

HAPAS

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HAPAS Certificate

17/H261

Product Sheet 4

LARSEN HIGHWAYS BEDDING MORTARS AND BACKFILL CONCRETE

LARSEN MBC10

This HAPAS Certificate Product Sheet⁽¹⁾ is issued by the British Board of Agrément (BBA), supported by Highways England (HE) (acting on behalf of the Overseeing Organisations of the Department for Transport; Transport Scotland; the Welsh Government and the Department for Infrastructure, Northern Ireland), the Association of Directors of Environment, Economy, Planning and Transport (ADEPT), the Local Government Technical Advisers Group and industry bodies. HAPAS Certificates are normally each subject to a review every three years.

(1) Hereinafter referred to as 'Certificate'.

This Certificate relates to Larsen MBC10, a rapid strength concrete for use as backfill of carriageway and reinstatement of ironwork, up to and including installation Group 4 of BS EN 124-1 : 2015.

CERTIFICATION INCLUDES:

- factors relating to compliance with HAPAS requirements
- factors relating to compliance with Regulations 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

Performance — the product meets the requirements for compressive strength and rapid construction in accordance with the MCHW, Volume 1, Series 500, Clause 507 Chambers, 44 (see section 6).

Durability — provided the surrounding pavement remains structurally sound, the product will have an anticipated service life of up to five years (see section 8).



The BBA has awarded this Certificate to the company named above for the product described herein. This 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

Date of Second issue: 15 April 2021

Originally certificated on 20 April 2017

Hardy Giesler
Chief Executive Officer

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

Readers MUST check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA directly.

Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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Requirements

In the opinion of the BBA, Larsen MBC10, when manufactured and installed in accordance with the provisions of this Certificate, is satisfactory as backfill concrete in ironwork reinstatement installation systems. The product meets the relevant requirements for rapid construction bedding mortars of the MCHW, Volume 1, Series 500, Clause 507 Chambers, 44.

(1) The MCHW is operated by the Overseeing Organisations: Highways England (HE), Transport Scotland, the Welsh Government and the Department for Infrastructure (Northern Ireland).

Regulations

Construction (Design and Management) Regulations 2015

Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

See section: 3 *Delivery and site handling* of this Certificate.

Technical Specification

1 Description

1.1 Larsen MBC10 is a cold-applied fast-setting cementitious backfill mortar consisting of a blend of selected cements, additives and aggregates.

1.2 The product comes in granular, grey powder form, containing a 10 mm size aggregate.

1.3 The following materials may be used with the product:

- Larsen MBM60 — a single-part cementitious mortar (see PS 1 of this Certificate)
- Larsen MBM104 — a two-part cementitious mortar (see PS 2 of this Certificate)
- Larsen PM04 — a two-part polyester resin based mortar (see PS 3 of this Certificate)
- other⁽¹⁾ suitably approved bedding mortars may also be used.

(1) Outside the scope of this Certificate. The advice of the Certificate Holder should be sought if such products are selected.

1.4 Ancillary components outside the scope of this Certificate:

- Larsen BES10 Seal and Tack – a spray-applied sealant, applied to the vertical edges at joint interfaces. This is used prior to application of the hot- or cold-applied asphalt.

1.5 Quality control checks are carried out on the raw materials, during manufacture and on the finished product.

2 Manufacture

2.1 The product is manufactured using typical batch blending processes for producing resin and powder blends.

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.

2.3 The management system of Larsen Manufacturing Ltd has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 and BS EN ISO 14001 : 2015 (McCaughey site only) by SGS (Certificates GB13/88131 and GB13/88132).

3 Delivery and site handling

3.1 The product is delivered to site in the packaging and weights given in Table 1. Packaging bears the Certificate holder's name and address, and the mixing instructions.

Table 1 Larsen MBC10 packaging and weight

Weight (kg)	Packaging type	Shelf Life (months)
25	2-part plastic bag	6

(1) Unopened containers/packs, when stored under dry conditions in accordance with the Certificate holder's instructions.

3.2 The Certificate holder has taken the responsibility of classifying and labelling the product under the *CLP Regulation (EC) No 1272/2008* on the *classification, labelling and packaging of substances and mixtures*. Users must refer to the relevant safety data sheet(s).

Assessment and Technical Investigations

The following is a summary of the assessment and technical investigations carried out on Larsen MBC10.

Design Considerations

4 Use

4.1 Larsen MBC10 is satisfactory for use as backfill concrete in the installation, raising and reinstatement of ironwork, up to and including installation Group 4 of BS EN 124-1 : 2015 where rapid construction and trafficking is required.

4.2 The product is intended for use as backfill material in combination with Larsen bedding mortars MBM60, MBM104 and PM04, covered in Product Sheets 1 to 3 of this Certificate. When used in conjunction with this product, Larsen MBC10 meets the requirements of the MCHW, Volume 1, Series 500, Clause 507 Chambers, 44.

4.3 The product is suitable for use with a minimum thickness of 30 mm, depending on the bedding system and the wearing surface to be applied.

5 Practicability of installation

Installation of the product must only be carried out by specialist contractors experienced with this type of product.

6 Performance

Larsen MBC10, when used as backfill concrete in ironwork installations, will achieve a minimum compressive strength of $25 \text{ N}\cdot\text{mm}^{-2}$ at 5°C and a minimum $30 \text{ N}\cdot\text{mm}^{-2}$ at 30°C , within two hours and so meets the requirements of the MCHW, Volume 1, Series 500, Clause 507 Chambers, 44.

7 Maintenance

The product is not subject to any routine maintenance requirements, but any damage must be repaired as soon as practicable (see section 12).

8 Durability

Provided the surrounding pavement remains structurally sound, the product will have an anticipated service life of up to five years.

Installation

9 General

9.1 The mixing and installation of the Larsen MBC10 must be carried out in accordance with the procedures described in this Certificate and the Certificate holder's Agreed Installation Method Statement. Reference must also be made to the *Recommendations for Installation* of Annex F, BS EN 124-1 : 2015.

9.2 The compressive strength and rapid-construction characteristics of Larsen MBC10 are affected by temperature, which must be between 5 and 30°C during curing. The advice of the Certificate holder must be sought when the material temperature is outside this range.

9.3 Precast concrete inspection chambers should comply with the requirements of BS 5911-4 : 2002 and BS EN 752 : 2017.

9.4 Where other materials are to be used in conjunction with the product (eg to repair/rebuild the supporting structure), such materials should have a strength commensurate with the reinstatement product in accordance with the MCHW, Volume 1, Series 500, Clause 507 Chambers, 44.

9.5 When packing materials are used to support and level the frame, they must be compatible with the product and of sufficient strength so as not to detrimentally affect the compressive strength of the bedding material. The Certificate holder must be consulted for suitable materials.

10 Substrate preparation

All substrates must be suitable to receive the bedding material in accordance with the Certificate holder's instructions. The ironwork must be bedded into one of Larsen's bedding mortars, in accordance with Product Sheet 1, 2 or 3 of this Certificate.

Figure 1 Preparation of substrate ready for the backfill



11 Installation

11.1 The product is mixed and laid strictly in accordance with the Certificate holder's Agreed Installation Method Statement and this Certificate.

11.2 The components of the Larsen MBC10 bag, sand and aggregate, must be mixed prior to the addition of the required amount of water to achieve the desired workability. The amount of water needed depends on the moisture content.

11.3 The mixed product can then be trowelled or poured into place. This must be carried out within 10 minutes of mixing. The workability is temperature dependent; the product must not be installed if the temperature falls outside of the range listed in this Certificate (as per section 9.2).

11.4 The product must be applied in a bed of 30 to 250 mm, in a single pass. Once applied, it must be compacted to eliminate any voids.

11.5 In backfill applications and prior to resurfacing of the area prepared, Larsen MBC10 must be applied with a maximum gap of 60 mm below the intended finished level. A tack coat is applied directly onto the surface once set.

11.6 The site can be reopened to traffic 2 hours after completion of the installation, depending on site conditions.

12 Repair

In the event that the product is damaged, the ironwork will need to be removed and the product reinstated as detailed in sections 9 to 11.

Technical Investigations

13 Tests

Tests were carried out and the results assessed to determine:

- pot life and workability
- tensile strength
- shrinkage
- water absorption
- compression strength
- flexural strength
- effect of freeze/thaw
- full-scale load testing with D400 access cover.

14 Investigations

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

14.2 Visits to sites were made to witness installation of the product.

Bibliography

BS 5911-4 : 2002 + A2 : 2010 *Concrete pipes and ancillary concrete products — Specification for unreinforced and reinforced concrete inspection chambers (complementary to BS EN 1917 : 2002)*

BS EN 124-1 : 2015 *Gully tops and manhole tops for vehicular and pedestrian areas — Gully tops and manhole tops made of composite materials*

BS EN 752 : 2017 *Drain and sewer systems outside buildings*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

BS EN ISO 14001 : 2015 *Environmental management systems — Requirements with guidance for use*

Manual of Contract Documents for Highway Works (MCHW), Volume 1, *Specification for Highway Works*, Series 500, Clause 507.24 (02/20)

Manual of Contract Documents for Highway Works (MCHW), Volume 1, *Specification for Highway Works*, Series 500, Clause 507.44 (02/20)

15 Conditions

15.1 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.

15.2 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.

15.3 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.

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

15.5 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.

15.6 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.