

 حكومة دبي GOVERNMENT OF DUBAI	Organization/Unit: إدارة مختبر دبي المركزي Dubai Central Laboratory Department	الوحدة التنظيمية:	 بلدية دبي DUBAI MUNICIPALITY
	Document Title: Guidelines for Factory Production Control System for Block Factories	عنوان الوثيقة:	
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Issue Date	Rev. No.	Summary Of Amendments
04-03-2010	0	First draft
21-03-2010	1	Issue for use
01-02-2011	2	-Revised (frequency of testing and other test requirements) -Including of DMS 1: PART 5 -Removing the year of issuance of the standard (always refer to latest edition)
20-02-2019	3	Adding frequency of SRI independent testing
25-12-2019	4	Adding requirements for AAC Blocks. (DMS 1: PART 3-2011) and aligning with new numbering
16-07-2020	5	Removing the requirements of all materials testing frequency in table A.2.1 as these requirements have been modified in the standard specification (DMS1 all parts) to address the frequency and testing as per the approved internal quality testing plan of the factory.
10-11-2020	6	Revised to include the provision of waiving the testing requirements for cement, admixtures, supplementary cementitious materials and polystyrene insert if supplied by DCLD-PCAS certified source. Include the additional requirements of AAC blocks as per the updated DMS 1 Part 3: 2020.

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1. INTRODUCTION

- 1.1 This document details the steps that shall be taken by Block Manufacturers under the factory assessment scheme, in establishing and documenting a system of production quality control to ensure that the finished product will conform to a specified requirement.

2. SCOPE

- 2.1 The established factory production system shall consists of procedures, regular inspection and tests and the utilization of the results to control raw and other incoming materials ,equipments , the production process and the finished products .

3. REFERENCE DOCUMENTS

- 3.1 DM-DCLD-RD-DP21-2001 (IC): General rules for the DM Third-party product certification system through factory assessment
- 3.2 DM-DCLD-RD-DP21-2169 (IC): Specific Rules for Certification of Precast Concrete Masonry Blocks (as per DMS 1: Part 1) through Factory Assessment
- 3.3 DM-DCLD-RD-DP21-2170 (IC): Specific Rules for Certification of Precast Concrete Filler Blocks (as per DMS 1: Part 2) through Factory Assessment
- 3.4 DM-DCLD-RD-DP21-2172 (IC): Specific Rules for Certification of Precast Concrete Paving Blocks (as per DMS 1: Part 4) through Factory Assessment
- 3.5 DM-DCLD-RD-DP21-2174 (IC): Specific Rules for Certification of Concrete-Polystyrene Sandwich Masonry Blocks (as per DMS 1: Part 5) through Factory Assessment
- 3.6 DM-DCLD-RD-DP21-2173 (IC): Specific Rules for Certification of Autoclaved Aerated Concrete Masonry Units as per DMS 1 Part 3) through Factory Assessment

4. RESPONSIBILITIES

- 4.1 Block factory quality control department
- Responsible for the preparation and effective implementation of an internal production quality control System, including documentation and recording of the results.
- 4.2 DM-Certification Body DCLD-PCAS
- Responsible for the approval of the manufacture internal production quality control

5. DEFINITIONS

- Manufacturer - Block Factory.
- Finished product: Different Types and shapes of Blocks.
- DM–Certification Body – Products Conformity Assessment Section-Dubai Central Lab. Department (DCLD-PCAS)

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6. GENERAL REQUIREMENTS AND PROVISIONS

6.1 The manufacturer shall establish Production Quality Control System(Product Quality Assurance Plan) conforming to Table (1), including procedures for ensuring proper controlling and monitoring of all inspections carried out for equipment's, raw materials, production and process, and finished product.

6.1.1 Equipment inspection shall conform to A.1 of Table (1).

6.1.2 Materials inspection shall conform to A.2 of Table (1).

6.1.3 Production process inspection shall conform to A.3 of Table (1).

6.1.4 Finished Product Inspection shall conform to A.4 of Table (1).

6.2 The manufacturer shall maintain and keep all records of inspection, sampling and testing.

6.3 The action to be taken when control values or acceptable criteria are not met shall be given; actions shall be recorded and documented.

6.4 Durability aspects for all blocks shall be in compliance with the related requirements of DMS 1 standards.

Table (1) Internal Quality Control Plan (Product Quality Assurance Plan)

A.1 Equipment Inspection				
Subject		Aim	Method	Frequency
A.1.1 Testing and measuring equipment				
All testing and measuring equipment's		Correct functioning and accuracy	Calibration, traceable to approved standards or norms	On (re)installation, after major repair or once per year
A.1.2 Storage and production equipment				
1	Storage of materials	Absence of contamination	Visual inspection or other appropriate method	-On installation -Weekly
2	Weighing or volumetric batching equipment's	Correct functioning and according to manufacturer's declared accuracy	Visual inspection and calibration, traceable to approved standard or norms	-On installation -Weighing-once a year -Volumetric-Twice a year -In case of doubt
3	Mixers	Wear and correct functioning	Visual inspection	Daily
4	Moulds	Cleanliness and conditions	Visual inspection	Daily
5	Curing chamber or Autoclave	Correct functioning according to manufacturer's operational manual and internal instruction	Visual inspection or other appropriate method	Daily
6	Dosing and mixing systems	Correct functioning according to manufacturer's operational manual and internal instruction	Visual inspection or other appropriate method	Daily
7	Cutting machines	Cleanliness and conditions	Visual Inspection	Daily

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A.2 Materials Inspection

A.2.1 All materials

1	Cement (All types)	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria	As per the defined testing frequency in the factory's internal product quality assurance plan (Where all used cement sources in the production is certified by DCLD-PCAS, this requirement can be waived)
2	Aggregates	Conformity with Block manufacturer's requirements.	-Visual inspection and appropriate test method or acceptable criteria	As per the defined testing frequency in the factory's internal product quality assurance plan
3	Aluminum (Powder/Paste)	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria	As per the defined testing frequency in the factory's internal product quality assurance plan
4	Quick Lime (Powder)	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria (Conforming to the requirements BS 890)	As per the defined testing frequency in the factory's internal product quality assurance plan
5	Silica Sand / Fly Ash (Type C) for AAC Blocks	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria	As per the defined testing frequency in the factory's internal product quality assurance plan
6	Gypsum	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria	As per the defined testing frequency in the factory's internal product quality assurance plan
7	Other Supplementary cementitious materials (Silica Fume, Ground Granulated Blast Furnace Slag (GGBS), or Fly Ash) for Masonry Blocks	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria	As per the defined testing frequency in the factory's internal product quality assurance plan (Where all used supplementary cementitious materials sources in the production is certified by DCLD-PCAS, this requirement can be waived)
8	Admixture	Conformity with Block manufacturer's requirements.	Appropriate acceptance criteria	As per the defined testing frequency in the factory's internal product quality assurance plan (Where all used admixture sources in the production is certified by DCLD-PCAS, this requirement can be waived)
9	Pigments (whenever applicable)	Conformity with Block manufacturer's requirements.	Appropriate acceptance criteria	As per the defined testing frequency in the factory's internal product quality assurance plan
10	Water	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria	As per the defined testing frequency in the factory's internal product quality assurance plan
11	Polystyrene insert- for sandwich blocks	Conformity with Block manufacturer's	Visual inspection to verify that the insert is certified	As per the defined testing frequency in the factory's internal

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		requirements.	by DCL and bears the DCL Mark	product quality assurance plan (Where all used Polystyrene insert sources in the production is certified by DCLD-PCAS, this requirement can be waived)
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A.3 Production Process Inspection

1	Mixture composition	Conformity with intended composition/mixture values	-Visual on weighing equipments -Checking against production process documents	Daily
2	Fresh concrete	Correct mixing	-Visual check	Daily
3	Production	Conformity with documented factory procedures	Checking actions against factory procedures	Daily
4	AAC Blocks Production (Raw materials preparation / Dosing and mixing process/Casting, rising and curing /Demoulding and cutting	Conformity with documented factory procedures	Checking actions against factory procedures	Daily

A.4 Finished Product Inspection

Subject	Aim	Method/Criteria	Frequency
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A.4.1 Product Testing

A.4.1.1 Paving Blocks

1	Visual checking	Shall conform to Clause 7 of DMS 1:Part 4	Visual	-Daily
2	Size (Work size and dimensions)	Shall conform to Clause 4.2 of DMS 1:Part 4	Annex A of DMS 1: Part 4	One test per machine per production day
3	Chloride and sulphate	Shall conform to Clause 5.4 of DMS 1:Part 4	BS 1881:Part 124	One test quarterly and for every change of materials source
4	Compressive strength	Shall conform to Clause 5.1 of DMS 1:Part 4	Annex A of DMS 1: Part 4	One test per machine per production day
5	Water absorption	Shall conform to Clause 5.2 of DMS 1:Part 4	Annex C of DMS 1: Part 4	One test monthly
6	Abrasion resistance	Shall conform to Clause 5.3 of DMS 1:Part 4	Test methods as per Clause 5.3 of DMS 1: Part 4	One test yearly
7	Solar Reflective Index (SRI)	Shall conform to Clause 5.6 of DMS 1: Part 4	ASTM E1980	One test yearly for paving blocks having Class 1 colors (> 29 SRI)

A.4.1.2 Masonry Blocks

1	Visual checking	Shall conform to Clause 5.1 of DMS 1:Part 1	Visual	Daily
2	Sizes (Work size and dimensions)	Shall conform to Clause 5.2 of DMS 1:Part 1	BS EN 772: Part 16	One test per machine per production day
3	Net Density	Shall conform to Clause 5.3	BS EN 772: Part 13	One test monthly and for every

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		of DMS 1:Part 1		change of materials source
4	Chloride and sulphate	Shall conform to Clause 5.4 of DMS 1:Part 1	BS 1881:Part 124	One test quarterly and for every change of materials source
5	Compressive strength	Shall conform to Clause 5.5 of DMS 1:Part 1	BS EN 772: Part 1 or Annex A of DMS 1: Part 1	One test per machine per production day
6	Drying shrinkage	Shall conform to Clause 5.6 of DMS 1:Part 1	ASTM C 426	One test quarterly
7	Thermal conductivity (whenever applicable)	Shall conform to Clause 5.7 of DMS 1:Part 1	Test methods as per Clause 5.7 of DMS 1: Part 1	One test yearly

A.4.1.3 Filler Blocks

1	Visual checking	Shall conform to Clause 5.1 of DMS 1:Part 2	Visual	-Daily
2	Size (Work size and dimensions)	Shall conform to Clause 5.2 of DMS 1:Part 2	BS EN 772: Part 16	One test per machine per production day
3	Net Density	Shall conform to Clause 5.3 of DMS 1:Part 2	BS EN 772: Part 13	One test monthly and for every change of materials source
4	Chloride and sulphate	Shall conform to Clause 5.4 of DMS 1:Part 2	BS 1881:Part 124	One test quarterly and for every change of materials source
5	Compressive strength	Shall conform to Clause 5.5 of DMS 1:Part 2	BS EN 772: Part 1 or Annex A of DMS 1: Part 2	One test per machine per production day
6	Drying shrinkage	Shall conform to Clause 5.6 of DMS 1:Part 2	ASTM C 426	One test quarterly
7	Thermal conductivity (whenever applicable)	Shall conform to Clause 5.7 of DMS 1:Part 2	Test methods as per clause 5.10 of DMS 1: Part 2	One test yearly

A.4.1.4 Concrete Polystyrene Sandwich Blocks

1	Visual checking	Shall conform to Clause 6.1& 6.3 of DMS 1:Part 5	Visual	Daily
2	Size (Work size and dimensions)	Shall conform to Clause 6.2 of DMS 1:Part 5	BS EN 772: Part 16	One test per machine per production day
4	Chloride and sulphate	Shall conform to Clause 6.4 of DMS 1:Part 5	BS 1881:Part 124	One test quarterly and for every change of materials source
5	Compressive strength	Shall conform to Clause 6.5 of DMS 1:Part 5	BS EN 772: Part 1 or Annex A of DMS 1: Part 5	One test per machine per production day
7	Thermal conductivity of the blocks	Shall conform to Clause 6.6 of DMS 1:Part 5	Test methods as per clause 6.6 of DMS 1: Part 5	One test yearly

A.4.1.5 Autoclaved Aerated Concrete Masonry Blocks

1	Gross Density	Shall conform to Clause 5.1 of DMS 1:Part 3	BS EN 772: Part 13	One test monthly and for every change of materials source
2	Chloride and Sulphate content	Shall conform to Clause 5.2 of DMS 1:Part 3	BS 1881: Part 124	One test monthly and for every change of materials source
3	Drying Shrinkage	Shall conform to Clause 5.3 of	BS EN 680	One test quarterly and for

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		DMS 1:Part 3		every change of materials source
4	Thermal Conductivity	Shall conform to Clause 5.4 of DMS 1:Part 3	Test methods as per ASTM C 518 (Clause 5.4 of DMS 1:Part 3)	One test yearly and for every change of materials source
5	Size (Work size and Dimensions)	Shall conform to Clause 8.1 of DMS 1:Par3	BS EN 772-16	One test per machine per production day
6	Normalized Compressive Strength	Shall conform to Clause 8.2 of DMS 1:Part 3	BS EN 772 Part 1	One test per machine per production day
7	Durability Aspect	Shall conform to Clause 6 of DMS 1:Part 3	Shall continue to provide satisfactory strength confirming to clause 8.2 of DMS 1:Part 3	Visually
8	Visual Aspects	Shall conform to Clause 7 of DMS 1:Part 3	Shall be sound and free of defects as described in Clause 7.1 and 7.2 of DMS 1:Part 3	Visually

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