

STANDARD INDUSTRI PEMBINAAN

(CONSTRUCTION INDUSTRY STANDARD)

CIS 24 : 2023

INDUSTRIALISED BUILDING SYSTEM (IBS) ASSESSMENT & CERTIFICATION

Description: IBS products, assessment, certification, verification, validation, marking

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CONSTRUCTION INDUSTRY DEVELOPMENT BOARD



Construction Industry Development Board Malaysia

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INDUSTRIALISED BUILDING SYSTEM (IBS) ASSESSMENT & CERTIFICATION



Industrialised Building System (IBS) Assessment & Certification
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COMMITTEE REPRESENTATION

This Construction Industry Standard (CIS) was managed and developed by the Construction Industry Development Board Malaysia with the assistance of the Technical Committee of Industrialised Building System (IBS) Assessment & Certification, which comprises representative from the following organisations:

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CIDB IBS Sdn Bhd
Construction Research Institute of Malaysia (CREAM)
Haustek Engineering Sdn Bhd
IJM IBS Sdn Bhd
Integrated Brickworks Sdn Bhd
Jabatan Kerja Raya Malaysia (JKR)
Malaysia Timber Industry Board (MTIB)
Master Builders Association Malaysia (MBAM)
NS BlueScope Lysaght (M) Sdn Bhd
PLYTEC IBS System MFG Sdn Bhd
Setia Precast Sdn Bhd
Starken AAC Sdn Bhd
Tasblock (M) Sdn Bhd
The Institution of Engineers, Malaysia (IEM)

PREFACE

This Construction Industry Standard (CIS), hereby referred to as CIS 24:2023 was developed as a Industrialised Building System (IBS) Assessment & Certification by the Construction Industry Development Board (CIDB) of Malaysia which acted as a moderator and facilitator for the technical committee throughout the development process of this standard in compliance with requirements regulated in the Akta 520 – 1994, Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat) 2021.

This second edition cancels and replaces the first edition (CIS 24:2018), which has been technically revised.

The main changes compared to the previous edition are as follows:

1. CIS 24 requirements;
2. Process for Application; and
3. IBS Product marking.

Compliance with this Construction Industry Standard does not of itself confer immunity from legal obligations.

Any feedback or questions on this document should be directed to CIDB at www.cidb.gov.my.

INDUSTRIALISED BUILDING SYSTEM (IBS) ASSESSMENT & CERTIFICATION

SECTION 1: GENERAL

1.1 Introduction

This document intends to ensure that IBS product(s) follows the CIDB requirements stipulated in the Akta 520 – 1994, Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat) 2021. This document shall be the guideline to monitor and assess the applicants' capability and the IBS product(s) which require document assessment and product verification. The applicant shall ensure that all materials used for their IBS product comply with the approved product's specifications if it falls under Akta 520 – 1994, Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat) 2021, whereby the Perakuan Pematuhan Standard (PPS) will then be required.

1.2 Objective

The purpose of this document is to certify that the IBS product(s) complies with the relevant standards before the PPS application for use in construction and to qualify for the CIS 18: Manual for IBS Content Scoring System (IBS Score).

1.3 Scope

This document outlines the application process for applicants applying for certification for IBS products under Akta 520 – 1994, Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat) 2021¹, which consists of six categories, namely:

- (a) Precast Concrete System
- (b) Blockwork System
- (c) Reusable Formwork System
- (d) Metal Framing System
- (e) Timber Framing System
- (f) Innovative System.

Note

¹ Products and standards listed in Lembaga Pembangunan Industri Pembinaan Malaysia (Amendment of Fourth Schedule) Order 2021 shall obtain the PPS by CIDB before they can be used in the construction works. The construction works in the Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat) 2021 means the construction, extension, installation, repair, maintenance, renewal, removal, renovation, alteration, dismantling, or demolition of:

- (a) any building, erection, edifice, structure, wall, fence or chimney, whether constructed wholly or partly above or below ground level;
- (b) any road, harbour works, railway, cableway, canal or aerodrome;
- (c) any drainage, irrigation or river control works;
- (d) any electrical, mechanical, water, gas, petrochemical or telecommunication works; or
- (e) any bridge, viaduct, dam, reservoir, earthworks, pipeline, sewer, aqueduct, culvert, drive, shaft, tunnel or reclamation works, and includes:
 - (A) any works which form an important and integral part of or are preparatory to or temporary for the works described in paragraphs (a) to (e), including site clearance, soil investigation and improvement, earth-moving, excavation, laying of foundation, site restoration and landscaping; or
 - (B) procurement of construction materials, equipment or workers, necessarily required for any work described in paragraphs (a) to (e);

1.4 Normative References

The following normative references are indispensable for this CIS 24 application. The latest edition of the normative references (including any amendments) below shall apply:

- (a) Akta 520 – 1994, Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat) 2021.
- (b) Tatacara Permohonan Perakuan Pematuhan Standard (PPS) Bagi Bahan Binaan Tempatan
- (c) Guideline for Industrialised Building System (IBS) Assessment Construction Product Approval (CPA).

1.5 Terms & Definitions

For the purpose of this document, the terms and definitions given in the Acts cited in this document and the following shall apply:

1. “Applicant”

A company, which can be either a manufacturer or an owner, that submits a CIS 24 application.

2. “Accredited Laboratory”

A testing laboratory that has obtained the Skim Akreditasi Makmal Malaysia (SAMM) / International Laboratory Accreditation Cooperation-Mutual Recognition Arrangement (ILAC-MRA) or approved by CIDB in accordance with the criteria outlined. The laboratory shall be endorsed by the Accreditation Body in compliance with ISO/IEC 17025.

3. “Blockwork System”

Blocks of concrete, cement, or any material for the main intended uses are common, facing or exposed blocks in load-bearing or non-load-bearing building and civil engineering applications. The units are suitable for all forms of walling, cavity walls, partitions, retaining, and basements with modular sizes according to MS 1064- 8.

4. “Certification Body (CB)”

Local agencies accredited by STANDARDS MALAYSIA or foreign agencies that are accredited by accreditation bodies of the country of origin and are required signatories of APAC MRA, IAF MLA as Certification Bodies or CB. CB has to be accredited by Accreditation Bodies according to ISO/IEC 17065.

5. “Certification”

A procedure by which CIDB gives written assurance that includes process, practice, or service, and conforms with specified requirements.

6. “Construction Product Approval (CPA)”

A certification process of four IBS categories, i.e., metal framing system, timber framing system, reusable formwork system, and innovative system, which do not have specific standards.

7. “Document Validation”

An assessment process to ensure all documents comply with the requirements.

8. “Industrialised Building System”

- (a) The technique or method of building construction in which the product(s) that consist of components/elements/systems are manufactured by the manufacturer in a controlled environment, either at the site or off-site, and subsequently transported, positioned and assembled into construction works.
- (b) This also includes the owner of the finished product(s) in relation to the above.

9. “Innovative System”

A form of construction which comprises IBS product(s) manufactured using new materials or new technologies in constructing the building system.

- (a) In terms of material innovation, the innovative product(s) could comprise new construction material or a combination.
- (b) In terms of construction technology, the innovative system is a system other than conventional methods that improves productivity, quality, and safety, and reduces wastage.
- (c) In an innovative system, the product(s) can be manufactured and delivered to construction sites in the form of individual, partial volumetric or complete volumetric systems.
- (d) Any IBS product(s) that meet any criteria of either material or technology innovation is considered an innovative system.

10. “Manufacturer”

A company or organisation that manufactures IBS product(s).

11. “Metal Framing System”

A prefabricated construction system with a combination of metal structural elements such as beams, columns, walls, slabs, tie rods, and roof trusses fitted together using connectors to support loads and transported, positioned and assembled into construction works.

12. “Material”

Any type, size and nature of the material, initial, temporary, intermediate or finished, whether manufactured locally or imported, used for the construction industry.

13. “Non-conformity”

Absence or failure to implement or maintain one or more of the minimum criteria according to the requirements.

14. “Owner”

A company or organisation that owns finished product(s) from the main IBS manufacturers or distributors.

15. “Perakuan Pematuhan Standard (PPS)”

A certificate issued by CIDB for a particular product that has complied with standard(s) specified by CIDB for the regulatory purposes under Akta 520 – 1994, Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat) 2021.

16. "Precast Concrete System"

A construction product(s) that are manufactured in a controlled environment, either at the site or off-site by casting concrete in a mould, cured in a controlled environment, and transported, positioned and assembled into construction works as categorised in Akta 520 – 1994, Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat) 2021.

17. "Product Certification (PC)"

The certificate issued by the Certification Body (CB) certifies the product's compliance with the standard within a certain validity period.

18. "Product Verification"

The process of verifying a product(s) which involves physical inspection to meet the requirements.

19. "Reusable Formwork System"

The application of reusable prefabricated formwork systems for the in-situ construction of concrete structures. The main function is to enable temporary work to be reused for a minimum count of 20 times.

- (a) Reusable formwork used for columns, beams, walls and slabs.
- (b) Tunnel form is used for the monolithic construction of walls and slabs.
- (c) The application of reusable formwork ensures high-quality finishing, shortens construction time, and reduced labour compared to the conventional formwork method.

20. "Timber Framing System"

A prefabricated construction system with a combination of timber structural product(s) such as beams, columns, walls, slabs, tie rods, and roof trusses fitted together using connectors to support loads and transported, positioned and assembled into construction works.

SECTION 2: REQUIREMENT FOR IBS PRODUCT(S) CERTIFICATION

2.1 General Requirements

- 2.1.1 The applicant shall obtain CIS 24 certification for IBS product(s) as required for the PPS application.
- 2.1.2 The six (6) categories of IBS product(s) that require CIS 24 are shown in Table 1, Table 2, and Table 3.
- 2.1.3 IBS product(s) shall be tested in an accredited laboratory according to Clause 2.2.
- 2.1.4 The product(s) produced shall comply with the requirement of the standards and pass the test that has been set.
- 2.1.5 All materials used for their IBS product(s) shall comply with the approved product specification if it falls under Akta 520 – 1994, Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat) 2021, then PPS is required.

2.2 IBS Products and Standards Compliance for Certification

- 2.2.1 IBS Product(s) shall comply with the reference standards for Product Certification as in Table 1, Table 2 and Annex A.

Table 1: Precast Concrete System

No.	Products	Reference standards
1.	Special roof elements	BS EN 13693
2.	Staircase	BS EN 14843
3.	Wall elements	BS EN 14992 With Fire Rating BS 476 Part 6 BS 476 Part 7 BS 476 Part 21 BS 476 Part 22 ASTM E2226-10
4.	Slab system	BS EN 13747
	(a) Half slab	
	(b) Plank	
(c) Pre-stressed slab		
	(d) Hollow core slab	BS EN 1168
	(e) Ribbed floor elements	BS EN 13224
5.	Linear structural elements	BS EN 13225
	(a) Beam	
	(b) Column	

Table 2: Blockwork System

No.	Products	Reference standards
1.	Concrete Masonry Units (CMU) The MANDATORY test includes dimension, density, water absorption, compressive strength, water absorption by capillarity	MS 2282-3 With Fire Rating BS 476 Part 21 BS 476 Part 22 ASTM E2226-10
2.	Cellular Lightweight Concrete (CLC) The MANDATORY test includes dimension, density, water absorption, compressive strength, water absorption by capillarity	MS 2282-3 With Fire Rating BS 476 Part 21 BS 476 Part 22 ASTM E2226-10
3.	Autoclaved Aerated Concrete (AAC) The MANDATORY test includes dimension, density, water absorption, compressive strength, dry shrinkage	MS 2282-4 With Fire Rating BS 476 Part 21 BS 476 Part 22 ASTM E2226-10

2.2.2 IBS Product(s) shall comply with the CPA Certification as in Table 3.

Table 3: Other IBS Products

No.	Products	Requirements
1.	Precast concrete system without a product reference standard	As stipulated in CPA Guideline
2.	Blockwork system without a product reference standard	
3.	Reusable formwork system	
4.	Metal framing system	
5.	Timber framing system	
6.	Innovative system	

SECTION 3: PROCESS FOR CIS 24 APPLICATION

3.1 Certification Process

The certification process is illustrated in Figure 1.

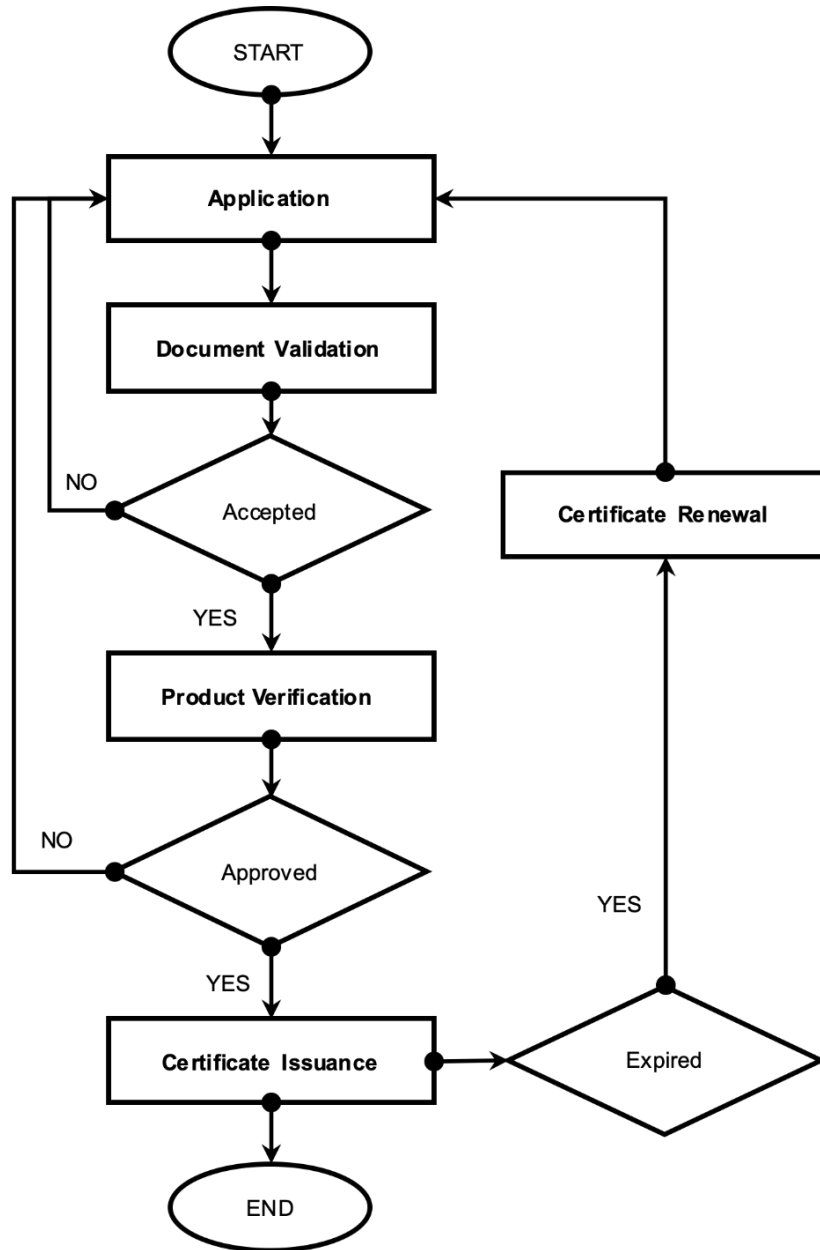


Figure 1: Certification Process for CIS 24

- 3.1.1 A notice shall be issued if the submitted application is complete or incomplete.
- 3.1.2 A letter of notification shall be issued after the product verification if non-compliance is found, and the applicant shall re-apply for the certification.
- 3.1.3 A product verification report shall be issued to the applicant after a factory inspection is completed.
- 3.1.4 The CIS 24 certificate is valid for one (1) year.
- 3.1.5 Application to renew the CIS 24 certificate shall be submitted three (3) months before the expiry date.

SECTION 4: IBS PRODUCT MARKING

4.1 Marking Requirements

4.1.1 Every IBS product(s) shall be marked with a label that is durable, waterproof, and visible for identification with the following minimum requirements:

- (a) Manufacturer and/or owner mark
- (b) Year of manufacture
- (c) Country of origin
- (d) No. of this standard: CIS 24: 2023

4.1.2 The method of marking shall be in accordance with Table 4.

Table 4: IBS Product Marking

Product	Method of marking
Precast concrete	Sticker, indented, or painted or stencilled or QR code
Blockwork	Sticker, labelling, tagged, or QR code
Metal framing	Sticker, stamped, labelling, tagged, stencilled or QR code
Timber framing	Sticker, stamped, painted, labelling, tagged, or QR code
Reusable formwork	Sticker, indented, painted, stencilled, or QR code
Innovative	Sticker, stamped, painted, indented, labelling, tagged, stencilled, or QR code (whichever is applicable)

ANNEX A
(normative)
List of IBS product references standards

IBS CATEGORY	REFERENCE STANDARD	
Precast Concrete System	BS EN 13693	Precast concrete product – Special roof elements
	BS EN 14843	Precast concrete products - Stairs
	BS EN 14992	Precast concrete products – Wall elements
	BS 476-6	Fire tests on building materials and structures - Methods of testing for fire propagation for products
	BS 476-7	Fire tests on building materials and structures - Methods of testing to determine the classification of the surface spread of flame of products
	BS 476-21	Fire tests on building materials and structures - Methods to determine the fire resistance of loadbearing elements of construction
	BS 476-22	Fire tests on building materials and structures – Methods to determine the fire resistance of non-loadbearing elements of construction.
	ASTM E2226-10	Standard Practice for Application of Hose Stream
	BS EN 13747	Precast concrete products - Floor plates for floor systems
	BS EN 1168	Precast concrete products - Hollow core slabs
	BS EN 13224	Precast concrete products - Ribbed floor elements
BS EN 13225	Precast concrete products - Linear structural elements	
Blockwork System	MS 2282-3	Masonry units - specification - part 3: Aggregate concrete masonry units (dense and light-weight aggregates) (second revision)
	MS 2282-4	Masonry units - Specification - Part 4: Autoclaved aerated concrete masonry units
	BS 476-21	Fire tests on building materials and structures - Methods to determine the fire resistance of loadbearing elements of construction
	BS 476-22	Fire tests on building materials and structures - Methods to determine the fire resistance of non-loadbearing elements of construction.
	ASTM E2226-10	Standard Practice for Application of Hose Stream

BIBLIOGRAPHY

- I. Akta 520 – 1994, Perintah Lembaga Pembangunan Industri Pembinaan Malaysia (Pindaan Jadual Keempat); 2021.
- II. Construction Industry Development Board. Industrialised Building System (IBS) Road Map 2011- 2015. CIDB Malaysia; 2010.
- III. Construction Industry Development Board. *Manual Tatacara Penilaian Pengeluar IBS* (Assessment of IBS System) CIDB Malaysia; 2018.
- IV. Guideline for Industrialised Building System (IBS) Assessment Construction Product Approval (CPA); 2021.
- V. Tatacara Permohonan Perakuan Pematuhan Standard (PPS) Bagi Bahan Binaan Tempatan.

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