

## Midland Lead Ltd

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Agrément Certificate  
**86/1764**  
Product Sheet 1

### MIDLAND LEAD LTD'S CAST PRODUCTS

### MIDLAND LEAD LTD'S CAST LEAD SHEET

This Agrément Certificate Product Sheet<sup>(1)</sup> relates to Midland Lead Ltd's Cast Lead Sheet, for use as external roofing, cladding and flashing.

(1) Hereinafter referred to as 'Certificate'.

#### CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



#### KEY FACTORS ASSESSED

**Weathertightness** — the product has adequate resistance to the passage of moisture (see section 6)

**Resistance to wind uplift** — when adequately fixed the product can resist the effects of wind suction (see section 7).

**Properties in relation to fire** — the product is classified as 'non-combustible' (see section 8).

**Durability** — when correctly installed, the durability of the product will be at least equivalent to that of milled lead, with an ultimate life in excess of 60 years (see section 10).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. The product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

A handwritten signature in black ink, appearing to be 'Simon Wroe'.

Simon Wroe  
Head of Approvals — Materials

A handwritten signature in black ink, appearing to be 'Claire Curtis-Thomas'.

Claire Curtis-Thomas  
Chief Executive

Date of Fourth issue: 20 March 2014

Originally certificated on 30 October 1986

Certificate amended on 03 April 2014 to incorporate change to Table 1.

*The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at [www.bbacerts.co.uk](http://www.bbacerts.co.uk)*

*Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.*

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# Regulations

In the opinion of the BBA, Midland Lead Ltd's Cast Lead Sheet, if installed, used and maintained in accordance with this Certificate, will meet or contribute to meeting the relevant requirements of the following Building Regulations (the presence of a UK map indicates that the subject is related to the Building Regulations in the region or regions of the UK depicted):



## The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	A1	Loading
Comment:		The product can contribute to satisfying this Requirement. See section 7 of this Certificate.
Requirement:	B3(2)(4)	Internal fire spread (structure)
Comment:		The product is unrestricted under this Requirement. See section 8.2 of this Certificate.
Requirement:	B4(1)(2)	External fire spread
Comment:		The product is unrestricted under this Requirement. See section 8 of this Certificate.
Requirement:	C2(b)	Resistance to moisture
Comment:		The product can contribute to meeting this Requirement. See section 6 of this Certificate.
Regulation:	7	Materials and workmanship
Comment:		The product is acceptable. See sections 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.



## The Building (Scotland) Regulations 2004 (as amended)

Regulation:	8(1)(2)	Fitness and durability of materials and workmanship
Comment:		Use of the product satisfies the requirements of this Regulation. See sections 9, 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.
Regulation:	9	Building standards applicable to construction
Standard:	1.1(a)(b)	Structure
Comment:		The product can contribute to satisfying this Standard. See section 7 of this Certificate.
Standard:	2.1	Compartmentation
Standard:	2.2	Separation
Standard:	2.8	Spread from neighbouring buildings
Comment:		The product is unrestricted under these Standards, with reference to clauses 2.1.1.5 <sup>(2)</sup> , 2.2.7 <sup>(2)</sup> , 2.2.10 <sup>(1)</sup> and 2.8.1 <sup>(1)(2)</sup> . See section 8.2 of this Certificate.
Standard:	2.6	Spread to neighbouring buildings
Standard:	2.7	Spread on external walls
Comment:		The product is unrestricted under these Standards, with reference to clauses 2.6.4 <sup>(1)(2)</sup> , 2.6.5 <sup>(1)(2)</sup> , 2.6.6 <sup>(2)</sup> and 2.7.1 <sup>(1)(2)</sup> . See section 8.1 of this Certificate.
Standard:	3.10	Precipitation
Comment:		The product can contribute to satisfying this Standards, with reference to clauses 3.10.1 <sup>(1)(2)</sup> , 3.10.5 <sup>(1)(2)</sup> , 3.10.7 <sup>(1)(2)</sup> and 3.10.8 <sup>(1)(2)</sup> . See section 6 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The product can contribute to meeting the relevant requirements of Regulation 9, Standards 1 to 6 and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.
Regulation:	12	Building standards applicable to conversions
Comment:		All comments given for this product under Regulation 9, Standards 1 to 6 also apply to this Regulation, with reference to clause 0.12.1 <sup>(1)(2)</sup> and Schedule 6 <sup>(1)(2)</sup> . (1) Technical Handbook (Domestic). (2) Technical Handbook (Non-Domestic).



## The Building Regulations (Northern Ireland) 2012

Regulation:	23(a)(i)(iii)(b)(i)	Fitness of materials and workmanship]
Comment:		The product is acceptable. See sections 10.1 and 10.2 and the <i>Installation</i> part of this Certificate.
Regulation:	28(b)	Resistance to moisture and weather
Comment:		The product can contribute to satisfying this Regulation. See section 6 of this Certificate.
Regulation:	30	Stability
Comment:		The product can contribute to satisfying this Regulation. See section 7 of this Certificate.
Regulation:	35(2)(3)(4)	Internal fire spread – Structure
Comment:		The product is unrestricted under this Regulation. See section 8.2 of this Certificate.
Regulation:	36(a)(b)	External fire spread
Comment:		The product is unrestricted under this Regulation. See section 8.2 of this Certificate.

## Construction (Design and Management) Regulations 2007

## Construction (Design and Management) Regulations (Northern Ireland) 2007

Information in this Certificate may assist the client, CDM co-ordinator, designer and contractors to address their obligations under these Regulations.

See sections: 1 *Description* (1.2) and 13 *Safety* of this Certificate.

## Additional Information

### NHBC Standards 2014

NHBC accepts the use of Midland Lead Ltd's Cast Lead Sheet, provided it is installed, used and maintained in accordance with this Certificate, in relation to *NHBC Standards*, Chapters 6.8 *Fireplaces, chimneys and flues*, 6.9 *Curtain walling and cladding*, 7.1 *Flat roofs and balconies* and 7.2 *Pitched roofs*.

### CE marking

The Certificate holder has taken the responsibility of CE marking the product in accordance with harmonised European Standard BS EN 14783 : 2013. An asterisk (\*) appearing in this Certificate indicates that data shown are given in the manufacturer's Declaration of Performance.

## Technical Specification

### 1 Description

1.1 Midland Lead Ltd's Cast Lead Sheet comprises lead with a fine dispersion of copper.

1.2 The sheet is available in 3 m, 6 m or 12 m rolls<sup>(1)</sup> up to 1.4 m wide and in the thicknesses<sup>(2)</sup> (and corresponding colour codes) given in Table 1. Tolerance on thickness is  $\pm 5\%$ .

(1) Other lengths are available to order, up to a length of 30 metres (depending on thickness).

(2) Also available in customised thickness up to 3.6 mm.

Table 1 Code designations for nominal thickness and mass per unit area

Code		Thickness and tolerance (mm)	Mass per m <sup>2</sup> and tolerance (kg)
Number	Colour		
3	green	1.32 $\pm$ 0.07	15 $\pm$ 0.75
4	blue	1.80 $\pm$ 0.09	20.4 $\pm$ 1.02
5	red	2.24 $\pm$ 0.11	25.4 $\pm$ 1.77
6	black	2.65 $\pm$ 0.13	30.1 $\pm$ 1.51
7	white	3.15 $\pm$ 0.16	35.1 $\pm$ 1.79
8	orange	3.55 $\pm$ 0.18	40.3 $\pm$ 2.02

### 2 Manufacture

2.1 The product is manufactured by a continuous casting process, and contains a fine dispersion of copper.

2.2 As part of the assessment and ongoing surveillance of product quality, the BBA has:

- agreed with the manufacturer the quality control procedures and product testing to be undertaken
- assessed and agreed the quality control operated over batches of incoming materials
- monitored the production process and verified that it is in accordance with the documented process
- evaluated the process for management of nonconformities
- checked that equipment has been properly tested and calibrated
- undertaken to carry out the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

### 3 Delivery and site handling

3.1 The product is delivered in rolls shrink-wrapped onto pallets.

3.2 Each pallet carries the BBA logo incorporating the number of this Certificate.

3.3 The rolls should be stored flat on a clean, dry surface clear of the ground, under cover and secure.

## Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Midland Lead Ltd's Cast Lead Sheet.

## Design Considerations

### 4 Use

Midland Lead Ltd's Cast Lead Sheet, when designed and installed in accordance with the relevant parts of BS 5534 : 2003, BS 6915 : 2001 and BS 8000-6 : 2013, is satisfactory for use in external roofing, cladding and flashing applications, including use as flashings to cavity trays.

### 5 Practicability of installation

The product is designed to be installed by a competent general builder, or contractor, experienced with this type of product.

### 6 Weathertightness



The product, when incorporated into a roofing or cladding system designed and installed in accordance with conventional good practice and section 12 of this Certificate, will adequately resist the passage of moisture.

### 7 Resistance to wind uplift



The product, when incorporated into a roofing or cladding system designed and installed in accordance with conventional good practice and section 12 of this Certificate, can adequately resist wind loads likely to be encountered in the UK.

### 8 Properties in relation to fire



8.1 Cast lead sheet is deemed to belong to fire class A1\* (no contribution to fire) in accordance with Commission Decision 96/603/EC.

8.2 Cast lead sheet can be considered to have a  $B_{ROOF}(t4)^*$  classification to BS EN 13501-5 : 2005.

### 9 Maintenance and repair



9.1 Regular maintenance inspections should be carried out to ensure that rainwater goods are present and in good order, that flashings are secure and that fixings are present and secure.

9.2 Damaged areas can be repaired using traditional techniques.

9.3 The product may be used to repair existing lead flashings and may be used to repair zinc flashings without introducing a risk of corrosion.

### 10 Durability



10.1 The fine dispersion of copper (maintained by the casting process) improves the product's resistance to creep and fatigue. When correctly installed, its durability will be at least equivalent to that of milled material, with an ultimate life in excess of 60 years.

10.2 Lead is a corrosion-resistant metal and on weathering forms a strongly adhering and insoluble protective patina. It is compatible with materials likely to be encountered in the situations described in this Certificate. However, in coastal atmospheres contact between lead and aluminium should be avoided.

10.3 The product can be fixed in contact with most types of hardwood and unpreserved and preserved softwoods (providing any preservative treatment is allowed adequate time for fixation), including those treated with fire retardants. It should be protected from acid-bearing timbers, such as western red cedar, oak or sweet chestnut, by a coat of bitumen paint.

### 11 Reuse and recyclability

The product comprises lead, which can be recycled.

## Installation

### 12 General

12.1 Midland Lead Ltd's Cast Lead Sheet should be installed by specialist roofing contractors using traditional tools and techniques for lead sheet in accordance with relevant parts of BS 5534 : 2003, BS 6915 : 2001 and BS 8000-6 : 2013.

12.2 Adjacent lengths of lead may be joined by welding, soldering, lead burning or other details. Solder should conform to BS EN ISO 9453 : 2006. The maximum size for a single sheet of cast lead sheet in a particular situation should be determined by reference to BS 6915 : 2001.

12.3 Underlays are necessary to isolate the lead from the substrate and may be of inodorous felt or non-woven polyester felt.

## 13 Safety

The conventional precautions for handling lead defined in the *Control of Lead at Work Regulations 2002*, the *Control of Lead at Work Regulations (Northern Ireland) 2003* and the HSE Approved Code of Practice and Guidance *Control of lead at work* must be observed.

## Technical Investigations

### 14 Tests

Tests were conducted and the results assessed to determine:

- tensile strength/elongation/fatigue
- cold bend
- chisel impact
- metallographic analysis
- short-term weathering
- tensile tests on lead-burned joints made using cast and milled lead sheet.

### 15 Investigations

15.1 The manufacturing process was evaluated, including the methods adopted for quality control, and details were obtained of the quality and compositions of materials used.

15.2 A practical demonstration of common details in cast and milled lead sheet was observed.

15.3 Data on the product's creep and fatigue resistance was assessed.

15.4 A user survey was conducted to assess the product's performance in use.

## Bibliography

BS 476-3 : 2004 *Fire tests on building materials and structures — Classification and method of test for external fire exposure to roofs*

BS 5534 : 2003 *Code of practice for slating and tiling (including shingles)*

BS 6915 : 2001 *Design and construction of fully supported lead sheet roof and wall coverings — Code of practice*

BS 8000-6 : 2013 *Workmanship on building sites — Code of practice for slating and tiling of roofs and walls*

BS EN 13501-5 : 2005 *Fire classification of construction products and building elements — Classification using data from external fire exposure to roof tests*

BS EN 14783 : 2013 *Fully supported metal sheet and strip for roofing, external cladding and internal lining — Product specification and requirements*

BS EN ISO 9453 : 2006 *Soft solder alloys — Chemical compositions and forms*

## 16 Conditions

16.1 This Certificate:

- relates only to the product/system that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page — no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

16.2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

16.3 This Certificate will remain valid for an unlimited period provided that the product/system and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

16.4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

16.5 In issuing this Certificate, the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product/system or any other product/system
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product/system
- actual installations of the product/system, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product/system is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product/system, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to CE marking.

16.6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product/system which is contained or referred to in this Certificate is the minimum required to be met when the product/system is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.