System Data Sheet

August 2021

Permatrack Bridge Surfacing

Product Scope

This product data sheet relates to Permatrack Bridge Surfacing for use as a surface course, and as a protection layer on new and maintenance road construction of steel and concrete bridge decks. It can also be used as a surfacing for footway/walkway applications.

DATA SHEET INCLUDES

Description

Factors relating to compliance with Regulations where applicable

Delivery and site handling

Design considerations

Installation guidance

Technical investigations

FEATURES AND BENEFITS

- VERSATILE – can be used for a range of roadway applications as listed in this data sheet.
- WATERPROOF – Impervious to water penetration and therefore unaffected by the effects of vehicle pressures , freeze thaw cycling.
- NO COMPACTION – Unlike conventional surfacings, no compaction is required.
- REDUCES LOADINGS – dead loads on structure can be reduced through reduced thickness of surfacing.
- DURABLE – extremely durable and long lasting thereby reducing future costs associated with maintenance and road closures.
- LARGE AND SMALL AREAS – can be installed in varying size areas to produce a seamless running surface.
- FLEXIBLE – polymer modification within the mastic asphalt offers greater flexibility at low temperatures and increased thermal stability at higher temperatures.

KEY FACTORS

Thickness – Can be installed at a range of thicknesses to accommodate varying levels of road surfacing for either new or maintenance applications. Can be built up in multiple layers.

Surface Texture – When used in conjunction with surface bitumen pre coated chippings or other suitable surface dressings a surface texture depth and skid resistance can be achieved for use on all types of highways.

Indentation – In accordance with test BS EN 12697-20.

Wheel tracking – Not applicable to mastic asphalt type surface, however laboratory test results from independent third party have shown satisfactory figures for initial rut depth and overall rut depth.

Sensitivity to water – impervious to water ingress.

TLA – Trinidad Lake Asphalt – contains a small percentage of naturally occurring bituminous material in the overall binder content to provide additional thermal stability and improve rut resistance.

Durability – will accept without significant damage, the type of traffic and concentrated loads associated with all types of highways.

Bond to substrate – the installed system has excellent bond strengths to concrete, bituminous materials and when used in conjunction with proprietary bituminous or PMMA waterproofing systems.

Technical Specification

DESCRIPTION

Permatrack Bridge Surfacing is used on steel, concrete, timber bridges and elevated carriageway structures.

Permatrack Bridge Surfacing is mastic asphalt manufactured from selected SBS modified bitumen, Trinidad Lake Asphalt, limestone filler and specially graded aggregates.

Permatrack Bridge Surfacing is designed primarily for use as a wearing course over a proprietary accredited PMMA or bituminous ~~sheet~~ waterproofing system. Tack coat/bond coats may be required as recommended by the manufacturer of the waterproofing system.

Permatrack Bridge Surfacing can also be applied to an existing planed traditional road surfacing material.

Permatrack Bridge Surfacing is also used as a protection layer over the waterproofing system prior to installing the traditional surfacing system or ballast for railway bridges.

MANUFACTURE

Permatrack Bridge Surfacing is manufactured using conventional asphalt production methods.

As part of 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 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.

The Quality Management System of IKO Plc has been assessed and registered as meeting the requirements of BS EN ISO 9001 by BSI (Certificate No FM595512).

The Environmental management System of IKO Plc has been assessed and registered as meeting the requirements of ISO 14001 (Certificate No 24700).

The Responsible Sourcing Management System of IKO Plc has been assessed and registered as meeting the requirements of BES 6001: ISSUE 3 (Certificate No 24703).

IKO ltd has been assessed and registered by CO^2Balance so that all mastic asphalts manufactured achieve Carbon Zero Status.

DELIVERY AND SITE HANDLING

Permatrack Bridge Surfacing is normally supplied directly to site in purpose built hot charge transporters capable of holding up to 18 tonnes of material. Permatrack Bridge Surfacing is also available in block form for remelting on site, blocks will require the addition of 40-45% 10mm size basalt/granite coarse aggregate prior to installation.

Permatrack Bridge Surfacing is not classified under *The Chemicals (Hazard Information and Packaging for Supply) Regulations 2009 (CHIP4)/ The Classification, labelling and Packaging of Substances and Mixtures (CLP Regulations) 2009.*

IDENTIFICATION AND TABLE OF WEIGHTS

Product	Code	Size	Qty/Pallet
Permatrack Bridge Surfacing hot charge	54911045	Made to order	Made to order
Permatrack Bridge Surfacing blocks	44910000	20Kg	80
10mm granite	39983200	25Kg	50

ADDITIONAL INFORMATION

CE MARKING

IKO Ltd has taken the responsibility of CE marking the Permatrack Bridge Surfacing in accordance with harmonised European Standard BS EN 13108-6. An asterisk (*) appearing in this data sheet indicates that data shown are given in the manufacturers Declaration of Performance.

Design Considerations

GENERAL

Permatrack Bridge Surfacing is satisfactory for use on bituminous, concrete, steel and timber substrates/structures provided they are stable and have sufficient loadbearing strength to support the loads imposed during installation and service.

PRACTICABILITY OF INSTALLATION

The product/system is installed only by contractors registered by IKO Ltd using purpose type paving equipment or by hand laying. The contractor should have operatives fully conversant with mastic asphalt laying techniques. (See installation section of this data sheet).

DENSITY

The mass per unit area of mastic asphalt varies due to a number of factors such as the differing proportions of constituents and the nature and quantity of coarse aggregate added. For practical and load calculation purposes the mass of the mastic asphalt can be taken to be 2.4Kg/m2 per millimetre of thickness or 2.4 tonnes per cubic metre.

THICKNESS

Roads and Carriageways generally min 40mm in a single layer with 40-45% added 10mm coarse aggregate.

Footpaths and cycle ways generally min 25mm in a single layer with approx. 30-35% added 6mm coarse aggregate.

Roads and Carriageways of greater depth can be built up in multiple layers.

Permatrack Bridge Surfacing can be used as a regulating layer, binder course and surface course.

SURFACE MACROTEXTURE

The Permatrack Bridge Surfacing on its own does not provide a surface macrotexture but requires bitumen coated chippings of a specific size and min 65 PSV (Polished Stone Value) , max 10 AAV (Aggregate Abrasion Value) to be embedded into the surface. Or alternative surface dressing material.

Unless otherwise specified by the purchaser, the mastic asphalt for highways, while still warm and in a plastic condition, should be covered with a layer of coated chippings.

The chippings should be evenly distributed at a rate of:
6mm chippings at a spread rate of 6.0Kg/m2 to 7.5Kg/m2
14mm chippings at a spread rate of 7.5Kg/m2 to 10Kg/m2

20mm chippings at a spread rate of 10kg/m2 to 13.0Kg/m2

The chippings should then be lightly rolled into the surface of the asphalt by means of a suitable hand or mechanical roller.

When the chippings are being spread, the channels against kerbs should be covered by battens, not less than 150mm wide, so as to ensure that a smooth channel is maintained to facilitate the flow of surface water to the gullies.

When used with the appropriate surface finish the system can achieve an initial texture depth in excess of 1.5mm and retained texture depth after rutting to a depth of 5mm in excess of 1.0mm.

PERMANENT DEFORMATION(*)

The indentation of specimens prepared in accordance with EN 13108-20.

The indentation shall be determined in accordance with EN 13108-20.

Permatrack Bridge Surfacing has indentation limits as declared on the relevant Declaration of Performance certificate.

WHEEL TRACKING

The resistance to permanent deformation was also assessed by means of the Wheel Tracking Test (WTT), in accordance with BS 598-110(5). Each WTT was carried out on 3 number 200mm diameter samples at 60^0C.

For Permatrack Bridge Surfacing material for use on roadways results showed a Rut Depth (mm) of <7 and a Rut Rate (mm/hr) <5

SENSITIVITY TO WATER

The standard Saturation Ageing Tensile Stiffness (SATS) described in SHW clause 953 combines the ageing and moisture damage mechanisms. The durability assessment showed that materials performed well under SATS conditions with retained stiffness values above 0.9, indicative of material with good resistance to the combined effects of age and moisture.

DURABILITY

In the UK there are numerous examples of mastic asphalt used as a surfacing material on major bridges such as The Forth Road Bridge (original crossing), Severn Bridge (original crossing), Humber Bridge, etc. Mastic Asphalt has also been used on other bridge structures such as Swing Bridges and Lifting Bridges. For Life costing purposes Permatrack Bridge Surfacing should have a serviceable life expectancy in excess of 25 years for both new and maintenance road construction.

INSTALLATION

GENERAL

Permatrack Bridge Surfacing must be installed in accordance with the recommendations listed below and the principles of laying PAVING grade mastic asphalt.

The system can be applied to bituminous, concrete, steel and timber substrates/structures.

SUBSTRATE PREPARATION

The surface on which the Permatrack Bridge Surfacing is to be laid should be made good and adjusted to a contour approximating to the final contour and swept clean of debris and standing water.

All surfaces should be clean dry and free from dust, oil, grease contaminants.

For Bridge surface course applications applied over a BBA HAPAS certified PMMA waterproofing system a tack coat as recommended by the waterproofing manufacturer must be installed.

For a surface course over an existing bituminous material a bitumen emulsion tack coat must be applied uniformly.

For a surface course over new bituminous material no specific preparation is required.

Note: In circumstances where blowing of the Permatrack Bridge Surfacing occurs and no specific bond strength to the substrate is required (never for bridge decks) an isolating layer of Glass Fibre Tissue may be used with approval of the purchaser/client.

MATERIAL

Material remelted on site from blocks broken into pieces of convenient size and carefully re-melted, preferably in mechanical mixers. At this stage the requisite proportion of coarse aggregate should be fed in successive portions until the complete charge is thoroughly incorporated. At no time during re-melting should the temperature exceed 230^0C.

The coarse aggregate content is expressed as a percentage by mass of the as-laid material. The mass of coarse aggregate has to be deducted from the tonnage of the as-laid material to give the mass of mastic blocks required.

Material prepared and transported hot from the manufacturer will contain the prerequisite amount of coarse aggregate and must be transported to the point of laying in suitably agitated mechanical mixers.

Hot Charge vehicle

Luggers for trnsportation to point of lay

RECOMMENDATIONS FOR LAYING

Permatrack Bridge Surfacing should be laid, normally in one coat (multiple layers are acceptable), at a temperature between 175^{0}C and 230^{0}C and spread uniformly by hand using wooden floats or by machine on the prepared and regulated surface. The thickness of the Permatrack Bridge Surfacing mastic asphalt and the percentage of added coarse aggregate should be in accordance with the manufacturers instructions and as specified by the purchaser/client. Where necessary steel gauges of the requisite dimensions should be employed.

Hand Lay

Machine Lay

JOINTS

Care should be taken to ensure that all joints are properly and truly made.

The joints between sections of work should be made by warming the existing Permatrack Bridge Surfacing mastic asphalt by the application of an excess of hot mastic asphalt which is subsequently trimmed off to form an accurately level joint.

Alternatively saw cut to three quarter depth, nominal 10mm wide. Clean then seal with IKO N2 Bituminous hot poured sealant.

PROJECTIONS

Before laying the Permatrack Bridge Surfacing mastic asphalt the edges of all manholes, gulley frames, boxes etc .against which it is to abut should be thoroughly cleaned and primed and removable steel gauges placed against the upstands. Allow the mastic asphalt to cool, remove the gauges and infill the gap with IKO N2 Bituminous hot poured sealant.

Alternatively proprietary self-adhesive bituminous tapes can be installed against all ironworks .

Where the Permatrack Bridge Surfacing is to abut kerbs, the edges of these should be similarly treated.

The finished surface should be kept flush with, or not exceeding 3mm above, such projections.

SURFACE FINISH

Unless otherwise stated by the purchaser/client, the Permatrack Bridge Surfacing mastic asphalt for roads and carriageways, while still warm and in a plastic condition should be covered with a layer of coated 6mm, 14mm or 20mm bitumen coated chippings.(see surface macrotexture above).

Surface finish of footways, unless otherwise specified by the purchaser/client can be sand rubbed and if required lightly rolled using a dimpled roller to provide a crimped finish.

The surface of the Permatrack Bridge Surfacing mastic asphalt , tested with a straightedge 3m long placed parallel to the centre line of the carriageway, should have no depression greater than 7mm and 10mm for hand laid reference should also be made to BS 594987-2015 section 6.7 Table 3.

Newly-laid sections should not be opened to traffic until the Permatrack Bridge Surfacing mastic asphalt has cooled to the prevailing atmospheric temperature.

MAINTENANCE AND REPAIR

The system is not subject to any routine maintenance requirements. However any damage must be repaired.

Any damaged areas must be cut back to sound material by planing or other suitable means and replaced with Permatrack Bridge Surfacing mastic asphalt including all jointing to existing as described above.

GUARANTEE

Permatrack Bridge Surfacing material comes with a 10 year material guarantee from the date of practical completion against manufacturing defects subject to terms and conditions (available on request).

CONDITIONS OF DATA SHEET

This technical datasheet is applied to products sold by IKO PLC and valid until withdrawal or until modification. Since this datasheet may be subject to revision, it is the responsibility of designer/end-user to make sure of possessing the latest version of the datasheet (*see date of issuing). Most recent version of this datasheet can be also accessed under www.ikogroup.co.uk. Modification of the technical datasheet repeals the previously issued versions.

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