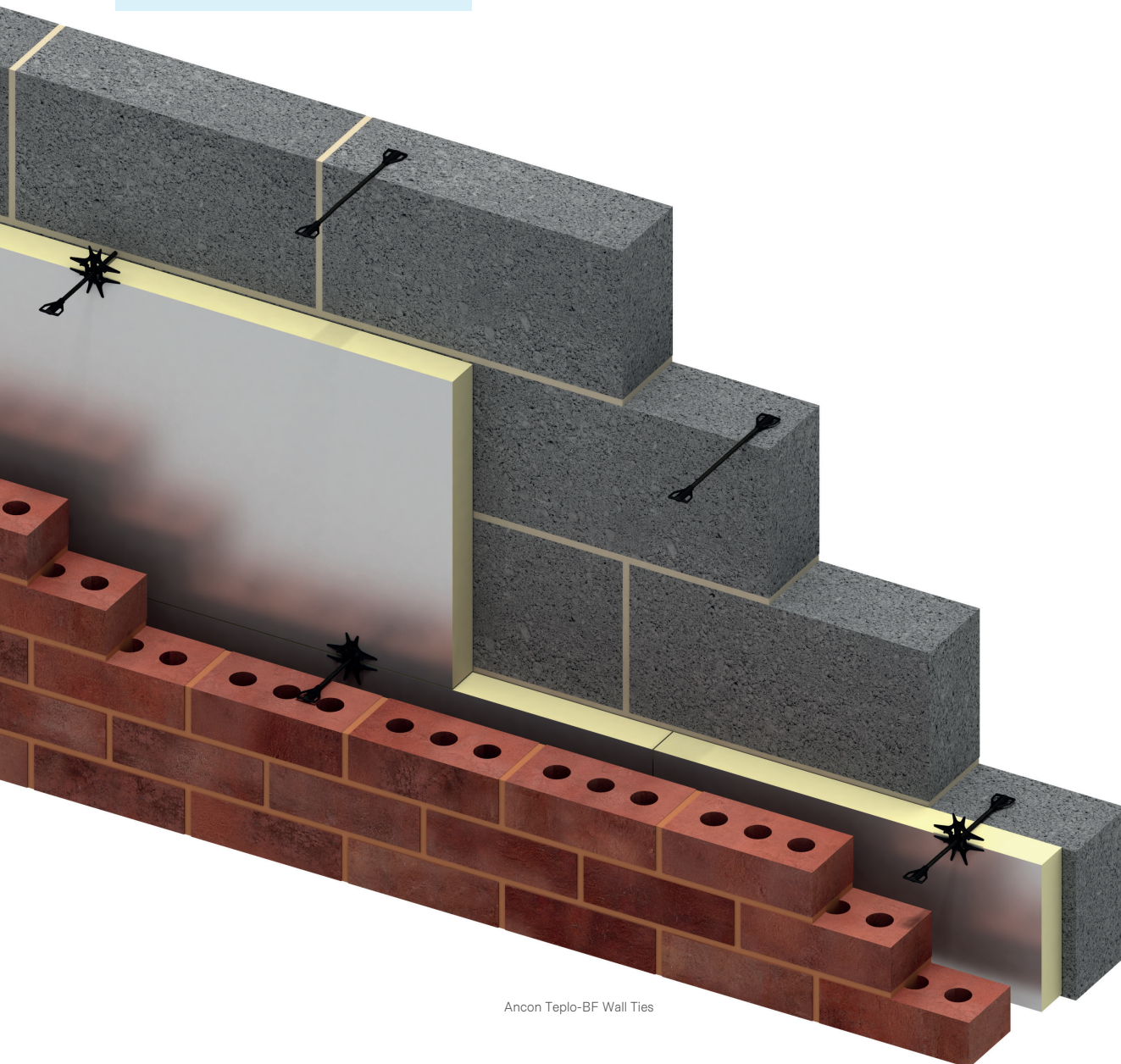
Helping to deliver sustainable, energy-efficient buildings

Wall Ties are an essential element in the strength and stability of a cavity wall, but by crossing the insulated cavity they act as a thermal bridge, providing a path for heat to escape from the building. Generally speaking, the wider the cavity, the more substantial the Wall Tie needs to be and the greater the effect the tie will then have on the thermal efficiency (U-value) of the wall.

The challenge for the Wall Tie industry was to reduce the thermal conductivity of its products whilst continuing to meet the structural performance requirements of wide cavity construction.

Leviat has met this challenge with it's innovative range of Ancon low thermal conductivity wall ties.

Ancon low thermal conductivity wall ties suit cavities up to 450mm and minimise heat loss through thermal bridging, improving the energy efficiency of a masonry cavity wall. Ideal for today's super-insulated building envelopes, they are suitable for both new-build and retrofit.



Ancon Teplo-BF Wall Ties

Low Thermal Conductivity Wall Ties

Ancon Teplo Basalt Fibre Wall Ties

Ancon Teplo wall ties comprise pultruded basalt fibres set in a resin matrix which offers a thermal conductivity of just 0.7W/mK. The thermal efficiency of this innovative material means these ties are excluded from U-value calculations to BS EN ISO 6946, minimising insulation thickness and wall footprint. The unique ribbed shank of these ties provides an effective moisture drip.

Plain-ended Teplo-R ties, inspired by the original basalt fibre wall tie, are ideal for resin-fixed remedial/ retrofit projects.

The Teplo-BF new-build wall tie, with its moulded safety ends, offers improved buildability and mortar bond strength, making it more user-friendly and suitable even in slow drying lime mortars.

The Teplo-BFR features a plain end for resin anchoring into an existing structure and a moulded safety end for building into a new bed joint.

For cavities from 50mm to 450mm



Ancon Teplo-BF1 (Type 1)
Lengths available: 200, 225, 250, 275mm

Ancon Teplo-BF2 (Type 2)
Lengths available: 200, 225, 250, 275, 300, 325, 350, 375, 400, 425mm

Ancon Teplo-BF3 (Type 3)
Lengths available: 450, 500, 525mm

Ancon Teplo-BF4 (Type 4)
Lengths available: 200, 225, 250, 550, 575mm

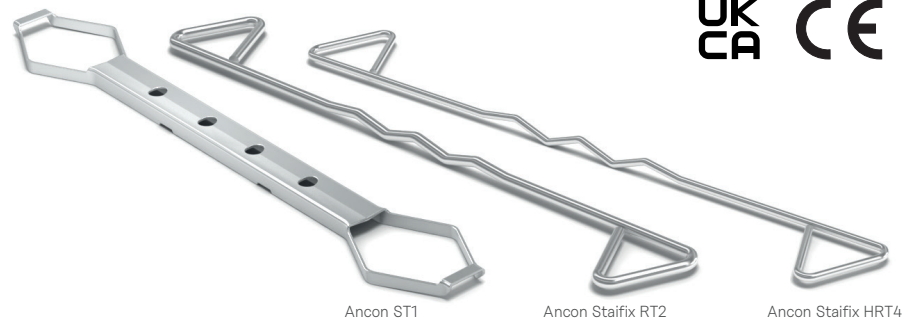
Ancon Teplo-BFR (Tie type dependent on resin-end/ substrate)
Lengths available: 210 - 585mm

Ancon Teplo-R (Tie type dependent on resin-end)
Lengths available: 215 - 590mm

Ancon Stainless Steel Wall Ties

Ancon stainless steel wall ties are value-engineered to provide high performance at a competitive price. The effect that the slender high tensile wire wall ties have on heat transfer is negligible and so, like the Teplo range, they are generally excluded from U-value calculations to BS EN ISO 6946.

For cavities from 50mm to 175mm



Ancon ST1 (Type 1)
Lengths available:
200, 225, 250, 275, 300, 325, 350mm
Type 1 in M2 mortar

Ancon Staifix RT2 (Type 2)
Lengths available:
200, 225, 250, 275mm

Ancon Staifix HRT4 (Type 4)
Lengths available: 200, 225, 250, 275mm
Suitable for use in internal separating walls to Approved Document E

Lambda value (W/mK) and cross-sectional areas are given overleaf to aid U-value calculations.

Product Marking

These Ancon stainless steel wall ties are UKCA & CE marked to BS EN 845-1 in accordance with the Construction Products Regulation. The basalt fibre Teplo range is outside the scope of UKCA & CE marking.

Low Thermal Conductivity Wall Ties

Ancon Teplo-L-Tie Basalt Fibre Frame Cramp

The Ancon Teplo-L-Tie is ideal where a low thermal conductivity fixing is required between new masonry and in-situ steel, timber, concrete or masonry. It offers all the same benefits as a Teplo cavity wall tie with an additional L-shaped stainless steel upstand, mechanically and chemically bonded to one end, with a 7mm diameter hole to allow surface fixing. A British Board of Agrément certificate is available to download online.

For cavities from 100mm to 300mm
Chi values (W/K) are given overleaf



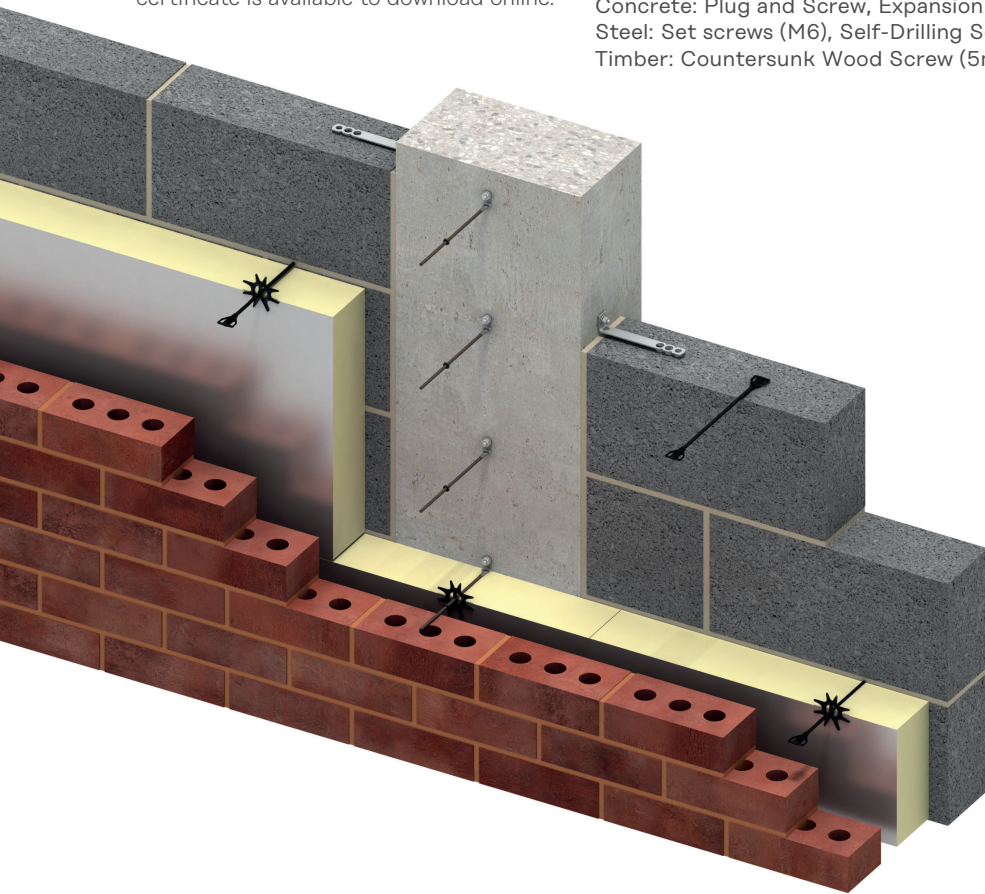
Suitable Fixings

Masonry: Plug and Screw

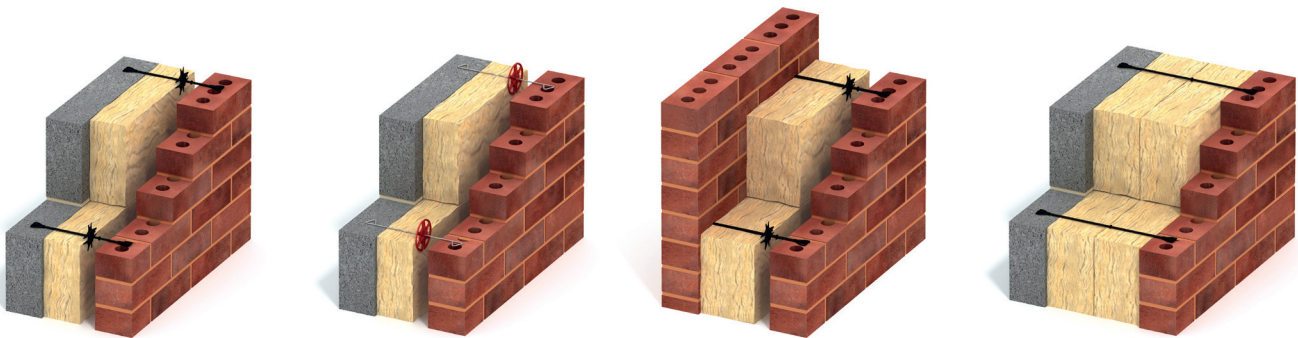
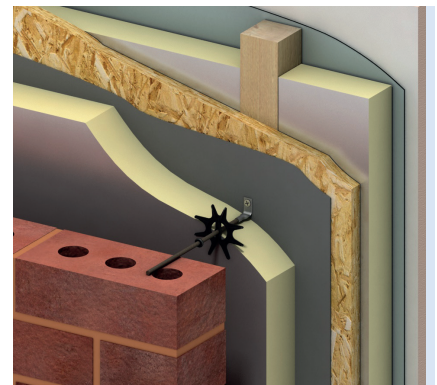
Concrete: Plug and Screw, Expansion Bolt (M6)

Steel: Set screws (M6), Self-Drilling Screws (SDTSS-38-5PT)

Timber: Countersunk Wood Screw (5mm x 30mm)



Example Wall Profiles



Project References

Ancon's low thermal conductivity wall ties have been used on numerous exemplary low energy construction projects, including certified zero carbon and PassivHaus developments. Visit www.ancon.co.uk or contact us for further information.

Low Thermal Conductivity Wall Ties

Information for U-value Calculations

For the accurate calculation of a wall's U-value, it is important to use the correct information for the wall ties, rather than allowing a program to apply a default value as this will over-estimate the effect of an Ancon Wall Tie. BS EN ISO 6946 permits the corrections due to wall ties (ΔU_p) and air gaps between insulation boards etc to be omitted if the corrections amount to less than 3% of the uncorrected U-value of the wall.

Ancon Teplo Basalt Fibre Wall Ties

Teplo-BF, Teplo-BFR and Teplo-R cavity wall ties have a thermal conductivity of less than 1.0W/mK and so are excluded from U-value calculations to EN ISO 6946, irrespective of tie diameter.

Ancon Stainless Steel Wall Ties

The thermal conductivity and cross-sectional areas of Ancon's stainless steel wall ties are shown below for use in U-value calculation programs.

Tie Reference	Tie Type	Tie Length (mm)	Cavity Range (mm)	Cross-Sectional Area (mm ²)	Thermal Conductivity (W/mK)
HRT4-200	4	200	50 - 75	3.5	17.0
HRT4-225	4	225	76 - 100	4.2	17.0
HRT4-250	4	250	101 - 125	6.2	17.0
HRT4-275	4	275	126 - 150	6.2	17.0
RT2-200	2	200	50 - 75	7.5	17.0
RT2-225	2	225	76 - 100	7.5	17.0
RT2-250	2	250	101 - 125	8.6	17.0
RT2-275	2	275	126 - 150	10.2	17.0
ST1-200	1	200	50 - 75	19.5	17.0
ST1-225	1	225	76 - 100	19.5	17.0
ST1-250	1	250	101 - 125	19.5	17.0
ST1-275	1	275	126 - 150	23.4	17.0
ST1-300	1	300	151 - 175	23.4	17.0
ST1-325	1	325	176 - 200	23.4	17.0
ST1-350	1	350	201 - 225	23.4	17.0

Ancon Teplo-L-Tie Basalt Fibre Frame Cramp

This basalt-fibre frame cramp with a stainless steel upstand has been thermally modelled by a third party expert, allowing us to provide accurate Chi values for each product length. To understand the effect of these wall ties in a square metre, the Chi value (W/K) is multiplied by the number of wall ties. The exceptional thermal efficiency of the Teplo range is such that it is unlikely ever to be taken into account in U-value calculations as a thermal bridge.

Tie Reference	Tie Type	Tie Length (mm)	Cavity (mm)	Chi Value (W/K)	$\Delta U_{2.5 \text{ ties/m}^2}$ (W/m ² K)	$\Delta U_{4.4 \text{ ties/m}^2}$ (W/m ² K)
TEPLO-L-5-165	Type 3 and Type 6	165	100	0.000335	0.00084	0.00147
TEPLO-L-5-190	Type 3 and Type 6	190	125	0.000260	0.00065	0.00114
TEPLO-L-5-215	Type 3 and Type 6	215	150	0.000215	0.00054	0.00095
TEPLO-L-5-240	Type 4 and Type 6	240	175	0.000175	0.00044	0.00077
TEPLO-L-5-265	Type 4 and Type 6	265	200	0.000150	0.00038	0.00066
TEPLO-L-7-165	Type 2	165	100	0.000515	0.00129	N/A, not Type 6
TEPLO-L-7-190	Type 2	190	125	0.000405	0.00101	N/A, not Type 6
TEPLO-L-7-215	Type 2	215	150	0.000340	0.00085	N/A, not Type 6
TEPLO-L-7-240	Type 2	240	175	0.000280	0.00070	N/A, not Type 6
TEPLO-L-7-265	Type 2	265	200	0.000245	0.00061	N/A, not Type 6
TEPLO-L-7-290	Type 2 and Type 6	290	225	0.000210	0.00053	0.00092
TEPLO-L-7-315	Type 2 and Type 6	315	250	0.000190	0.00048	0.00084
TEPLO-L-7-340	Type 2 and Type 6	340	275	0.000165	0.00041	0.00073
TEPLO-L-7-365	Type 2 and Type 6	365	300	0.000150	0.00038	0.00066

Wall Tie Types

Wall Ties are classified by the Types given in PD6697 (Types 1 to 4) and, specifically for timber frame construction, BS5268-6.1:1996 (Types 5 to 7). These documents should be consulted for complete information on wall tie use, such as altitude and wind speed restrictions, however, generally speaking, Type 1 ties are suitable for buildings of any height, Type 2 and Type 3 ties are suitable for buildings up to 15 metres, Type 4 ties are suitable for houses up to 10 metres and Type 6 ties are suitable for timber frame developments up to 15 metres.

Wall Tie Spacing

Wall Tie Types 1 to 4 should be installed at a standard spacing of 2.5 per square metre (900mm horizontal x 450mm vertical centres). Decreasing the centres can increase the performance e.g. Type 3 to Type 2. Contact Leviat for details. Type 6 timber-to-masonry wall ties should be installed at a minimum of 4.4 per square metre.

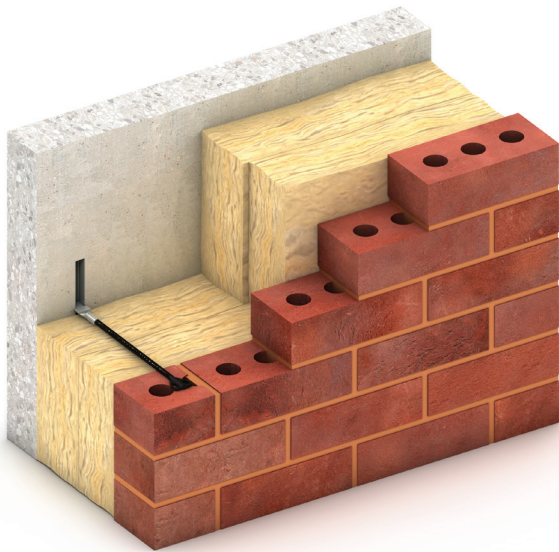
Low Thermal Conductivity Wall Ties

Ancon Teplo-Channel Basalt Fibre Wall Ties

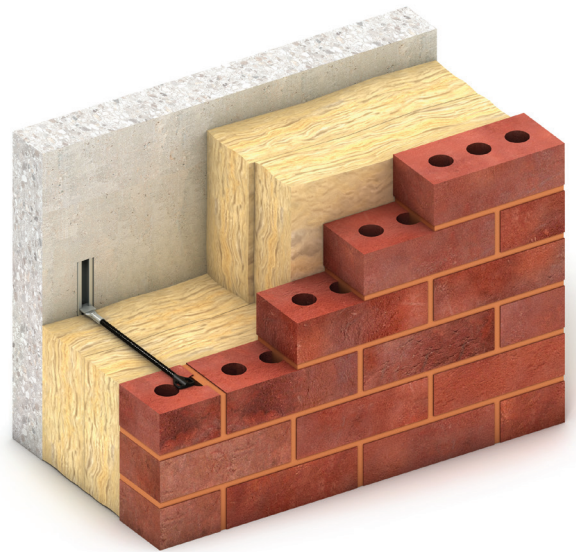
The Ancon Teplo-Channel tie range uses the same innovative combination of basalt fibres set in a resin matrix to provide a low thermal conductivity wall tie for use with our popular Omega 21/18, 25/14 and 28/15 channel profiles. These channel ties have a profiled stainless steel head at one end, shaped to suit each individual channel and mechanically fixed in place. A moulded safety end is provided for building the tie into the outer leaf bed joint.

Ancon Teplo-Channel ties provide unlimited adjustment along the length of the channel and are ideal for use with SFS and concrete frames. The range has been independently tested and is BBA approved; a British Board of Agrément certificate is available to download online.

For cavities from 70mm to 344mm
Chi values (W/K) are given overleaf



Teplo 21-18 Cast in Concrete



Teplo 28-15 Cast in Concrete

Low Thermal Conductivity Wall Ties

Information for U-value Calculations

For the accurate calculation of a wall's U-value, it is important to use the correct information for the wall ties, rather than allowing a program to apply a default value as this will over-estimate the effect of an Ancon Wall Tie. BS EN ISO 6946 permits the corrections due to wall ties (ΔU_t) and air gaps between insulation boards etc to be omitted if the corrections amount to less than 3% of the uncorrected U-value of the wall.

Ancon Teplo-Channel Basalt Fibre Wall Ties

The range of basalt fibre channel ties have been thermally modelled by a third party expert to provide accurate Chi values for each tie length and channel end type. To understand the effect of these wall ties in a square metre, the Chi value (W/K) is multiplied by the number of wall ties. The exceptional thermal efficiency of the Teplo range is such that it is unlikely ever to be taken into account in U-value calculations as a thermal bridge.

Tie Reference	Tie Type	Tie Length (mm)	Cavity (mm)	Chi Value (W/K)	ΔU_t , 2.5 ties/m ² (W/m ² K)
Teplo-BF-CT 21 - 150	2	150	70 - 94	0.0009	0.00225
Teplo-BF-CT 21 - 175	2	175	95 - 119	0.0006	0.00150
Teplo-BF-CT 21 - 200	2	200	120 - 144	0.0004	0.00100
Teplo-BF-CT 21 - 225	2	225	145 - 169	0.0003	0.00075
Teplo-BF-CT 21 - 250	2	250	170 - 194	0.0003	0.00075
Teplo-BF-CT 21 - 275	2	275	195 - 219	0.0002	0.00050
Teplo-BF-CT 21 - 300	2	300	220 - 244	0.0002	0.00050
Teplo-BF-CT 21 - 325	3	325	245 - 269	0.0002	0.00050
Teplo-BF-CT 21 - 350	3	350	270 - 294	0.0001	0.00025
Teplo-BF-CT 21 - 375	3	375	295 - 319	0.0001	0.00025
Teplo-BF-CT 28 - 150	2	150	70 - 94	0.0009	0.00225
Teplo-BF-CT 28 - 175	2	175	95 - 119	0.0006	0.00150
Teplo-BF-CT 28 - 200	2	200	120 - 144	0.0004	0.00100
Teplo-BF-CT 28 - 225	2	225	145 - 169	0.0003	0.00075
Teplo-BF-CT 28 - 250	2	250	170 - 194	0.0003	0.00075
Teplo-BF-CT 28 - 275	2	275	195 - 219	0.0002	0.00050
Teplo-BF-CT 28 - 300	2	300	220 - 244	0.0002	0.00050
Teplo-BF-CT 28 - 325	3	325	245 - 269	0.0002	0.00050
Teplo-BF-CT 28 - 350	3	350	270 - 294	0.0001	0.00025
Teplo-BF-CT 28 - 375	3	375	295 - 319	0.0001	0.00025
Teplo-BF-CT 28 - 400	3	400	320 - 344	0.0001	0.00025

Data based on thermal modelling using mineral wool in a full fill cavity with channel cast into concrete and Teplo-BF-CT ties bridging the insulation zone. Cavity Range values refer to cast-in channels. For surface-fixed 28/15 applications, cavity range values should be increased by 15mm.

Note: Thermal values will vary for other wall build-ups. For more information please contact Leviat.

Tie Reference	Tie Type	Tie Length (mm)	Cavity (mm)	Chi Value (W/K)	ΔU_t , 3.7 ties/m ² (W/m ² K)
Teplo-BF-CT 25 - 150	2	150	85 - 109	0.0008	0.00289
Teplo-BF-CT 25 - 175	2	175	110 - 134	0.0007	0.00250
Teplo-BF-CT 25 - 200	2	200	135 - 159	0.0006	0.00216
Teplo-BF-CT 25 - 225	2	225	160 - 184	0.0005	0.00191
Teplo-BF-CT 25 - 250	2	250	185 - 209	0.0005	0.00167
Teplo-BF-CT 25 - 275	2	275	210 - 234	0.0004	0.00150
Teplo-BF-CT 25 - 300	3	300	235 - 259	0.0004	0.00133
Teplo-BF-CT 25 - 325	3	325	260 - 284	0.0003	0.00122
Teplo-BF-CT 25 - 350	3	350	285 - 309	0.0003	0.00109
Teplo-BF-CT 25 - 375	3	375	310 - 334	0.0003	0.00100

Data based on thermal modelling using 100mm thick mineral wool in a partial fill cavity with channel fixed to front of insulation and Teplo-BF-CT ties bridging the clear cavity.

Note: Thermal values will vary for other wall build-ups. For more information please contact Leviat.

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