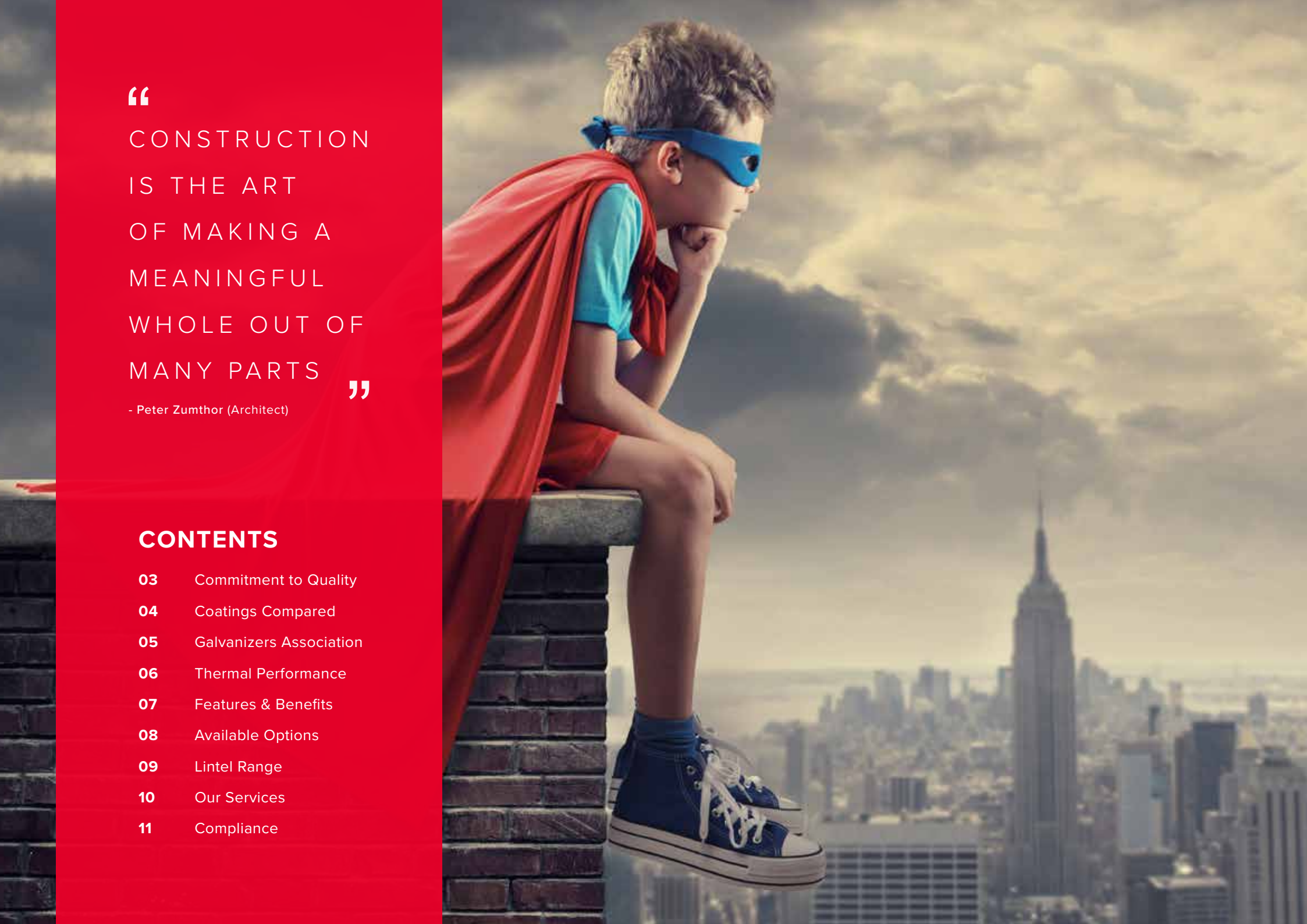
Birtley

SUPATHERM

FOR HEROIC STRUCTURES



“CONSTRUCTION IS THE ART OF MAKING A MEANINGFUL WHOLE OUT OF MANY PARTS”

- Peter Zumthor (Architect)

CONTENTS

SUPPORTING THE UK CONSTRUCTION INDUSTRY **SINCE 1965**

Founded in 1965 in County Durham, Birtley began life as a small structural steel business, opening on 19th July that year. Originally steel fabricators for the mining industry, Birtley added steel lintels to its product range in 1967 and by 1979 was a credible building industry specialist, with depots across the country. In 1996, Birtley commissioned and built a brand new plant, establishing one of Europes most advanced facilities for hot dipped galvanizing which remains fully operational today.

Birtley acquired the metalwork manufacturer Expamet in 2012, followed by an acquisition of Bowater Doors in 2015. All three companies now operate under the Birtley Group banner, providing a broad spectrum of products to the construction industry.

UNDERSTATED STRENGTH

Birtley is the only lintel manufacturer to hot-dip galvanize after fabrication providing up to 50% more zinc protection than other approved coatings. Hot Dip Galvanizing to EN1461 offers superior corrosion protection and lifespan compared with pre-galvanized steel.

We offer a 65-150µm zinc coating thickness to suit life expectancy and exposure class. Our lintels are the only lintels to deliver consistent protection to all parts including welds and cuts, which are otherwise only protected by paint on pre-galvanized alternatives.

OUR COMMITMENT TO **QUALITY**

With over 50 years of manufacturing expertise Birtley continues to be the stalwart of the lintel market, producing over 25,000 tonnes of steel products for the construction sector every single year.

Birtley Group
STRENGTH THROUGH QUALITY

Birtley

galvanizing
SHOT BLASTING & POWDER COATING

CE

BS EN 1090-1 Quality Management

ISO 14001 Environmental Management

ISO 9001 Quality Management

GALVANIZERS ASSOCIATION

BMF Builders Merchants Federation

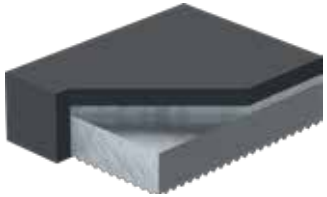
COATINGS COMPARED

Our post fabrication dipping process ensures that every part of every lintel is covered with an equally effective layer of protection. Other lintels are often made using pre-galvanized material, which is cut, bent and processed before a layer of paint is used to protect the cut surfaces, the same surfaces which are at the greatest risk of damage. Our cut edges are protected by metal, not paint, that's why Birtley lintels are far more durable than other products on the market.

Within EN845-2, several material coatings are deemed suitable for use when manufacturing lintels for the UK market. The following scale diagrams show how we compare with other hEN approved systems of corrosion protection:

BASIC

Paint only on cut edges



DUPLEX

Paint only on cut edges

BIRTLEY STANDARD

Fully protected edges

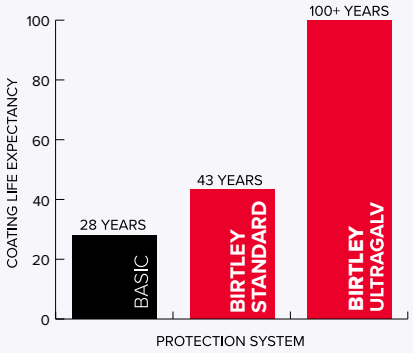
BIRTLEY ULTRAGALV

Fully protected edges

	BASIC	DUPLEX	BIRTLEY STANDARD	BIRTLEY ULTRAGALV
Coating	Pre-galvanized steel strip with coated edges	Pre-galvanized steel strip with coating all over	Fully galvanized	Shot blasted & fully galvanized
Zinc Thickness	42 Microns	19 Microns	65 Microns	150+ Microns
Life Expectancy	28 Years	Dependent on condition	43 Years	100+ Years

LIFE EXPECTANCY

The graph below shows how long you would expect each galvanized coating to last in a moderate 1.5µm/year corrosion rate as defined by the map overleaf. The difference speaks for itself.



NEED TECHNICAL ADVICE?

Speak to our technical team

0845 121 4542

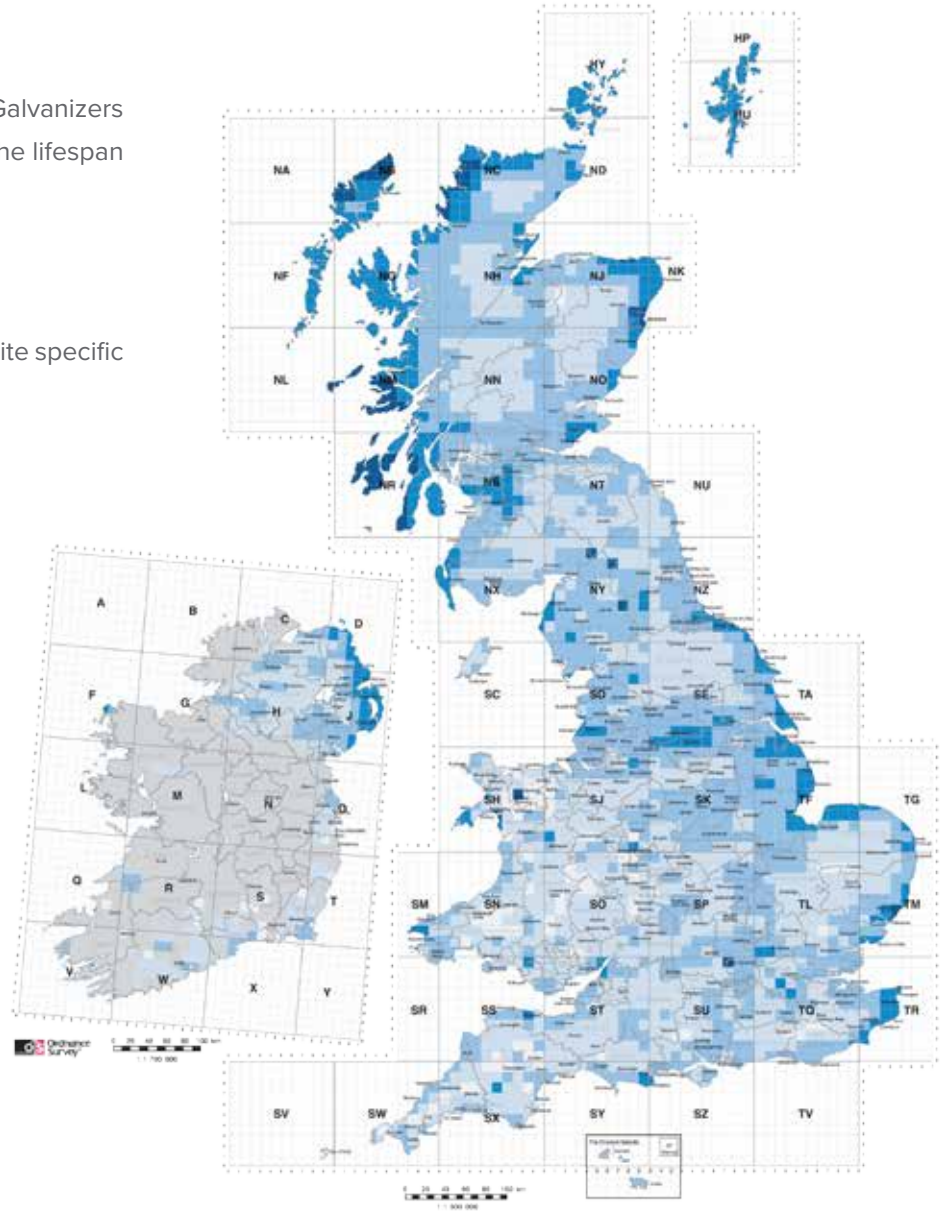
GALVANIZERS ASSOCIATION

The life of any coating is dependent on the local environment, which is often hard to quantify. The Galvanizers Association is responsible for a nationwide scientific survey which links geographic location to the lifespan of a galvanized coating.

ATMOSPHERIC CORROSION RATE OF HOT DIP GALVANIZING

This is an approximate guide and is most relevant to stationary, exterior exposed structures. Any site specific factors which may affect the corrosion rate must also be taken into account.

Detailed data for individual sites and advice on its interpretation (e.g. the possible effects of a local micro-climate on the corrosion rate actually experienced by the galvanized structure) is available from the Galvanizers Association.



HOW TO USE THE MAP:

1. Locate your project on the map
2. Match the colour of the square to the key
3. Read off the average background corrosion rate in µm per annum
4. Divide the coating thickness by the corrosion rate to obtain the expected

CORROSION CATEGORY					
Average Corrosion rate (µm/year)	0.5	1	1.5	2	2.5
BIRTLEY STANDARD 65µm min life expectancy (years)	130	65	43	33	26
BIRTLEY ULTRAGALV 150µm min life expectancy (years)	300	150	100	75	65

Based upon the annual average atmospheric corrosion of Zinc, UK and Republic of Ireland, 1998-2000.

THERMAL PERFORMANCE

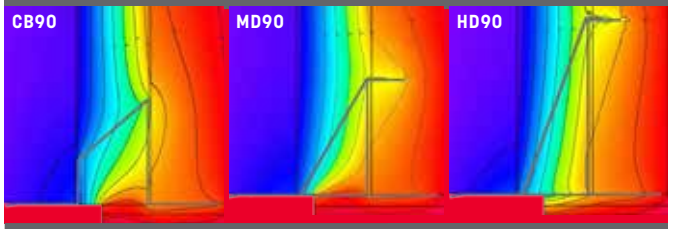
Lintels are classed as non-repeating thermal bridges and have an associated heat loss which is quantified as a Ψ (Psi) Value. Psi values are measured in Watts/Metre*Kelvin, therefore the lower the value, the less heat is lost through the junction.

THE BUILDING REGULATIONS: APPROVED DOCUMENTS L1A/L2A & SAP

Recent changes in the Building Regulations mean that a building's fabric performance must now hit a Target for Fabric Energy Efficiency (TFEE) in addition to the traditional Target Emission Rate (TER) for CO2. This means that more emphasis is put on reducing heat loss, a significant proportion of which can be attributed to lintels and other non-repeating thermal bridges.

A 'recipe' based system is adopted by SAP 2012 whereby a notional dwelling of identical proportions is given set values of linear thermal transmittance from Appendix R. These values aren't intended to limit each individual junction or wall, but when combined with other factors and U values, form a target for the dwelling as a whole. Appendix R values are significantly lower than approved values from Appendix K so it is important that energy assessors use dwelling specific accredited values; otherwise they may be forced to over-compensate in other aspects of fabric specification.

BIRTLEY LINTELS:



	Length Range	Psi Value*W/mK
CB90	900	0.18
	1200-1350	0.178
	1500-1650	0.198
	1800-2100	0.2
	2250-2400	0.227
	2550	0.222
	2700-3000	0.217
	3300-3900	0.241
MD90	1800	0.226
HD90	1800	0.201

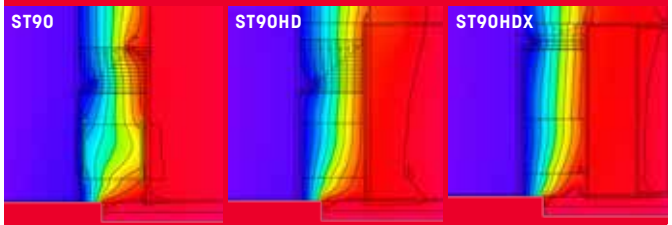
** Actual calculated values based on 100mm cavity, full fill insulation. Block λ=0.45.*

ACCREDITED CONSTRUCTION

Building to a Part L Accredited Construction Detail allows energy assessors to use an approved value of 0.3W/mK for lintels without a baseplate; in reality, our lintels can perform significantly better.

The values above show the actual calculated heat loss, for standard, medium and heavy duty lintels in a 100mm cavity wall. For other wall constructions, lengths or conductivities, please contact our Technical Department for further guidance. Temperature Factors should be in excess of 0.75 to minimise the risk of mould growth.

BIRTLEY SUPATHERM LINTELS:



	Length Range	Psi Value*W/mK
ST90	750-1050	0.098-0.057
	1200-1350	0.053-0.048
	1500-1650	0.043-0.039
	1800-2100	0.06-0.052
	2250-2400	0.048-0.043
	2550	0.039
	2700-3000	0.055-0.051
	3300-3900	0.037-0.031
ST90HD	1800	0.04
ST90HDX	1800	0.043

** Actual calculated values based on 100mm cavity, full fill insulation. Block λ=0.45.*

FEATURES & BENEFITS

When more significant fabric savings are needed, our Supatherm range of lintels can reduce heat loss by up to 80% when compared with a standard cavity wall lintel. Based on a typical detached, semi-detached, or terraced property, Supatherm lintels can improve the Dwelling Fabric Energy Efficiency (DFEE) by up to 3%, and the overall Dwelling Emission Rate (DER) by over 1%.

WHAT ACTUAL BENEFIT WILL THIS GIVE?

For a small detached dwelling (105m2), this could mean the difference between double glazing and triple glazing, saving roughly 25% on all windows.

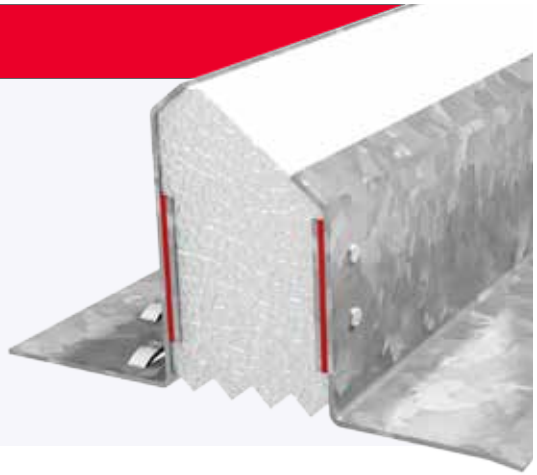
On a large detached dwelling (304m2), it could enable a wall cavity reduction from 150 to 125mm. This creates significant savings in insulation and masonry ancillaries.

TYPICAL Ψ VALUE 0.03 - 0.06

Further details on request

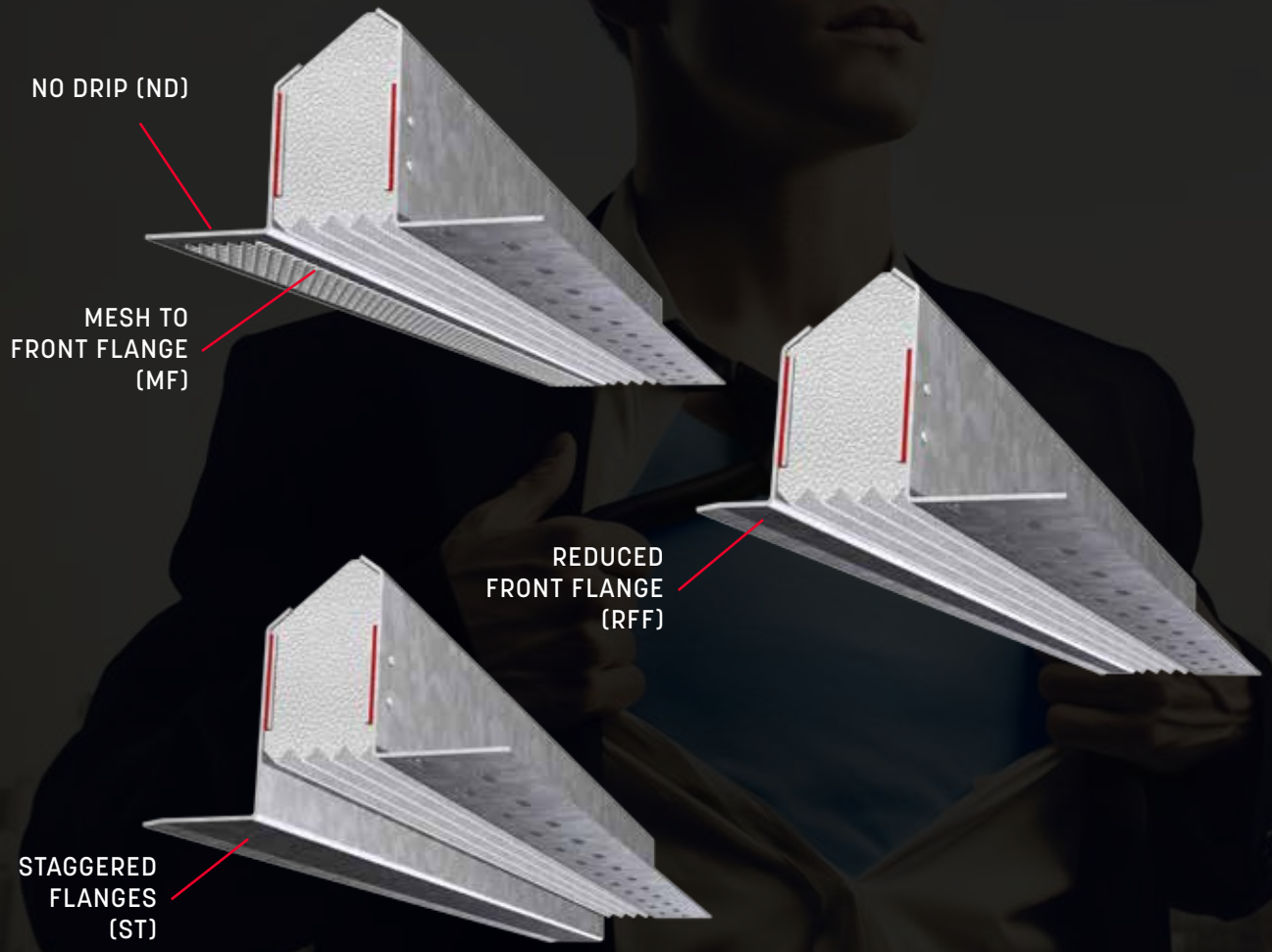
WHY CHOOSE SUPATHERM?

- Up to 80% reduction in heat loss compared with standard cavity wall lintels
- 65µm Hot-Dip Galvanized coating to EN1461 as standard *Ultragalv, Duplex and Stainless steel available on request
- Options to suit all types of masonry and wall construction
- Custom shapes, arches and various flange options on request
- All parts and assemblies CE marked to BS EN 845-2
- To suit cavity widths from 90 to 150mm
- Lengths available from 750 to 3900mm
- Standard duty, heavy duty and extra heavy duty versions available
- Avoids propping associated with single leaf lintels



SUPATHERM LINTEL OPTIONS

Sometimes a standard lintel just doesn't suit the architectural detailing of a building's design so a range of bespoke options are available on request.



REFERENCE GUIDE:

RFF

The front flange of a lintel can be reduced in length. This is most useful when using a chamfered window head or narrow brick, when a standard flange would protrude. Also used in an eaves situation.

To specify, add 'RFF' to the end of the lintel reference, followed by the projection of the flange e.g. ST90 RFF50.

ND

To minimise the mortar bed thickness at the end bearings, e.g. when using stone heads and surrounds, the weather drip on the front flange of the lintel can be omitted.

To specify, add 'ND' to the end of the lintel reference e.g. ST90 ND.

MF

A mesh can be welded to the underside of the front flange as a key to allow a rendered soffit. As the lintel is galvanized after the mesh is attached, it doesn't compromise the integrity of the lintel.

To specify, add 'MF' to the end of the lintel reference e.g. ST90 MF.

NM

Where the inner leaf of a cavity wall is fair-faced and the inner flange of the lintel is not plastered, the plaster key on this flange can be omitted.

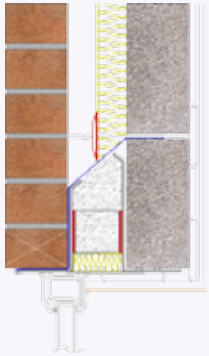
To specify, add 'NM' to the end of the lintel reference e.g. ST90 NM.

ST

Inner and outer leaf flanges can be staggered to allow for uneven coursing. Please contact our Technical Department for further information.

		Length (mm)														
	Load Ratio	<1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	3300	3600	3900
Standard	1:3	27	25	23	21	31	29	27	25	23	22	21	19	16	13	11
	Profile				148 high				198 high					203 high		
Heavy Duty	1:3 1:19	40 32	40 32	40 32	40 32	40 32	40 32	40 32	40 32	40 32	40 32	40 32	40 32	34 27	28 22	24 18
	Profile				231 high									231 high		
Extra Heavy Duty	1:5 1:19	50 45	55 45	55 45	55 50	58 50	58 50	58 50	60 50	60 50	60 50	60 50	60 50	60 50	54 45	54 45
	Profile				223 high									223 high		

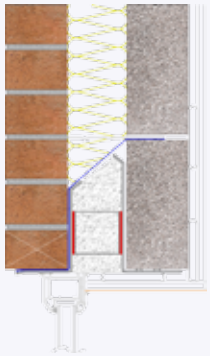
TYPICAL APPLICATIONS:



PARTIAL FILL

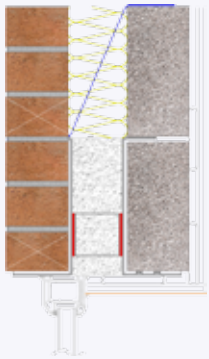
100mm cavity, partial fill insulation*, with fire rated cavity closer to underside ST90 1950-2400mm shown

*Partial full insulation requires a suitable fire stop.



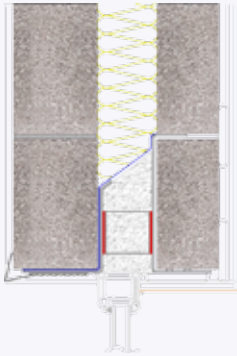
FULL FILL

100mm cavity, full fill insulation ST90 1950-2400mm shown



HEAVY DUTY

100mm cavity, full fill insulation Bespoke ST90HD shown for use where outer leaf has higher than average loading



RENDERED FINISH

100mm cavity, full fill insulation, heavy duty application, mesh flange option for rendering, ST90HD 750-1800mm shown with wide outer leaf

OUR SERVICES

Birtley is the **only lintel range** that **guarantees complete and consistent protection**. On top of our **industry-leading performance**, you'll also enjoy the **unlimited support** of our entire technical team, **free of charge**.

Industry leading performance

Free of charge support team

Quick turnaround

Custom-made solutions

Downloadable technical information

Birtley provides comprehensive technical support to designers, specifiers, builders and merchants covering all aspects of the design, specification and installation of Supergalv lintels. The service includes :

TECHNICAL SUPPORT
Comprehensive pre- and post-sale technical support by phone or email.

CAD SCHEDULING
Free specification and CAD scheduling service when architectural plans are supplied.

UNUSUAL APPLICATIONS
Advice and solutions for unusual loading situations.

DESIGN SERVICE
Lintel design service for bespoke architectural features and wall constructions.

STRUCTURAL ANALYSIS
Finite Element Analysis of complex structures.

CALCULATIONS
Structural calculations, when necessary, for building control approval.

BIM LIBRARY
Access BIM Objects on our website www.birtleylintels.co.uk

Ψ PSI VALUES
Bespoke accredited linear thermal transmittance Ψ (Psi values) for use in SAP calculations.

PRODUCT SPECIFICATION
COMPLIANCE

PRODUCT STANDARDS

EN845-2:2013 Specification for ancillary components for masonry Part 2: Lintels. EN1090-1:2009+A1:2011 Execution of steel structures and aluminium structures Part 1: Requirements for conformity assessment of structural components. BS EN ISO 3834-2/3:2005 Quality requirements for fusion welding of metallic materials. EN ISO 13920:1997 Welding. General tolerances for welded constructions. BS EN 13163:2012+A1:2015 Thermal insulation products for buildings. Factory made expanded polystyrene (EPS) products.

FABRICATED ITEMS

Since 1st July 2014, it has been a requirement that steel fabrications for structural use are CE marked to EN 1090. This standard ensures that manufacturers operate a strict welding quality management system, with all operatives fully qualified to carry out specific connections using the materials specified. Our processes, procedures and qualifications are assessed on an annual basis by BSI to ensure that quality standards remain consistently high. Our accreditation covers structures and fabrications up to and including Execution Class 2.

TESTING

Our standard range of lintels to BS EN 845-2 has been subject to structural testing in accordance with BS EN 846-9:2000 and previously BS5977-2. All structural testing has been carried out independently by Lucideon Structures Laboratory (NB:0013) and The University of South Wales (NB:1014). Fire tests were carried out in accordance with BS 476 by Exova Warrington Fire (NB:0249).

QUALITY SYSTEMS

BS EN ISO 9001:2008/2015 BSI Accredited Quality management system.
BS EN ISO 14001:2004/2015 BSI Accredited Environmental management systems.

CE MARKING

Since 1st July 2013, it has been a legal requirement that any construction product under the scope of a Harmonised European Standard (hEN) or European Technical Approval (ETA) must be CE marked.

The significance of CE marking is in its declaration of conformance to the full normative text of the product standard which relates to all essential requirements of the EU Construction Products Directive, and more recently, the Construction Products Regulation (No.305/2011). CE marking can't be superseded or conflicted by any other 3rd party accreditation and is the primary assessment criterion of product conformity as used in the Building Regulations document 7 and by the NHBC. A requirement of compliance is providing a declaration of performance certificate (DoP) which contains the essential characteristics as dictated by the hEN or ETA, for each individual product type. DoPs are available to download via our website www.birtleylintels.co.uk.

KITEMARK

In addition to statutory requirements, various ranges are also accredited to carry the BSI kitemark. This means that our processes are monitored and structural audit tests carried out on a regular basis to ensure that our lintels are still as safe as when they were first developed.

All accreditations and other compliance details are correct at time of going to print. (Jan 17). Please refer to website for full details.

Birtley Group

STRENGTH THROUGH QUALITY

One Group. Three Outstanding Brands.

Birtley EXPAMET BOWATER by Birtley

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