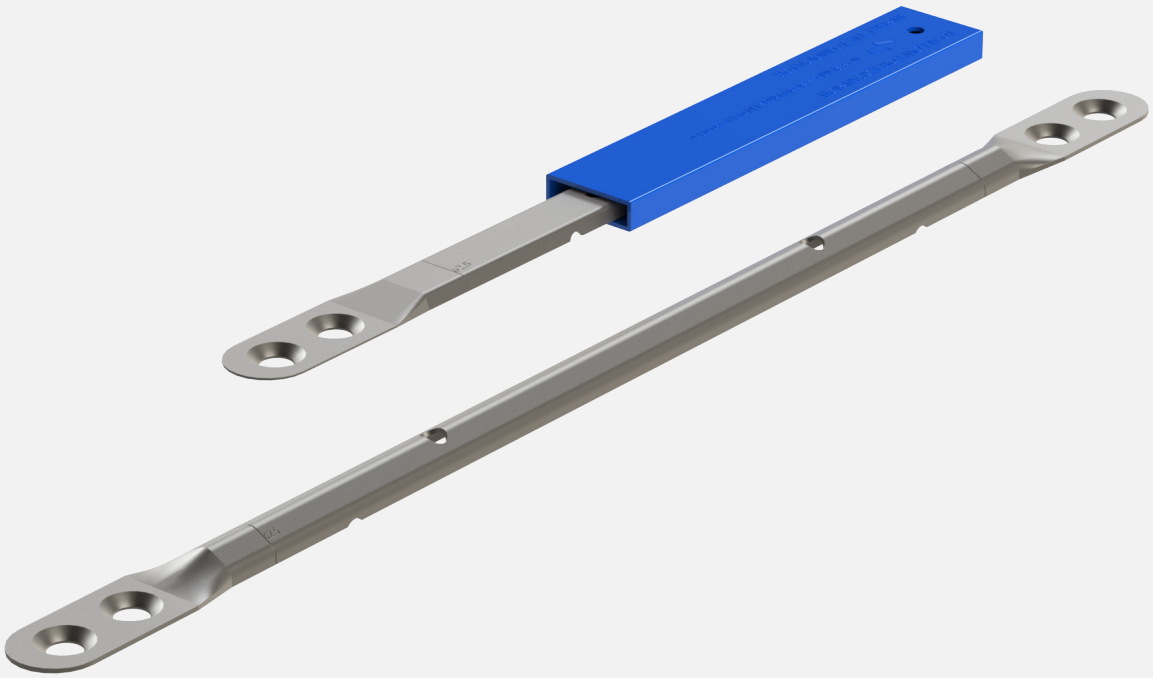
Technical Data Sheet

2000 Range Tie – Type 1/Debondable Wall Tie



2000 Range Tie – Type 1/Debondable Wall Tie

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Product summary

UK CA | CE UK NI

BS EN 845-1

The ACS 2000 Range Tie is a multi-purpose tie designed in accordance with all relevant standards, dependant on use.

Its first use is as a cavity tie where it can be classified as a Type 1 tie in line with PD6697. The 2000 Range Tie also has the added capability to be used as a movement tie*, designed to tie two panels of masonry together at a vertical movement joint. The tie provides lateral resistance to wind loading whilst allowing expansion and contraction of the masonry panel to prevent cracking. Through the use of an ACS debonding sleeve, it is designed to allow in axis movement of up to +/- 10mm. The final use of the product is as a shear tie across such scenarios as a collar jointed wall.

The tie formed section and the integrated drip features act to prevent water from crossing the cavity. The minimum mortar joint thickness that this tie is intended for is 10mm.

The ACS 2000 Range Tie is available in Grades 304 (BS EN 1.4301) and Grade 316 (BS EN 1.4401) austenitic stainless steel.

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ACS Stainless Steel Fixings Ltd
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Product highlights

Type 1 - heavy duty tie (PD6697)
Embedment 62.5 – 75mm
UKCA / CE+UKNI marked
Shear / movement tie
Austenitic stainless steel
Suits cavities 50 – 225mm
Lucideon tested
A1 non-combustible

Tie reference	Tie length (mm)	Cavity length (mm)
ACS2000/200*	200	50 – 75
ACS2000/225*	225	76 – 100
ACS2000/250	250	101 – 125
ACS2000/275	275	126 – 150
ACS2000/300	300	151 – 175
ACS2000/325	325	176 – 200
ACS2000/350	350	201 – 225

* Debondable

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A1 non-combustible

The ACS 2000 Range Tie is a stainless steel product which satisfies the requirements for an A1 classification without testing as the below details outline. Referring to document 96/603/EC, the ACS 2000 Range Tie is produced from stainless steel and shall on account of the material's low level of combustibility, be classified in Classes A ("No contribution to fire") without need for further testing. The document shows all categories considered as non-combustible. For any further information please refer to the aforementioned standard.

Thermal properties

Due to the innovative design of the ACS 2000 Range tie, the cross sectional area has been reduced while still achieving the requirements for a Type 1 cavity tie. As the cross sectional area is reduced, this introduces the benefit of less thermal transfer across the cavity when compared to other ties. The cross sectional area of the tie is 19mm^2. Stainless steel has a thermal conductivity of 17W/mK. With these figures, the effect of wall ties upon the panel can be calculated.

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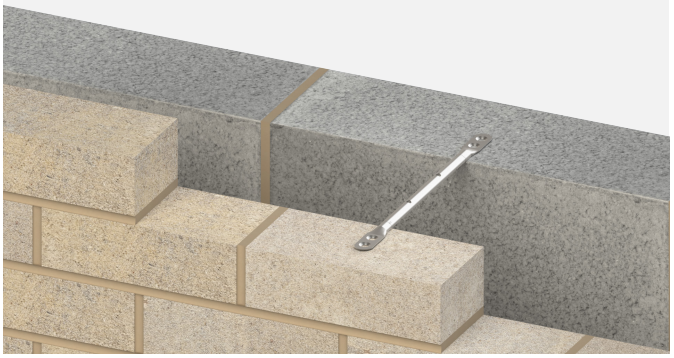
1



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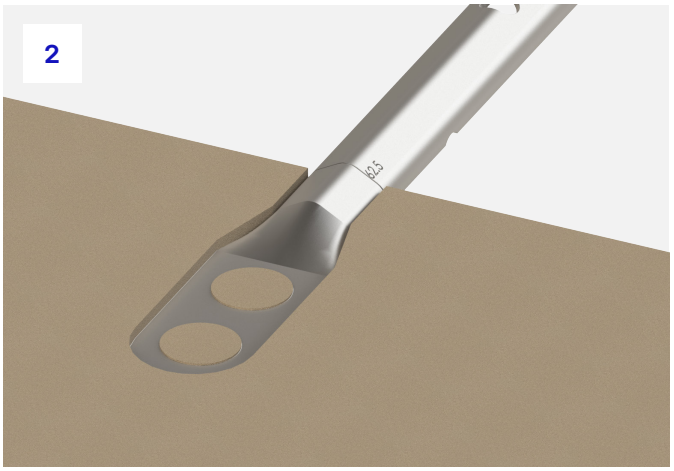

Installation

Cavity tie

1. When used as a cavity tie, ACS 2000 Range Ties should be installed in-line with the guidance of PD6697 which stipulates that ties should typically be installed at 900mm horizontal centres and 450mm vertical centres, staggered by 450mm between courses. This spacing should be reduced to 225mm around openings and at unbonded edges within 300mm of the edge or opening. However, the exact required spacing to suit each building should be calculated by the project structural/ facade engineer based upon test results within this data sheet.

2. Ties should be selected to provide 62.5mm of embedment in each leaf of masonry to ensure their performance under load. The 2000 Range Tie includes clear embedment markings at 62.5mm to aid with installation. Tie lengths should be selected to provide a design embedment of between 62.5mm and 75mm in each leaf of masonry to ensure their performance under the load as per the table on page 7. The 2000 Range Ties include clear embedment markings at 62.5mm to aid with installation.

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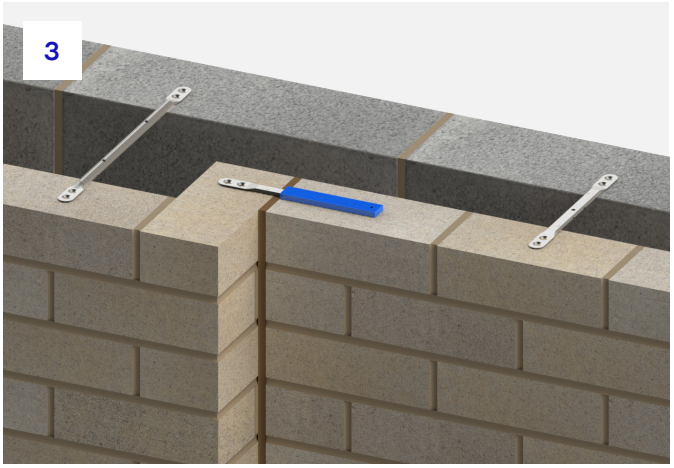


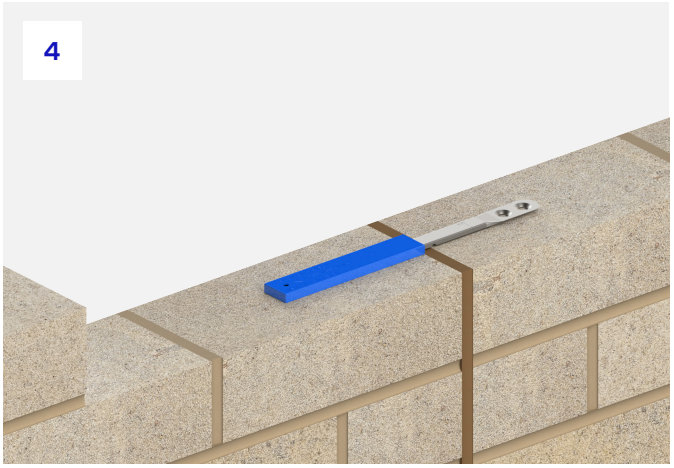
Movement tie

3. When used as a movement tie, ACS 2000 Range Ties are designed for use in vertical movement joints at 225-450mm maximum centres.

The tie should be installed so the end of the tie aligns with the hole at the bottom of the debonding sleeve, allowing a minimum of 10mm of movement in both directions.

The tie is available in two lengths to suit the specific application (200mm and 225mm) and debonding sleeves are available in either 100mm or 125mm standard lengths. A tie should be selected to provide the minimum of 75mm embedment of the safe end and 100 or 125mm of plain strip for insertion into the appropriate debonding sleeve.

Test results can be found on the next page.



Multi-use tie

4. As mentioned, the unique design of the product means that it can be used in a number of scenarios. As seen in the above image, around common architectural features such as brickwork steps, the ACS 2000 Range Tie can be used for multiple locations. Across the two different cavities, two different lengths of tie are used, whilst over the movement joint located where the brickwork returns, the same tie can be used with a debonding sleeve to allow for in plane movement whilst still resisting the applied shear loads.

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Test results

Cavity tie

ACS 2000 Range Ties are designed as a symmetrical cavity wall tie as defined in BS EN 845-1:2013 and tested in-line with guidance of BS EN 846-5:2012 to establish a declared load capacity. These values, as well as the required value to PD 6697:2019, can be found opposite:

BS EN 846-5 Brick Couplet Test

Mode of test	Tie length (mm)	Maximum Declared Value (N)	PD6697:2019 Required Value (N)	Mortar class
Compressive	250 – 350	2530	2000	M2 (iv)
Tensile	250 – 350	3710	2500	M2 (iv)
Compressive	200 – 225	2600	2000	M2 (iv)
Tensile	200 – 225	2600	2500	M2 (iv)

Movement tie / Shear tie

ACS 2000 Range Ties are also designed as a slip tie, asymmetrical and movement tolerant at the debonding sleeve end as defined in BS EN 845-1:2013 and tested in line with guidance of BS EN 846-7:2012 to establish a declared load capacity.

These values are found on the right, as well as the design resistance per metre at given centres when the necessary partial factor is applied, given in NA to BS EN 1996. The results are subject to a minimum mortar class of M4.

Tie type	Maximum Declared Value (N)	Design Shear Resistance per Metre (N/m)		Mortar class
		450mm centres	225mm centres	
Masonry end	1230	911	1822	M4 (iii)
Debonded end	1380	1022	2044	M4 (iii)

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