iLF Forschungs- und Entwicklungsgesellschaft Lacke und Farben mbH

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T E S T R E P O R T

Test Report No:	130608
Client:	MIG Material Innovative Gesellschaft mbH Mr Burkhard Brandt Am Grarock 3 33154 Salzkotten GERMANY
Contract No/Date:	-/22.08.2013
Offer No:	130648
Subcontractors:	none
Archiving of Samples:	3 months for stable retaining samples
Subject of Testing:	energy saving paint for exterior use
Aim of Testing:	application-related testing
Origin of Samples:	provided by client
Entry Date of Samples:	20.08.2013
Start of Testing:	27.08.2013
End of Testing:	17.10.2013
Laboratory:	Application Technology
Test Methods:	see paragraph 2 „Test methods and evaluation“
Number of Pages:	6

The test methods marked *) are non-accredited test methods.

1 Subject of testing

For the tests a white *Energy Saving Paint for Exterior Use* (5-L-container) was provided by the client.

2 Test methods and evaluation

2.1 Determination of density

Test method:	pyknometer method according to DIN EN ISO 2811-1
Pyknometer:	metal pyknometer with a volumetric capacity of 100 cm^3 (manufacturer: BYK-Gardner, Geretsried)
Testing temperature:	(23 ± 0,5) °C

2.2 Exposure to artificial weathering

Test method:	exposure to fluorescent UV lamps and water according to DIN EN ISO 11507
Application:	by brushing in two layers, load: each with 200-300 mL/m^2 (priming coat diluted with 5 % water, top coat undiluted), intermediate drying time: at least 24 h
Substrate:	fibre-reinforced cement panels (150 mm x 70 mm)
Drying:	7 days at (23 ± 2) °C and (50 ± 5) % relative humidity
Lamps:	type II, UV-A (340)
Cycle:	method A – exposure with condensation of water • four hours irradiation at (60 ± 3) °C, • for hours condensation at (50 ± 3) °C
Duration:	1000 h
Evaluation:	evaluation of degradation of coatings (criteria according to DIN EN 1062-11): • designation of intensity of uniform changes in appearance (for example changes in colour and gloss) according to DIN EN ISO 4628-1, Table 3 • blistering according to DIN EN ISO 4628-2 • cracking according to DIN EN ISO 4628-4 • flaking according to DIN EN ISO 4628-5 • chalking according to DIN EN ISO 4628-7

2.3 Mud cracking*)

Application:	with a doctor blade, which incorporates a wedge-shaped groove (50…2000 µm)
Substrate:	glass panels
Drying:	48 h at (23 ± 2) °C and (50 ± 5) % relative humidity
Evaluation:	determination of the dry-film thickness, at which the coating film cracks

2.4 Workability check *)

The paint was applied by rolling onto a textured wall-covering of 1 m x 2 m in area, which was held in a vertical position.
A roller was used to decorate the substrate according to the recommendations of the supplier. A visual assessment was made of the product in original state (in the pot) and when applied onto the substrate. The following parameters were evaluated:

- Applicability
  scale from 1 (very good) to 5 (very poor)
- Splashing
  scale from 1 (none) to 5 (very strong)
- Sagging
  scale from 1 (none) to 5 (very strong)
- Application rate
  Application rates are given in g/m^2 for one and two paint layers to achieve a wet-covering of a grey and a black contrast stripe on the wall.
- visual assessment of the (dried) coating
  - *hiding power*
  - *touch-drying*
  - *homogenity of surface*
- Cleaning of application items
  Are there any problems when cleaning the roller with water?
- Smell nuisance
  scale from 1 (very low) to 5 (very strong)

3 Test results

Table 1 *Density*

Sample designation	*ρ [g/cm³]*
Energie Saving Paint for Exterior Use	1,1

Table 2 *Degradation of coatings after 1000 h artificial weathering*

Sample designation	*Intensity of changes in appearance*	*Degree of blistering*	*Degree of cracking*	*Degree of flaking*	*Degree of chalking*
Energie Saving Paint for Exterior Use	Rating 0	0(S0)	0(S0)	0(S0)	2

Table 3 *Mud cracking*

Sample designation	*Dry-film thickness, at which the coating film cracks [µm]*
Energie Saving Paint for Exterior Use	550…630

Table 4 *Results of workability check*

1. Applicability Assessment:	very good X	good ← X	satisfactoy	poor	very poor
2. Splashing Assessment :	none	little	medium X	strong	very strong
3. Sagging Assessment :	none X	little	medium	strong	very strong
4. Application rate [g/m²]	1. layer 293		2. layer 240		
5. Visual assessment of the (dried) coating					
hiding power	4		2		
touch-dry	approx. 1,5 h		approx. 1,5 h		
homogenity of surface	homogeneously mat coating surface, strong body, structured by rolling				
6. Cleaning of application items Assessment :	no problems when using water				
7. Smell nuisance Assessment :	very low	low X	moderate	strong	very strong

4 Summary

After 1000 hours artificial weathering (exposure to UV-A lamps and water) the tested coating shows a good resistance (no yellowing, no delamination, no blistering, no cracking, no flaking, slight chalking).
Mud cracking (i.e. the occurrence of cracks during the drying phase) already starts at a dry-film thickness in the range of 550 to 630 µm. For exterior emulsion paints this value should be at least 900 µm (tolerance level).
From a practical point of view the tested energy saving paint is easy to apply and therefore ranked as good to very good; but there is a medium splashing. After application of two coats the visual appearance of the coating surface is homogeneously covering and mat. The surface is slightly structured by rolling. The smell nuisance during the application is low.

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