

 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:	
	Doc Ref. DM-DCLD-RD-DP21-2090 (IC)	رقم الوثيقة :	

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
20/02/2019	3	-Removing the year of issuance of the standard (always refer to latest edition) Adding frequency of SRI independent testing

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

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 ,equipments, 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).

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- 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 equipments		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 equipments	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
A.2 Materials Inspection				
A.2.1 All materials				
All materials		-To ascertain that the consignment is as ordered and from correct source. -Shall conform with clause 4 of DMS1 P1&P2&P4& P5 .	Inspection of delivery ticket and/or label on the package showing conformity with order	Each delivery
1	Cement	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria	- First delivery from new source and yearly thereafter. - Conformity Certificate shall be provided from cement manufacturer for each batch/delivery
2	Aggregates	Conformity with Block manufacturer's requirements.	-Visual inspection and appropriate test method or acceptable criteria	-First delivery from new source. - Grading and material finer than 75 micron and water absorption to be tested at least once per quarter. - Other tests as per Annex B of DMS P1& P2 and Annex C of DMS P4 & P5 to be tested at least once per year.
3	Other cementitious materials (Silica Fume or Ground Granulated	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria	- First delivery from new source and yearly thereafter.

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	Blast Furnace Slag –GGBS or Fly Ash)			
4	Admixture	Conformity with Block manufacturer's requirements.	Appropriate acceptance criteria	- First delivery from new source and yearly thereafter.
5	Pigments (whenever applicable)	Conformity with Block manufacturer's requirements.	Appropriate acceptance criteria	- First delivery from new source and yearly thereafter.
6	Water	Conformity with Block manufacturer's requirements.	Appropriate test method or acceptable criteria	-First use of new source -If supplied by DEWA, no need for test.
7	Polystyrene insert- for sandwich blocks	Conformity with Block manufacturer's requirements.	Visual inspection to verify that the insert is certified by DCL and bears the DCL Mark	- Each delivery

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

A.4 Finished Product Inspection

Subject	Aim	Method	Frequency	
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	ASTM C 140	-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	ASTM C 140 or 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	ASTM C 140	-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)

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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 of DMS 1:Part 1	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 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
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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

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