



Specific Rules for FA Certification of Low Emitting Materials (Paints, Coatings, Adhesives, Sealants) as per the 2010 Dubai Green Building Regulations and Specifications
Dubai Central Laboratory- Products Conformity Assessment Section

Doc. Ref :RD-DP21-2180 (IC)
Issue Date 16/05/2017

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Issue Date	Rev. No.	Summary Of Amendments
06/11/2012	0	First draft for comments
19/11/2012	0	Final draft
04/12/2012	1	Issue for use
18/06/2014	2	Amended for typographical error clause [2.2.2]
08/09/2015	3	Updated the reference to DMS 020: 2015 and incorporating the pass-fail criteria as Annex A. Use of the term "license" and "licensee" is avoided.
29/03/2016	4	Scope is changed to Low Emitting Materials (paints, coatings, adhesives, sealants). Added Table 1 for Required Tests; Added formaldehyde [2.4.1.2] as a required test for paints and coatings;
17/07/2016	5	Provision for the selecting samples and sample size [2.4]
21/08/2016	6	Table 1 is revised to differentiate external & internal coatings and to add test requirements for external coating. Some Test Methods were updated in [2.4.1].
16/05/2017	7	Updated Table 1; Annex B added; removed Table A.2 from Annex A

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1. GENERAL

1.1 INTRODUCTION

- 1.1.1 This document prescribes the Specific Rules for the implementation of the DM Third Party Product Certification System through factory assessment as applied to the specific product(s) identified herein, taking into consideration the applicable normative references and standard specifications.
- 1.1.2 The applicant shall comply with these specific rules, and with those already mentioned in the "General Rules for DM Third Party Product Certification Through Factory Assessment", RD-DP21-2001 (IC).

1.2 SCOPE

This specific rule applies to Low Emitting Materials (paints, coatings, adhesives, sealants) in accordance with the related requirements and specifications in the 2010 Dubai Green Building Regulations and Specifications.

1.3 PRODUCT IDENTIFICATION AND APPLICABLE STANDARD/NORMATIVE REFERENCE

- 1.3.1 Product name: Low Emitting Materials (any or all of the following: (a) Paints, (b) Coatings, (c) Adhesives, (d) Sealants)
- 1.3.2 Applicable Standard/Normative Reference: 2010 Dubai Green Building Regulations and Specifications clauses [404.01] and/or [404.02], [304.01], [304.03] and [701.04]
- 1.3.3 Additional References:
- 1.3.3.1 ISO 9001:2008, Quality Management System – Requirements
- 1.3.3.2 ISO 19011:2002, Guidelines for Quality and Environmental Management System Auditing
- 1.3.3.3 DMS 20: 2015 Specifications for paints and varnishes

1.4 DEFINITION OF TERMS

In addition to the definitions given in 2010 Dubai Green Building Regulations and Specifications, RD-DP21-2001 (IC) the following shall also apply:

- 1.4.1 DM Certification Body : Products Conformity Assessment Section – DCL
- 1.4.2 Independent Testing Laboratory - Dubai Central Laboratory (DCL) or any testing laboratory recognized by the DM Certification Body.
- 1.4.3 Independent Test – test performed or conducted by an Independent Testing Laboratory
- 1.4.4 Standard Specification (SS) – 2010 Dubai Green Building Regulations and Specifications
- 1.4.5 Factory Production Control Plan – a document being agreed upon both by the Certification Client and the certification body being used to ensure continuous compliance of the certified product.
- 1.4.6 QMS - Quality Management System aligned with the requirements of ISO 9001 Standard

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1.4.7 Coating - Liquid, liquefiable, or mastic composition that is converted to a solid adherent film after application to a substrate as a thin layer and is used for decorating, protecting, identifying or to serve some functional purpose such as the filling or concealing of surface irregularities or the modification of light and heat radiation characteristics and is intended for on-site application to interior or exterior surfaces of residential, commercial, institutional or industrial buildings. For the purposes of this standard, the definition of paint or coating does not include stains, clear finishes, recycled latex paint, specialty (industrial, marine or automotive) coatings or paint sold in aerosol cans.

1.4.8 Paint: A pigmented coating. See definition for Coating.

2. REQUIREMENTS FOR CERTIFICATION

2.1 APPLICATION

2.1.1 Manufacturer of Low Emitting Materials (Paints, Coatings, Adhesives, Sealants) shall apply to Dubai Central Laboratory Department through Products Conformity Assessment Section for the Certification and authorization to use The DCL Conformity Mark.

2.1.2 Application Form F-IC-2001 shall be filled-up by the applicant-company and submitted to DCLD together with the required supporting documents as mentioned in the Application Form.

2.2 FACTORY OPERATION

2.2.1 Quality Management System

Manufacturer of Low Emitting Materials (Paints, Coatings, Adhesives, Sealants) shall have a Quality Management System that is aligned to the requirements of ISO 9001 standard.

NOTE: Certification to ISO 9001 is not a mandatory requirement.

2.2.2 Laboratory

Manufacturer of Low Emitting Materials (Paints, Coatings, Adhesives, Sealants) shall have a quality assurance laboratory to carry out factory production control testing to ensure that the product comply with the requirements of the standard specification.

The laboratory can be part of the factory facilities, or, can be through a documented agreement with an external laboratory.

2.3 INITIAL FACTORY AUDIT

2.3.1 DM Certification Body duly authorized representative shall conduct an audit of the factory quality management system to verify its compliance with the requirements of ISO 9001.

NOTE: An independent certification to ISO 9001 issued by a QMS certification body recognized by DM may be considered as having satisfied this requirement; however, the DM Certification Body reserves the right to carry out verification audit to confirm that the factory is in compliance with the QMS requirements.

2.3.2 Factory audit shall be conducted by designated audit team in accordance with ISO 19011 – Guidelines for Quality and Environment Management System Auditing.

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2.4 PRODUCT EVALUATION

2.4.1 The products conformity evaluation will be based on the satisfactory compliance of the tests results of the required tests to be carried out on each sample (The test shall be carried out at an independent approved laboratory. Please refer to Table 1 for the required tests to different types of low-emitting materials:

2.4.1.1 Volatile Organic Compounds (VOC) as per Clause 404.01 (*the acceptance limit shall be in accordance with Dubai Municipality Standard (DMS) 20: 2015 as given in Annex A*), tested as follows

- DMS 0033:2016 for VOC content adhesive/sealant/Various Materials (water and solvent based)
- BS EN ISO 11890-1:2007 for VOC of Water and Solvent Based paints and coating by DIFF. Method (content more than 150 g/L)
- BS EN ISO 11890 P2:2006 for VOC of Water and Solvent Based paints and coating by DIFF. Method (content less than 150 g/L)

Note: When exempt compounds (as per US EPA definition) are present in the product being tested, the quantity may be deducted from the reported VOC content subject to the following conditions:

- The reported value (in the test report) did not take into consideration the presence of exempt compounds;*
- The client submits a declaration of the amount of exempt compounds, supported by documented evidences (formulations, test reports, etc) that have been reviewed and verified by DCL auditors;*

2.4.1.2 Formaldehyde as per ASTM D 6191-97 (2008) or ASTM D5910-12 for Formaldehyde content of water reducible coatings and emulsion paints.

2.4.1.3 Light Reflectance Value as per clause 304.03; and tested as per BS 8493_2008 Cl.A1 2010 or any equivalent test method. Acceptance limit shall be as per Annex A.

2.4.1.4 Solar Reflective Index as per Clause 304.01; and tested as per ASTM E1980-01 or any equivalent test method. Acceptance limit shall be as per Annex B.

2.4.1.5 Heavy Metals (Lead, Cadmium, Arsenic, Mercury) as per Clause 701.04; and tested as per ASTM E 1613-12 addendum 14:2016. Acceptance limit shall be as per Annex A.

2.4.1.6 Heavy Metal Chromium (VI) as per Clause 701.04; and tested as per BS 3900-B10:1986 / ISO 3856-5:1984. Acceptance limit shall be as per Annex A.

Table 1 Required Tests to be carried out on different types of low emitting materials

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S/N	Low Emitting Material	Required Tests
1	Roof Paint /Roof Coating	Solar Reflective Index* (SRI) as per [2.4.1.4] Volatile Organic compound (VOC) as per [2.4.1.1]
2	Paint (Wall Exterior)	Volatile Organic compound (VOC) as per [2.4.1.1] Formaldehyde as per [2.4.1.2] Light Reflectance Value* (LRV) as per [2.4.1.3] Heavy Metals as per [2.4.1.5] and [2.4.1.6]
3	Paint (Interior)	Volatile Organic Content (VOC) as per [2.4.1.1] Formaldehyde as per [2.4.1.2] Heavy Metals as per [2.4.1.5] and [2.4.1.6]
4	Coatings (other than paint) for exterior wall application	Light Reflectance Value* (LRV) as per [2.4.1.3] Volatile Organic Content (VOC) as per [2.4.1.1]
5	Coatings (other types not covered by above)	Volatile Organic Content (VOC) as per [2.4.1.1]
6	Adhesives	Volatile Organic Content (VOC) as per [2.4.1.1]
7	Sealants	Volatile Organic Content (VOC) as per [2.4.1.1]

* SRI and LRV Testing, please refer to Annex B

2.4.2 Sampling and Testing

2.4.2.1 Sampling size of the product (paint, coating, adhesive and sealant) for independent tests shall be based on the following;

- Paints & Coatings– as per Table A.1 of Annex A, at least one sample per product subcategory per type (VOC limits)
- Adhesive and Sealant – as per Table 404.02 (1) of Section 5 Annex A, at least one sample per specific type of application

Note: For multi-colored paints and coatings, the paint and coating with the darkest shades of color shall be sampled per product subcategory per type (VOC limits).

2.4.2.2 Three sets of sample per product per type shall be selected from the production line or from the warehouse and shall be subjected to testing; the first set, if applicable, will be tested in the plant witnessed by a duly authorized DM Certification Body representative, the second set will be sent to independent testing laboratory. The third set will be kept by the manufacturer as reference.

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2.4.2.3 Test sample(s) for independent test shall be identified and signed in the presence of DM Certification Body's representative and shall be submitted to an independent testing laboratory by the DM Certification Body representative.

2.4.2.4 If the result of the test conducted by the independent testing laboratory shows non-conformance to the specified requirements, retest shall be carried out on the reference sample kept by the manufacturer or on new samples collected by DM Certification Body, on which full testing shall be carried out, if necessary.

2.4.2.5 If the retest passed, the initial product assessment is considered conforming to product specification. If not, the manufacturer will be advised to take corrective action.

2.4.2.6 Independent test shall only be conducted if the result of the in-plant test shows satisfactory result.

3. GRANTING OF THE DCL CERTIFICATE OF CONFORMITY

3.1 CONDITIONS FOR GRANTING THE DCL CERTIFICATE OF CONFORMITY

3.1.1 When the results of the factory audit (clause 2.3) and product evaluation (clause 2.4) show conformity to the requirements specified in the General Rule and Specific Rule, the Certificate of Conformity and authorization to use the DCL Conformity Mark shall be issued to the manufacturer for the type(s) and size of the product tested.

3.1.2 The factory shall agree with the DM Certification Body for the preparation and implementation of a product quality assurance plan to ensure continuing compliance with the Standard Specifications and the requirements of this certification scheme. It shall consist of (1) an internal product quality assurance plan, and (2) an independent testing plan.

3.1.3 Factory Production Control System (Internal Product Quality Assurance Plan)

The factory shall prepare and submit to DM Certification Body for approval of an internal product quality assurance plan. This will include as a minimum, the following details: (1) location of sampling; (2) frequency of sampling; (3) quantities of samples; (4) tests to be carried out; (5) results acceptance criteria; and (6) responsible person to carry out the activity. The plan shall cover all inspections carried out thru out the whole manufacturing process; i.e. (raw materials – production lines- finished product testing and evaluation as per standard specifications – final packing).

The plan shall take into consideration the production process, the volume of production, the criticality of the test to be specified, and other relevant factors.

3.1.4 Independent Testing Plan

The factory shall agree to an independent testing plan to be carried out on samples which are collected in accordance with RD-DP21-2096 (IC) – Surveillance of Certified Establishments under the Factory Assessment Scheme, and implemented by the DM Certification Body. The cost of testing under the independent testing plan shall be borne by the factory.

3.2 ISSUANCE OF DCL CERTIFICATE OF CONFORMITY

If the conditions mentioned in clause 3.1 above have been complied, the manufacturer of Paints and

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Coatings shall be granted a DCL Certificate of Conformity and a Scope of Certification that covers the type(s) and size of the products that are certified.

3.3 RESPONSIBILITIES OF THE CERTIFIED CLIENT

- 3.3.1 Every client shall ensure that his product, for which a Certificate of Conformity has been issued, conforms at all times to the requirements of the General Rule and Specific Rules, and regulations and legislation, whenever applicable, and shall maintain to the satisfaction of DM Certification Body, a system of quality control including inspection and testing.
- 3.3.2 The client shall give the duly authorized representative(s) of DM Certification Body, access during working hours, without prior notification, to the premises of the factory where certified product is manufactured, for the purpose of evaluating the materials, production processes, finished products, quality assurance facilities, records and others in accordance with the requirements of the scheme.
- 3.3.3 The client shall inform the DM Certification Body in writing of any change of management, transfer of plant site, modification in the product, manufacturing process or factory quality management system.
- 3.3.4 Upon transfer of plant site, the Certificate of Conformity shall be deemed valid only after factory and product audit at the new site has been satisfactorily completed.
- 3.3.5 Any infraction stated in the Terms and Conditions for the use of DCL Conformity Mark shall constitute sufficient grounds for suspension, termination and withdrawal of the Certificate of Conformity against a client.
- 3.3.6 Any dispute that may arise in connection with the Terms and Conditions of the DCL Mark shall be settled in accordance with IMS-RD-08 Appeals, Disputes, and Complaints Procedure.

3.3.7 The client shall pay all applicable fees related to the certification process.

3.4 USE OF THE DCL CONFORMITY MARK

- 3.4.1 The design and use of the DCL Conformity Mark shall be in accordance with the Terms and Conditions for the Use of the DCL Conformity Mark, RD-DP21-2098 (IC)
- 3.4.2 The client shall submit samples of label/tag showing the DCL Conformity Mark, for approval by the DM Certification Body.
- 3.4.3 The authorization to use the DCL Conformity Mark is non-transferable.

4. SURVEILLANCE

- 4.1 DM Certification Body shall carry out periodic surveillance to ensure consistent compliance with the requirements of this certification scheme as per RD-DP21-2096 (IC) – Surveillance of Certified Establishments under the Factory Assessment Scheme.
- 4.2 The surveillance shall include testing of certified products in accordance with the Independent Testing Plan (clause 3.1.4) that has been agreed between the DCLD and the factory.

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5. FEE SCHEDULE

- 5.1 The client shall pay the applicable fees and charges related to the granting of the authorization to use the DCL Conformity Mark based on the DCL Official Fee Structure, RD-DP21-2097 (IC).
- 5.2 The fees for this certification scheme shall include but not limited to the following;
- 5.2.1 Application Fee
- 5.2.2 Initial Assessment Fee
- 5.2.3 Certification Fee
- 5.2.4 Marking Fee
- 5.2.5 Surveillance Fee
- 5.2.6 Annual Renewal Fee
- 5.2.7 Testing Fee

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Annex A

Requirements for Testing and PASS/FAIL criteria:

1. Clause 404.01 Low Emitting Materials: Paints and Coatings

According to **Green Building Regulations and Specifications Practice Guide** for Clause 404.01 sub-clause 6.2:

6.2 Technical Data and Specifications

All paints and coatings used in the interior of the building must comply with the maximum Volatile Organic Compound (VOC) limits indicated in Dubai Municipality Standard DMS 20-Specification for Paints and Varnishes.

VOC content shall be as per DMS 020: 2015 (See Table A.1)

Formaldehyde content as per DMS 020 clause [4.4.5] below:

4.4.5 **Formaldehydes:** The content of free formaldehyde present in the product shall not exceed 10 mg/kg. Formaldehyde donators may only be added in such quantities as will ensure that the resulting total content of free formaldehyde not exceed the stated amount.

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Table A.1: Maximum Volatile Organic Compounds (VOC's) Content Limit Values for Paints and Coatings (from DMS 020)

#	Product subcategory	Type	VOC g/l (*)
1	Interior matt walls and ceilings paint (Gloss < 25@60°C)	WB	30
		SB	30
2	Interior glossy walls and ceilings paint (Gloss > 25@60°C)	WB	100
		SB	100
3	Exterior walls of mineral substrate	WB	40
		SB	430
4	Interior /exterior trim and cladding paints for wood and metal	WB	130
		SB	300
5	Interior /exterior trim varnishes and woodstains, including opaque woodstain	WB	130
		SB	400
6	Interior /exterior minimal build woodstains	WB	130
		SB	700
7	Primers	WB	30
		SB	350
8	Binding Primers	WB	30
		SB	750
9	One-pack performance coatings	WB	140
		SB	500
10	Two pack reactive performance coatings for specific end use such as floors	WB	140
		SB	500
11	Multi colored coatings	WB	100
		SB	100
12	Decorative effect coatings	WB	200
		SB	200
Notes:			
1. WB: water-based; SB: solvent-based			
2. The limit values are as per the EC Directive 2004/42/EC concerning VOC reduction for decorative paints and varnishes			
3. * ready to use			

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2. Clause 304.03 Light Reflective Value (Exterior Paint)

This requirement is applicable only to exterior paints. The paint shall be applied on a flat substrate such as wood, metal or plastic sheet or concrete surface with a minimum size of 150 x 150 mm. The thickness of applied paint shall be such that there is no transparency.

304.03 Light Colours on the Outside of Buildings

For all new buildings, at least seventy five percent (75%) of the area of externally painted walls must have a minimum Light Reflective Value of forty-five percent (45%).

**3. Clause 304.01 Solar Reflective Index (Exterior Paint of Roofing Surface)
(Please see Annex B)**

This requirement is applicable to paints used in roofing surfaces. The paint shall be applied on a flat substrate such as wood, metal or plastic sheet or concrete surface with a minimum size of 150 x 150 mm. The thickness of applied paint shall be such that there is no transparency (same specimen can be used for Light Reflective Value).

304.01 Urban Heat Island Effect

For all new buildings:

1. All opaque external roofing surfaces must comply with a minimum Roof Solar Reflective Index (SRI) value according to Table 304.01(1) for a minimum of seventy five percent (75%) of the roof area:

Table 304.01 (1) – Roof SRI Requirements

Type of Roof	Minimum Roof SRI
Steep Sloped Roofs (slopes steeper than 1:6)	≥ 29
Flat and Low Sloped Roofs	≥ 78

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4. Clause 701.04 Lead, Heavy Metals

701.04 Lead or Heavy Metals Containing Materials

For all new buildings and for the maintenance, addition or alteration of existing buildings, paints, or other materials, containing lead or other heavy metals with percentage more than the approved specifications by Dubai Municipality must not be used unless the metal is encapsulated in a system such as a photovoltaic cell.

All paints and materials containing lead or other heavy metals must be accredited / certified from Dubai Central Lab or any source approved by Dubai Municipality.

Heavy Metal	Maximum Level Allowed
Lead	100mg/kg
Cadmium	500 mg/kg
Chromium VI	500 mg/kg
Mercury	100 mg/kg
Arsenic	100 mg/kg

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5. Clause 404.02 Adhesives and Sealants

6.2 Technical Data and Specifications

All adhesives, adhesive bonding primers, adhesive primers, sealants and sealant primers used in the interior of a building must comply with the maximum Volatile Organic Compound (VOC) limits listed in Table 404.02(1).

Table: 404.02 (1) - Maximum VOC Limits of Adhesives and Sealants

Maximum VOC Limits - Grams per litre (g/l) less water			
Architectural Applications		Specialty Applications	
Indoor Carpet Adhesives	50	PVC Welding	510
Carpet Pad Adhesives	50	CPVC Welding	490
Wood Flooring Adhesives	100	ABS Welding	325
Rubber Floor Adhesives	60	Plastic Cement Welding	250
Subfloor Adhesives	50	Adhesive Primer for Plastic	550
Ceramic Tile Adhesives	65	Contact Adhesive	80
VCR & Asphalt Adhesives	50	Special Purpose Contact Adhesive	250
Drywall & Panel Adhesives	50	Structural Wood Member Adhesive	140
Cove Base Adhesives	50	Sheet Applied Rubber Lining Operations	850
Multipurpose Construction Adhesives	70	Top & Trim Adhesive	250
Structural Glazing Adhesives	100		
Substrate Specific Applications		Sealants	
Metal to Metal	30	Architectural	250
Plastic Foams	50	Non-Membrane Roof	300
Porous Materials (except wood)	50	Roadway	250
Wood	30	Single-Ply Roof Membrane	450
Fiberglass	80	Other	420
		Sealant Primers	
		Architectural Non-Porous	250
		Architectural Porous	775
		Other	750

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Annex B

TESTING OF SRI AND LRV

Since SRI and LRV tests are for classification only, there is no "Pass" or "Fail" result. Testing will be carried out on the products that the client manufacturer submits to be classified and included in the Scope of Certification.

If the product is not classified as per Scope of Certification, the user (owner, contractor or consultant) shall be responsible for ensuring that the correct SRI Class or LRV Class is used; according to the requirements of the DM-GBRS and as defined below:

1. SRI: Results of SRI Test for Roof Paint/Roof Coating shall be used for classification as:
SRI Class 1 (≥ 78) – "Can be Used in 75 - 100% of surface to be coated – Sloped or Flat Roof"
SRI Class 2 ($29 < 78$) - "Can be Used in 75 - 100% of surface to be coated – Sloped Roof"
SRI Class 3 (< 29) – "Can be Used in 0 – 25% of surface to be coated – Sloped or Flat Roof"
2. LRV: Results of LRV Tests for Exterior Wall Paints/Coatings shall be used for classification as:
LRV Class 1 ($\Rightarrow 45$) – "Can be used in 75-100% of surface to be /painted/coated"
LRV Class 2 (< 45) – "Can be used in 0-25% of surface to be painted/coated".

If manufacturers decides to add SRI Classification in their Scope of Certification, the manufacturer shall classify and declare their product according to the above Classes and DCL will select representative sample at random and carry out testing to confirm the declaration.

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