



CALDER INDUSTRIAL MATERIALS LTD



Calder

Products

Lead and Related

The Calder Group Limited

the largest producers of lead sheet in Europe

Lead Sheet and Engineered Products



Calder Group

The Calder Group story began in the early 1700's and now its companies are the largest producers of lead sheet in Europe, manufacturing products which conform to the highest specifications.

Calder Group is Europe's largest producer of specialist lead products outside the battery industry. Group subsidiaries in France, Germany, Holland, Ireland and the UK produce sheet lead for construction markets, and engineered lead products for a wide range of nuclear, medical, military, automotive and other applications.

The Group's objective is to remain the leading European supplier of engineered lead solutions with a worldwide reach.

Calder Industrial Materials Limited

The UK factory produces lead sheet to BSEN12588, available in 3m and 6m rolls up to 2.4m wide (Special sizes can be provided), which ensures that the tolerances of +/- 5% provide the construction industry with the highest specification product, offering a maintenance-free life and the fixer will never live long enough to see the product fail, provided that the sheet is fixed correctly.

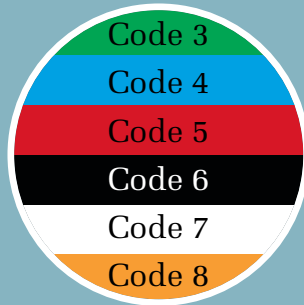
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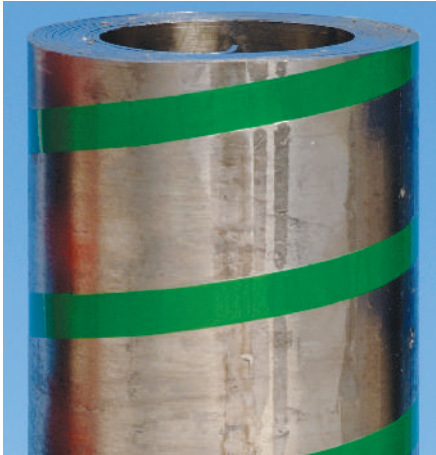
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Lead Academy



Lead

manufactured to BSEN12588
www.lead4life.co.uk



Lead

- Lead has been in use for many hundreds of years – the Roman Empire used it for sanitary and ablutionary installations.
- Lead sheet has been in use as a building material for centuries.
- Lead sheet adorns the roofs of churches, offices, factories, public buildings and homes throughout the United Kingdom because of its ease of use, durability and the pleasing grey colour of its protective patina.
- Lead sheet is easily shaped, is long lasting and flexible in all weather conditions.
- Lead sheet is easy to install and will out-perform other building materials, if the rules of good practice are followed.
- Lead is 100% recyclable time after time.
- Over 1,000,000 tonnes have been used in roofing since 1995.

Lead is a natural metal – the Earth’s crust contains an estimated 290 million tonnes of it.

- Melting point – 327.4°C
- Atomic weight – 207.2
- Atomic number – 82
- Density – 11.34g/cm³
- Co-efficient of linear expansion – 0.0000297 per °C
- Thermal Conductivity – 34.76W/m °C



Available in
Codes 3,4,5,6,7 and 8
3m and 6m lengths
Up to 2.4m wide as standard
Special sizes can be provided

Application by Code

Code	Thickness	Kg per M ²	Soakers	Flashings	Flat Roofing	Parapet and Tapered Valley Gutters	Pitched Roofs	Vertical Cladding	Dormers	Bay Roofs and Canopies
Code 3	1.32mm	14.97								
Code 4	1.80mm	20.41								
Code 5	2.24mm	25.4								
Code 6	2.65mm	30.05								
Code 7	3.15mm	35.72								
Code 8	3.55mm	40.26								
Ancillary products per Application			1	1, 2, 3, 4	1, 4, 5, 6, 7	1, 4, 5, 7, 8	1, 4, 5, 6, 7	1, 4, 5, 9	1, 4, 5, 6, 7	1, 4, 5, 6, 7

- | | | |
|-----------------------|-------------------|---------------------|
| 1. Patination Oil | 4. Clips | 7. Geotec Underlay |
| 2. Lead Sheet Sealant | 5. Nails | 8. Expansion Joint |
| 3. Borra Fixing Clip | 6. Wood Core Roll | 9. Dome Head Screws |

Nominal Roll Weights

	Code 3		Code 4		Code 5		Code 6		Code 7		Code 8	
Weight per m ²	14.97kg		20.41kg		25.40kg		30.05kg		35.72kg		40.26kg	
Thickness	1.32mm		1.80mm		2.24mm		2.65mm		3.15mm		3.55mm	
Standard Widths	3m kg	6m kg	3m kg	6m kg	3m kg	6m kg	3m kg	6m kg	3m kg	6m kg	3m kg	6m kg
150mm	7	13	9	18	11	23	14	27	16	32	18	36
180mm	8	16	11	22	14	27	16	32	19	39	22	43
240mm	11	22	15	29	18	37	22	43	26	51	29	58
300mm	13	27	18	37	23	46	27	54	32	64	36	72
360mm	16	32	22	44	27	55	32	65	39	77	43	87
390mm	18	35	24	48	30	59	35	70	42	84	47	94
450mm	20	40	28	55	34	69	41	81	48	96	54	109
600mm	27	54	37	73	46	91	54	108	64	129	72	145
760mm	34	68	47	93	58	116	69	137	81	163	92	184
800mm	36	72	49	98	61	122	72	144	86	171	97	193
900mm	40	81	55	110	69	137	81	162	96	193	109	217
1000mm	45	90	61	122	76	152	90	180	107	214	121	242
1200mm	54	108	73	147	91	183	108	216	129	257	145	290
2400mm	108	216	147	294	183	366	216	433	257	514	290	580

To calculate the approximate weight of a piece of Rolled Lead Sheet multiply the length in metres by the width in metres and then multiply by the Code weight per m² shown in the above table.

If you want something in lead - ask Calder!

Freephone: 0800 484181 www.calderlead.co.uk E-mail: buildingproducts@caldergroup.co.uk

Patination Oil

protective coating for new lead



Patination Oil

Specifically developed for the industry by Calder on behalf of the Lead Sheet Association, minimises unsightly staining and imparts a pleasing appearance to newly applied lead sheet and flashings.

Occasionally the patina formed on lead looks patchy and unattractive. In rainy or damp conditions new lead will quickly develop an uneven powdery white, non-adherent coating of lead carbonate, a corrosion product, which is aesthetically unacceptable. The staining of tiles and brickwork spoils the overall appearance of the building.

Patination Oil will minimise this uncontrolled formation of carbonate, improve the hygiene on the job AND impart a pleasing appearance to the lead both 'before' and 'after' the formation of its final patina.

125ml – (10 containers per box)

0.5 Litre – (4 containers per box)

1.0 Litre – (4 containers per box)

2.0 Litre – (2 containers per box)

Available in boxes only

Important

- Shake the oil vigorously before use.
- Apply the oil evenly with a soft absorbent cloth. Work horizontally from top to bottom maintaining a wet lower edge. Do not use a circular scrubbing motion.
- Apply the oil to **all** newly installed lead items - large or small.
- Apply the oil before any rain and at the end of the day's work.
- One coat is all that is needed.
- Lift flashings and coat the underside of the lead for about 50mm from the edge.
- Coat the lead **before** turning up clips around the edges.
- Remember to coat between laps.

NB: Because of the solvents it contains it is important to keep Patination Oil away from roof areas where bituminous felt has been laid, any spillage will dissolve the bitumen.

A comprehensive LSA data sheet is available on request.

Fixings

should hold the lead securely in position without restricting thermal movement



Lead Sheet Sealant

The practical, long-term alternative to mortar pointing. This one-part, neutral-cure, high-performance, silicon-based sealant has been specially formulated for use with lead sheet and flashings.

- The sealant specifically designed for pointing joints between lead and brickwork or masonry.
- Provides a long term, flexible joint, which can absorb temperature changes.
- Avoids the problems of pointing with wet mortar, particularly in hot or frosty conditions.
- Quicker, cleaner and easier to use than mortar.
- The Lead Sheet Association recommends sealant.

310ml tubes – (12 tubes per box)

Available in Standard Lead,

Terracotta and Dark Brown

Available in boxes only



Borra fixing Clip®

An easy-to use fixing clip which will securely fasten lead flashing in place.



25 Clips per bag – (4 bags per box)

Available in boxes only



Fixing Strip/Clips

Clips will hold lead permanently in position. Cut to the required length fixing clips are recommended in rolls, welts, standing seams and for the clipping of lap joints and flashings.

- Clips should not be less than 50mm wide.
- They should be turned over at the edge of the lead by at least 25mm except where they are tucked into a welted edge.
- Continuous clips should not be less than 75mm wide.

0.6mm Copper

0.38mm Terne Coated Stainless Steel

Fixing Strip – 20m x 50mm Coils

Fixing Clips – 600mm x 50mm Packs of 25

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Fixings

should hold the lead securely in position without restricting thermal movement



Nails

Nails should be large-headed copper or a stainless steel conforming to BS1020-1&2.

- The shanks should be annular ring, helical ring or serrated and not less than 20mm long.
- The shank diameter for heavy duty should not be less than 3.35mm and for light duty not less than 2.65mm.

25mm length – (1kg per bag)
30mm length – (1kg per bag)
3.35mm Annular Ring Shank



Lead Dome Sets

A simple intermediate fixing. Complete sets of four items are available to save time.

Cast Lead Dome – (100 per box)
Nylite Washer – (100 per box)
Brass Counter Sunk Screw – (100 per box)
Brass Cup Washer – (100 per box)
Complete Sets – (5 x 20 packs)



Wood Core Roll

Used for joining bays of lead roofing, also on steeply pitched roofs and lead cladding where a bold joint appearance is preferred, allowing for the expansion and contraction in lead sheet and flashing.

The wood rolls are treated and shaped as shown. The undercut to the base of the roll is designed to prevent wind lift.

2.4m x 50mm – Treated – Standard
2.4m x 75mm – Treated – King Roll

Underlays

for Roofing, Cladding and Weathering applications.

An underlay is normally used to isolate the lead sheet from the substrate and allow the lead sheet to expand and contract freely with changes in temperature.

The main requirements for underlays are that they should:

- a. Allow the thermal movement by reducing the amount of drag between the substrate and the lead sheet.
- b. Help to protect the lead sheet against corrosive attack from stone, concrete, or discharge from timber and roof condensation.
- c. Provide an even surface and to level out any imperfections such as nail heads, board edges and knots which could damage the lead.
- d. Fully support the lead sheet so that it cannot sag or be punctured.
- e. Reduce the risk of moisture being tapped between the lead and the substrate.
- f. Not be adversely affected by heat when in-situ welding takes place.
- g. Be free of any substance which could be deleterious to lead sheet.



Geotec Underlay

Prevents wear due to thermal movement.

- Geotec 220PY underlay is used to isolate sheet metal roofing from substrates allowing metal sheet to expand and contract with temperature changes.
- Geotec 220PY is a non-woven, needle punched, polyester textile underlay, weighing 220g/m², conforming to the Lead Sheet Association's requirements.

Geotec is found to be particularly useful on existing traditional timber boards to prevent ridges and fractures forming on the lead sheet where the lead ridges over the edges of the boards.

25m x 1000mm Roll

50m x 1000mm Roll



Building Paper

Paper conforming to BS1521 Class A

Building paper may be used on smooth decking materials such as plywood providing that the underside of the decking is ventilated. It is also a suitable underlay for smooth concrete, stone or screeded surfaces to prevent corrosive attack on the underside of the lead sheet caused by the release of free alkali from the drying cement.

25m x 1000mm Roll – Standard

25m x 1000mm Roll – Moisture Resistant

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Tools



Lead Tools

Lead is the softest of the common metals. Most importantly it does not harden significantly when worked being quickly self-annealing at ambient temperatures. Thus, lead can be readily shaped by bossing without the application of heat and without it cracking or becoming hard and brittle.

Bossing, like other manual skills, must be learned from an experienced instructor and much practice is required to achieve the standard required for competent leadwork.

- Flat Dresser – required for dressing lead sheet flat both when setting the work out and when fitting it in position.
- Bossing Stick – the original tool used for bossing lead sheet.

Available in Beech or Plastic

- Bending Stick – often used by leadworkers for bossing.
- Bossing Mallet – some bossing required the use of two tools together, which are the bossing mallet and the bossing or bending stick.
- Setting-in Stick – used primarily struck with a mallet to set in lines of folds prior to bossing but may also be used in finishing leadwork in position.
- Chase Wedge – also used struck with a mallet for setting-in but its main use is for finishing leadwork in position.



Burning Kit

Traditionally the welding of lead has been known as lead burning. This is widely used as an alternative to bossing and is preferred for situations where bossing is likely to result in unacceptable thinning of the lead sheet.

Lead bossing as well as lead burning should best be learned from a skilled instructor.

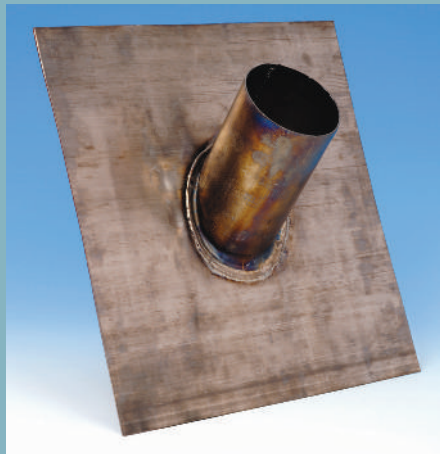
Although hydrogen and propane can be used in combination with oxygen for welding, the gases normally used for building work are oxygen and acetylene.

Portable equipment is now in common use, making in-situ work much easier than in the past.

Oxy Turbo Gas Welding Kit 90
Oxygen Refil
Turbo Gas Refil

Fabrications

manufactured using code 4 lead



Ready-Made Lead Slates

Slates are the perfect and permanent solution to weathering pipe penetrations through tiles or slated roofs. Manufactured from Code 4 lead with bases of 450mm x 450mm, with minimum rear upstands of 150mm.

SPECIAL SIZES CAN BE MADE TO ORDER.



Lead Flexislates

Flexislates make good weathertight joints between pipes/aerials etc. which penetrate tiles, slated and built-up felt roofs. Manufactured from Code 4 lead with bases of 450mm x 450mm with sealing sleeves of moulded EPDM synthetic rubber securely bonded in position.



Ventilators

Standard ventilators are manufactured from Code 5 Lead and are fitted with stainless steel mesh.

They are designed for strength and ease of installation enabling plumbers to site lead burn to sheet lead.

Ready-Made Lead Slates and Lead Flexislates 450mm x 450mm Base, Code 4 Apron.

Collar 4" x 30 degree – (5 slates per box)
Collar 5" x 30 degree – (5 slates per box)
Collar 4" x 45 degree – (5 slates per box)
Collar 4" x 90 degree – (5 slates per box)
Collar 5.5" x 30 degree – (4 slates per box)

Pitched – (5 slates per box)
Flat – (5 slates per box)

Ventilators V1 – 450mm & 600mm long
Ventilators V2 – 200mm long
Ventilators V3 – 450mm & 600mm long
Ventilators V4 – "Eyebrow"

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Fabrications



Expansion Joints

Specifically designed to overcome the problem of laying lead-lined gutters where the building construction prevents the recommended drip detail being used.

Calder Expansion Joint consists of two lead strips connected by a high quality EPDM.

The expansion band is double-sided vulcanised and the colour of the EPDM is similar to that of lead.

Calder Expansion Joint carries a five year insurance backed guarantee.

3m x 390mm – (Calder Expansion Joint)
1.5m x 400mm – (T-Pren Plus)



Motifs

A decorative intermediate fixing for lead sheet applications. Supplied with attached brass screw.



Funnels

For use with wooden gutters and downpipes.

Motifs – Various sizes/designs
Funnels – 2", 2.25" & 2.5"



Lead Wool

Used for caulking purposes. To prevent leakage at joints or to substitute for molten lead in fixing ironwork into concrete.



Sash Weights

- 50mm (2") diameter C/W 10mm hole
- Chamfered ends to avoid snagging
- Hook with anchor bolt
- Weight individually marked
- Transportation hole
- Manufactured in 0.5lb increments, from 2lb to 29lb
- Over 29lb coupled, fitted with hook and eye

Lead Wool available in 25kg bags only

Flexi-Lead

manufactured to BSEN12588

A lead sheet product that has been developed using state-of-the-art technology so that the benefits of the lead have been retained whilst offering a colour-match with surrounding roof, wall or conservatory colours.

- Perfect colour match
- UV resistant
- Pre-painted, no staining
- Developed to meet the needs of modern building practices



Colour Coated & Corrugated

A lead sheet that is colour-coated on both sides. It can be supplied with different colours on different sides and can be used in the same way as conventional lead.

- Long lasting, high quality colour coating
- Easily shaped and flexible in all weather conditions
- Two sided, two colour
- Design freedom for architects and tradesmen

Colours – Terracotta, Black and Dark Brown		
	Corrugated	Colour Coated
Width (MAX)	500mm	1000mm
Gauge (MAX)	1mm	1.8mm
Length	3m & 6m	3m & 6m

Self Adhesive

This new product has an adhesive layer on one side for easier fitting and is colour coated on the other to allow for perfect matching with existing materials.

- Excellent self-adhesion
- Suitable for flashings around chimneys abutments and pipework
- Ease of fixing and simplified installation

Colours – Terracotta, Black and Dark Brown	
Width	– 300mm & 450mm
Gauge	– 1.5mm (0.8mm lead, 0.7mm adhesive)
Coil Size	– 5m rolls

- Touch-up paints are available to allow to cover scratches or lead burning.
- Lead Sheet Sealant, colour matched, is also available in 310ml tubes

Touch -up paint and Sealant	
available to match colour-coating	

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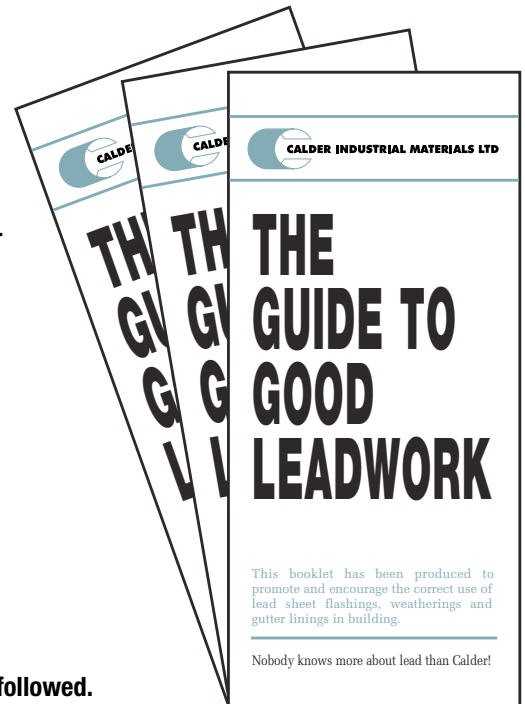
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Fact File

Lead sheet is a proven, long-life building material.

To ensure this longevity it is essential to follow these basic rules.

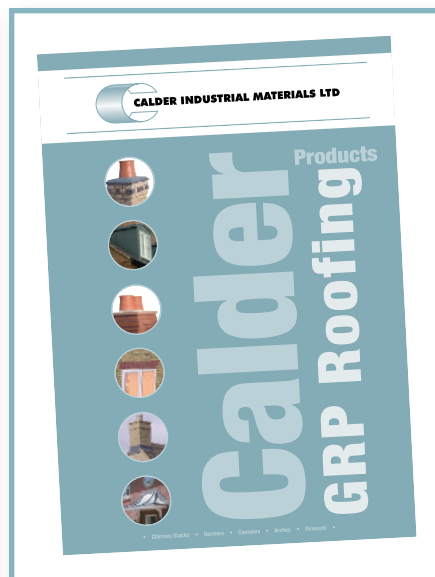
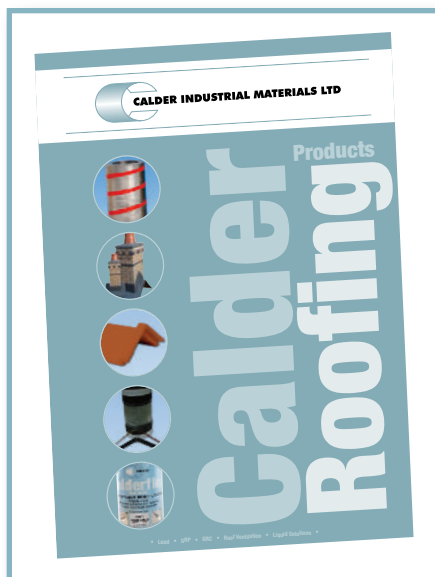
- Individual pieces of lead flashing must be no longer than 1.5m.
- Lap all flashing pieces a minimum of 100mm.
- Easy to use, Borra Fixing Clips will securely fasten the lead flashing in place in accordance to BS6915. Fix at 450mm max. centres.
- Use clips, correctly fitted, to avoid wind lift in exposed areas.
- Don't use mortar when fixing flashings into brickwork - this will crack and fall out. Use Calder Lead Sheet Sealant.
- Apply Patination Oil to all lead surfaces including under the laps and coat the underside of the lead for about 50mm from the edge. This should be done at the end of the day's work. Patination Oil will minimise unsightly staining.



Before fixing lead make sure that the correct rules for the job in hand are being followed.

Information

Also available from Calder



Comprehensive brochures are available on request

training for the construction industry

At the Lead Sheet Association's
Technical and Training Centre
East Peckham, Kent



Get yourself a Certificated Construction Industry Qualification

The **brand new Training Centre** in Kent offers a full range of training opportunities for the construction industry. Fully equipped workshops provide hands on training by a team of qualified and industry experienced staff.

Skills Certification

The Basic Skills and City and Guilds practical hands on courses are fully recognised by the Construction Industry Training Board, Basic bossing and welding courses provide access to the Construction Skills Certification Scheme

Grants Available

CITB Construction Skills grant
aid approved



If you want to know more about the courses that are available why not visit their web site:

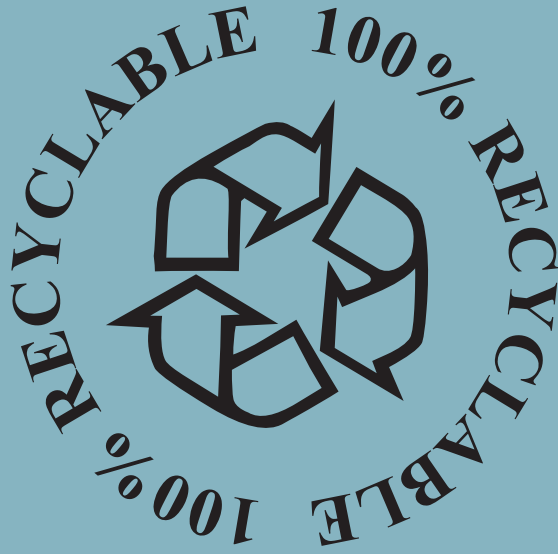
www.leadtraining.org.uk

Tel: 01622 872432

Training Courses

- Basic working techniques bossing and welding
- City and Guilds Leadworkers Certificate
- Awareness courses for Architects and Surveyors





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www.lead4life.co.uk
www.elsia.org.uk



EMS 68146



Calder is an Associate Member of the LCA. It is also a founder member of the Lead Sheet Association, providing the industry standards to ensure that Lead continues to be specified confidently by architects and designers.

Produced by Calder Industrial Materials Limited



A Calder Group Company

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