



उत्पाद मैनुअल
खनडजे के लिए कंक्रीट ब्लॉक्स के लिए
आई एस 15658:2021 के अनुसार

PRODUCT MANUAL
CONCRETE PAVING BLOCKS
ACCORDING TO IS 15658: 2021

विभिन्न उत्पादों के लिए भारतीय मानक ब्यूरो) अनुरूपता मूल्यांकन (विनियम, 2018 की योजना -I के तहत प्रमाणन के संचालन में एकरूपता और पारदर्शिता के लिए इस उत्पाद मैनुअल का उपयोग सभी क्षेत्रीय / शाखा कार्यालयों और लाइसेंसधारियों द्वारा संदर्भ सामग्री के रूप में किया जाएगा। दस्तावेज़ का उपयोग बीआईएस प्रमाणन प्राप्त करने के इच्छुक संभावित आवेदकों द्वारा भी किया जा सकता है।

This Product Manual shall be used as reference material by all Regional/Branch Offices & licensees to ensure uniformity of practice and transparency in operation of certification under Scheme-I of Bureau of Indian Standards (Conformity Assessment) Regulations, 2018 for various products. The document may also be used by prospective applicants desirous of obtaining BIS certification.

1.	मानक संख्या IS No.	:	IS 15658:2021
	शीर्षक Title	:	Concrete Paving Blocks
	संशोधनों की संख्या No. of amendments	:	2
2.	नमूना दिशानिर्देश Sampling Guidelines		
a)	कच्चा माल Raw material	:	Please refer to Annex-A Note: This section indicates the requirements for raw material (if specified in the IS) for which compliance is to be established during Grant of Licence/Change in Scope of Licence/ Factory Surveillance
b)	समूहीकरण दिशानिर्देश Grouping Guidelines	:	Please refer to Annex-B
c)	नमूने का परिमाण Sample Quantity	:	35 blocks for all tests Note: This section indicates the quantity of the sample of the product and/or the raw material (if applicable), required to be sent to the laboratory for testing, for the purpose of Grant of Licence/Change in Scope of Licence/ Factory Surveillance (incase of market surveillance, effort may be made to procure therequired quantity of product sample, as far as possible since raw material sample may not be available in market)

d)	परीक्षण अनुरोध में घोषित किए जाने वाले पैरामीटर Parameters to be Declared in Test Request	-	Same as the scope of licence
3.	परीक्षण उपकरणों की सूची List of Test Equipment	:	Please refer to Annex-C
4.	निरीक्षण और परीक्षण की स्कीम Scheme of Inspection and Testing	:	Please refer to Annex-D
5.	एक दिन में संभावित परीक्षण Possible tests in a day		
	a) Visual appearance (Clause 6.2.1) b) Dimensions and tolerance (Clause 6.2.2) c) Thickness of wearing layer (Clause 6.2.3) Note: This section is for the guidance of BIS Certification Officers/Technical Auditors of BIS Authorized Outside Surveillance Agencies (OSAs) during factory inspection to provide readyreference regarding the tests which can be witnessed during the inspection in the factory by the officer/auditor.		
6.	लाइसेंस का दायरा /Scope of the Licence:		
	“Licence is granted to use Standard Mark as per IS 15658 : 2006 with the following scope:		
	Name of the product	CONCRETE PAVING BLOCKS	
	Grade designation	M-30, M-35, M-40, M-50 and M-55	
	Thickness of Block	--- mm (as applicable for the grade designation)	
	No of layer	Single layer / Double layer	

भारतीय मानक ब्यूरो
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ANNEX A
Details of Raw Materials

Raw Material	Indian Standard
Cement (Cl 5.1)	Cement shall conform to the relevant Indian Standards mentioned at Clause 5.1 of IS 15658:2021
Mineral Admixtures (Cl 5.1)	Mineral Admixtures shall conform to the relevant Indian Standards mentioned at Clause 5.2 of IS 15658:2021
Chemical Admixtures (Cl 5.3)	Chemical Admixtures shall conform to IS 9103
Coarse and Fine Aggregates (Cl 5.4)	Coarse and Fine Aggregates shall conform to IS 383. In addition, coarse shall also conform to Clause 5.4.1.2 of IS 15658:2021
Pigments (Cl 5.5)	Pigments shall conform to Clause 5.5 of IS 15658:2021
Water (Cl 5.6)	Water shall conform to IS 456
Alkali activated concrete (Cl 5.7)	Where alkali activated concrete is used for manufacture, the constituent materials, mix design procedure and curing requirements shall be as per IS 17452.

ANNEX B

Grouping Guidelines

1. IS 15658 : 2021 covers Precast Concrete Blocks for Paving with the following requirements :
 - i) Grade Designation: M-30, M-35, M-40, M-50 and M-55.
 - ii) Dimensions:
 - The thickness of the blocks shall be not less than 50 mm and not more than 120 mm and shall also meet the thickness requirement specified under Table 1 of IS 15658: 2021. When agreed to between manufacturer and purchaser, Blocks of thickness more than 120 mm may also be manufactured.
 - Length and Width: To be specified by the manufacturer.
 - iii) Blocks can be manufactured in one layer or two layers.
2. Considering the above, Precast Concrete Blocks for Paving are categorized into the following groups based on Grade Designation:

	GROUP-I	GROUP-II
GRADE DESIGNATION	M-30, M-35, M-40	M-50, M-55

3. Considering the above, following grouping guidelines for GoL/ CSoL have been developed:
 - (i) One sample from each Group having the highest Grade Designation and any thickness shall be tested for all requirements, in order to cover the complete range of thickness and grade of that Group.
 - (ii) Paving blocks of each layer (one or two) shall be tested for all requirements, in order to cover that particular layer tested.
4. The Firm shall declare the varieties of paver blocks intended to be covered in the Licence. In case of M55 grade, the firm shall also declare the traffic categories in MSA (million standard axle) for which the blocks shall be used. The Scope of Licence may be restricted based on the Manufacturing and Testing capabilities of the Manufacturer.
5. During the operation of the Licence, BO shall ensure that all the Grade Designations, Types and Sizes covered in the Licence are tested in rotation, to the extent possible.

ANNEX C

List of Test Equipment

(INDICATIVE LIST, FOR GUIDANCE ONLY)

Sl. No.	Tests used in with Clause Reference	Test Equipment
1	Aggregates (clause 4.2)	- Test sieves for aggregate testing
2	Dimensions, tolerance and thickness of wearing layer (clause 6.2.2, 6.2.3)	- Steel calipers - Steel rules/Vernier caliper - Weighing balance - Sheets of thin cardboard of uniform thickness - Sharp pencil - Sharp scissors - Odd leg marking gauge - Engineers square or profiled template - Feeler gauge
3	Water absorption (clause 6.2.4)	- Weighing balance - Drying air oven
4	Compressive strength (clause 6.2.5)	- Compression testing machine with bearing blocks and plates (rate of loading 15 ± 3 N/mm² min) - Water bath capable to maintain temperature $27 \pm 2^\circ$ C - Capping of specimen arrangement/plywood
5	Abrasion resistance (clause 6.2.6)	- Abrasion testing machine - Hot air oven - Weighing balance - Standard abrasive powder - Grinding disk with defined load - Stop watch
6	Tensile splitting strength (clause 6.2.7)	- Testing machine with rigid bearers of radius 75 ± 5 mm - Packing piece thickness 4 ± 1 mm & width 15 ± 1 mm - Water bath capable to maintain temperature $27 \pm 2^\circ$ C

7	Flexural strength /breaking load (clause 6.2.8)	- Testing apparatus with rollers of diameter 25 - 40 mm - Loading machine with rate 6 kN/min
8	Freeze–thaw durability (clause 6.3.3)	- Freezing cabinet/cold room : -15 ± 2 °C - Thawing chamber : 23 ± 3 °C - Moist chamber : temperature 23 ± 2 °C & humidity 90 % - Weighing balance - Container

ANNEX D

SCHEME OF INSPECTION AND TESTING

1. QUALITY ASSURANCE PLAN

1.1 It is expected that during operation of BIS licence, manufacturers will implement a Quality Assurance Plan (QAP) i.e. a plan of regular testing and in-process controls, designed to ensure that the product bearing the Standard Mark conforms to all requirements of the Indian Standard.

1.2 The manufacturers shall define a Quality Assurance Plan (QAP) defining the control unit (i.e. lot/batch etc.), the levels of control (i.e. the frequency and number of samples for conducting the different tests as per the Indian Standard) and declare the arrangement for testing i.e. whether in-house or subcontracting/sharing for each applicable test and submit the same to BIS Branch Office for information. The manufacturer shall comply with the QAP and maintain test records in accordance with para 2.1.

1.3 RECOMMENDED LEVELS OF CONTROL/CONTROL UNIT:

1.3.1 For the guidance of manufacturers, the recommended definition of control unit is : Every 25000 Precast Concrete Blocks for Paving or part thereof of same size/shape and grade manufactured under identical condition from raw material of same source in a week shall constitute one control unit.

1.3.2 For the guidance of manufacturers in preparing the Quality Assurance Plan, recommended levels of control are given in **Table 1**. Manufacturer has the discretion of declaring their own levels of control or accept the levels of control given in this document.

1.3.3 The manufacturer shall ensure inspection and testing as per the Quality Assurance Plan submitted by them on the whole production of the factory which is covered by this plan.

2. ENSURING COMPLIANCE THROUGH TESTING- manufacturers shall ensure compliance of their products to all the requirements of the Indian Standard for which they may have in-house test facilities. However, there is no obligation to maintain in-house laboratory. Licensee may use alternative arrangements for tests of the production as per the declared QAP. Various alternatives are available for operation of BIS certification as given below and the relevant guidelines for availing such relaxations by the manufacturers, as amended from time to time, are to be referred :

- i) Shared testing resources like common facility,
- ii) Cluster based testing facility,
- iii) Sub-contracting to outside laboratories which may either be:
 - a) BIS recognised/empanelled laboratories, or
 - b) Any accredited laboratory as per ISO/IEC 17025

2.1 TEST RECORDS- The manufacturers shall maintain test records for the tests carried out (either in-house or at a sub-contracted or at shared test facility) to establish conformity of the product to the Standard for operation of licence. For the tests being subcontracted or conducted at a shared test facility, test results issued by the laboratories or test facilities, shall be made available for inspection by BIS.

3. PACKING AND MARKING - The Standard Mark as given in the Schedule of the licence shall be marked on the concrete paving block/package, provided always that the material so marked conforms to each requirement of the specification.

3.1 Marking shall be done as per Clause 10 of IS 15658:2021.

3.2 The manufacturer shall supply test certificate/invoice with each batch mentioning the batch number and date of manufacture, to enable to trace back the same to factory records. However, the manufacturer shall ensure during dispatch in every consignment, that at least 0.5% of the consignment or 5 blocks, whichever is higher, shall be marked with batch number and date of manufacture.

3.3 **Additional Marking requirements:** Additionally, the following shall also be marked on product or package :

a) “For BIS certification details please visit www.bis.gov.in”

4. REJECTION - The production which conforms to the Indian Standard and covered under the scope of this licence shall be marked with the Standard Mark. Disposal of non-conforming product shall be done in such a way so as to ensure that there is no violation of provisions of BIS Act,2016.

TABLE 1*(Recommended Levels of Control by BIS- for Guidance Only)*

(1)				(2)		
Test Details				Recommended Levels of Control		
Clause	Requirement	Test Methods Clause Reference		No. of Sample*	Frequency	Remarks
5.1	Cement	5.1	IS 15658	-	-	Shall be ISI marked and received with test certificate.
5.2	Mineral Admixture	5.2	IS 15658	One	Once in three month for each type and source of admixture supply	No further testing is required, if accompanied with test certificate or ISI marked.
5.3	Chemical Admixtures	5.3	IS 15658	One	Each consignment	No further testing is required, if accompanied with test certificate or ISI marked
5.4	Coarse and Fine Aggregates	5.4	IS 15658	One	Once in a year for each source and size	Additional sample shall be tested whenever there is change of source of supply of material. Maximum aggregate size used in manufacturing shall be ensured in house for each consignment received or once in a week, whichever is earlier. No further testing is required, if accompanied with test certificate or ISI marked
5.5	Pigments	5.5	IS 15658	One	Each consignment	No further testing is required, if accompanied with test certificate or ISI marked
5.6	Water	5.6	IS 15658	One	Once in a year for each source	Additional testing is required whenever there is change of source.

7.1.1	General Quality	7.1.1	IS 15658	Eight blocks	Each control unit	Samples shall be selected at random to cover entire production evenly as far as possible. In case failure of sample in any requirement, double the initial sample shall selected and tested, control unit shall be rejected in case of failure of retested samples.
7.1.2	Visual Inspection	7.1.2	IS 15658	Eight blocks	Each control unit	
7.1.3	Colour and Texture	7.1.3	IS 15658	Eight blocks	Each control unit	
7.2	Dimensions and Tolerances	7.2 and Annex B	IS 15658	Three blocks	Each control unit	
7.2	Thickness of wearing Layer	7.2	IS 15658	Three blocks	Each control unit	
7.3	Water Absorption	7.3 and Annex C	IS 15658	Three blocks	Once in a month	
7.3	Compressive Strength	7.3 Annex D	IS 15658	Five blocks	Once in a month	Samples may be selected in such a manner that over a period of time, paver blocks of all grades, shapes and sizes etc are tested.
7.3	Abrasion Resistance	7.3 and Annex E	IS 15658	Six blocks**	Once in a month	
7.3	Tensile Splitting Strength	7.3 and Annex F	IS 15658	Three blocks	Once in six months	
7.3	Flexural strength/ Breaking load.	7.3 and Annex G	IS 15658	Three blocks	Once in six months	
7.3	Freeze- thaw durability	7.3 and Annex H	IS 15658	Three blocks	As required by the Purchaser or once in a year, whichever is earlier	

* If any sample fails, twice the number of samples from the same control unit shall be tested for that requirement and if any failure is observed in retested sample, the control unit shall be rejected.

** In case of abrasion resistance, three blocks shall be tested for wet abrasion and three blocks shall be tested for dry abrasion resistance. If concrete paving blocks subjected to wet abrasion resistance test also pass the specified requirements of dry abrasion resistance, then further testing of the samples for dry abrasion resistance requirements will not be required.