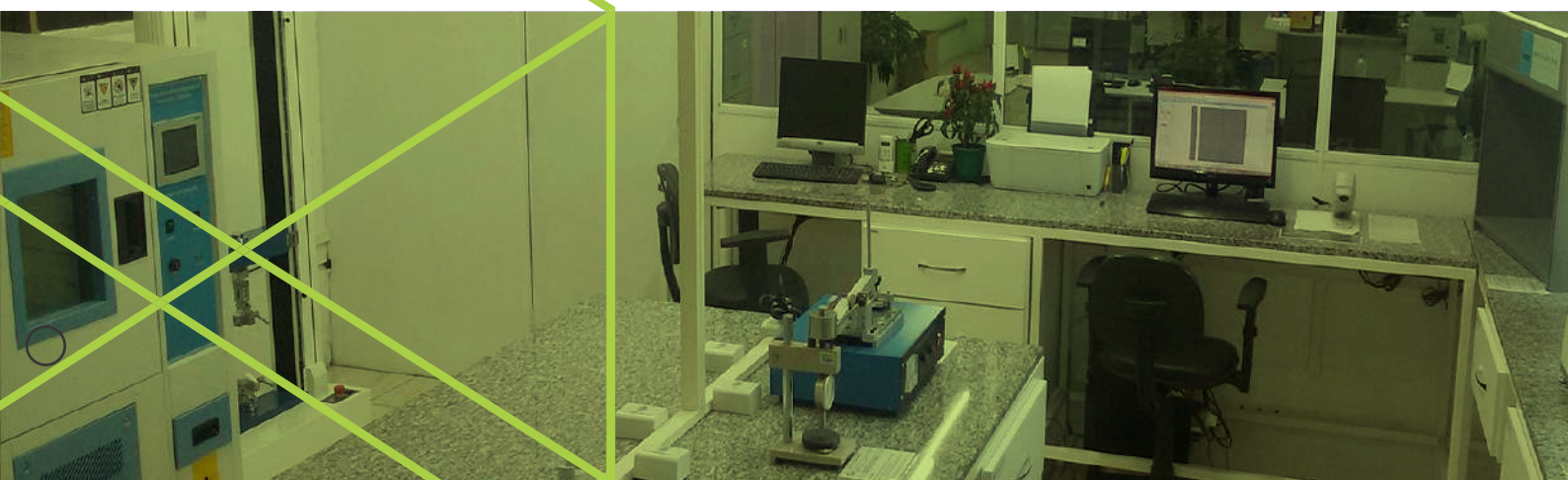


UV LIGHT TEST 930-14



Lamiecco
ecological coverings



FIERGS SENAI

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LABORATÓRIO DE CONTROLE DE QUALIDADE

Request Nº: 930/14 of 08/08/2014

Proposal Nº: 307/14

Company: Lamiocco Plásticos Ltda.
CNPJ: 08.889.084/0001-78 IE: 290/0003487
Rua Souza Lobo, 625
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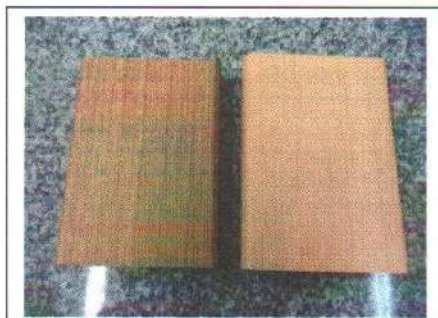


UV LIGHT TEST

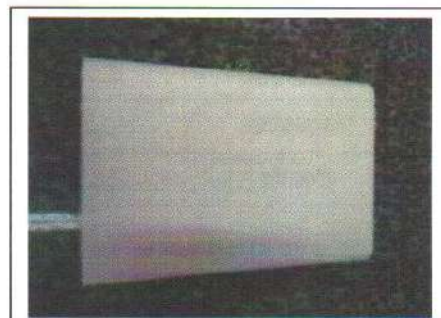
1 - DESCRIPTION AND IDENTIFICATION OF THE SAMPLE:

SAMPLE 01: Lamiocco Branco TX.

SAMPLE 02: Lamiocco Madeirado.



SAMPLE 01



SAMPLE 02

2 - SAMPLING:

The collecting, sampling and identification were carried out by the client.

3 - PURPOSE OF THE TEST:

Through these tests we intend to evaluate the performance of the sample, when undergoing the tests according to the standards described in item 4.3.

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4 - PROCEDURE:

4.1 – SAMPLE PREPARATION:

The sample was prepared by the client.

4.2 – CONDITIONING OF THE SAMPLE:

Before conducting the tests, the samples are conditioned for a period of 24 hours under the conditions of $(23 \pm 2) ^\circ \text{C}$ and temperature $(50 \pm 5)\%$ relative humidity.

4.3 - TEST METHOD:

The tests were developed complying with the following standard:

- **ABNT NBR 14535/08** - Móveis de madeira – Requisitos e ensaios para superfícies pintadas.

4.3.1 – RESISTANCE REQUIREMENTS OF FILM:

The minimum requirements for protection are presented by category of mobile in Table 1, attached to this report.

4.3.2 – FILM RESISTANCE OF UV LIGHT (item 6.4 of the standard) - (PRI 632/514 – 1ªEd. Rev. 00):

This test evaluates the resistance of the finish compared to the change in tone, simulating the effect of sunlight through the glass window. The sample is exposed in equipment which produces UV radiation for 24 hours at a temperature of $(50 \pm 3) ^\circ \text{C}$.

Type of lamp	Irradiation lamp	Wavelength	Emission peak
ATLAS UVA 351	0,76 W/m ² nm	250 a 400 nm	353nm

After exposure, the samples are evaluated for color variation between the exposed and unexposed part and classified conforms table below:

Finishing	Estable	Semi estable	Unstable
Varnishes	No change	-	Color change
Paints	$(\Delta E < 1)$	$(1 > \Delta E < 2)$	$(\Delta E > 2)$

4.3.3.1 – TEST EQUIPMENTS:

- UV Chamber: ATLAS UV TEST;
- MINOLTA spectrophotometer with measurement of d / 8in geometry, color parameters CIE-1976 (L * a * b *) for light D65 and 10 ° observer.



Categories of mobile	Table 1 – Minimum requirements of protection category of mobile										
	Tests and requirements										
	Scratch	Impact	Abrasion	Thickness	Adherence	Scraping	Chemical resistance	Migration of certain elements in according ABNT NBR NM 300-3	Flame spread in according ABNT NBR 9942		
	6.8	6.9	6.10	6.11	6.12	6.13	6.14				
RESIDENTIAL USE											
Chair and seat	ND	≥ Grade 4	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Wardrobe	ND	Grade 5	ND	ND	≤Gr1	≥1000g	ND	CN	ND		
Rack e home office	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Dinning table and sideboard	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Center table, Corner table	ND	≥ Grade 4	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Bed	ND	≥ Grade 3	ND	ND	≤Gr1	≥1000g	ND	CN	ND		
Dresser	ND	≥ Grade 4	ND	ND	≤Gr1	≥1000g	ND	CN	ND		
Worktop and Top support	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Children's furniture	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Kitchen cabinet and closet for laundry	ND	≥ Grade 4	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Kitchen counter and Laundry counter	ND	≥ Grade 4	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Bathroom cabinet	ND	≥ Grade 4	ND	ND	≤Gr1	≥1000g	ND	CN	ND		
Garden furniture	ND	ND	ND	ND	≤Gr1	ND	ND	CN	ND		
OFFICE											
Desk	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Side table	ND	≥ Grade 4	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Meeting table	ND	≥ Grade 4	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Partition	ND	≥ Grade 4	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Cabinets	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
PUBLIC USE											
School furniture	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Hospital, Doctor's office and Dental office	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Bar, Cafe and Restaurant	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Dinning hall	ND	Grade 5	ND	ND	≤Gr1	≥3000g	ND	CN	ND		
Audience furniture, Church furniture	ND	Grade 4	ND	ND	≤Gr1	≥1000g	ND	CN	ND		

NOTE: NA – Not applicable, ND – Not defined, Characteristic to be determined in accordance with the understanding between supplier and customer, CN - Must meet the specifications of Section 4.1 - Specific requirements - Table 1 of ABNT NBR NM 300-3.

Categories of mobile		Tests and requirements						
		Moist heat 6.1	Dry heat 6.2	Weathering 6.3	UV light 6.4	Thermal shock 6.5	Brightness 6.6	Pencil Hardness 6.7
RESIDENTIAL USE								
Chair and seat	≥Grade 4 in 55°C	≥ Grade 4 in 55°C	NA	ND	≥30 cycles	ND	≥F	
Wardrobe	NA	NA	NA	ND	≥30 cycles	ND	≥2H	
Rack e home office	≥ Grade 4 in 55°C	≥ Grade 4 in 70°C	NA	ND	≥30 cycles	ND	≥2H	
Dining table and sideboard	≥ Grade 4 in 70°C	≥ Grade 4 in 85°C	NA	ND	≥30 cycles	ND	≥2H	
Center table, Corner table	≥ Grade 4 in 55°C	≥ Grade 4 in 70°C	NA	ND	≥30 cycles	ND	≥F	
Bed	NA	NA	NA	ND	≥30 cycles	ND	≥B	
Dresser	≥ Grade 4 in 55°C	≥ Grade 4 in 70°C	NA	ND	≥30 cycles	ND	≥F	
Worktop and Top support	> Grade 4 in 70°C	> Grade 4 in 85 °C	NA	ND	≥30 cycles	ND	≥2H	
Children's furniture	ND	ND	NA	ND	≥30 cycles	ND	≥2H	
Kitchen cabinet and closet for laundry	NA	NA	NA	ND	≥30 cycles	ND	≥F	
Kitchen counter and Laundry counter	> Grade 4 in 70°C	> Grade 4 in 85°C	NA	ND	≥30 cycles	ND	≥2H	
Bathroom cabinet	> Grade 4 in 55°C	> Grade 4 in 70° C	NA	ND	≥30 cycles	ND	≥F	
Garden furniture	ND	ND	ND	NA	≥30 cycles	ND	ND	
OFFICE								
Desk	ND	ND	NA	ND	≥30 cycles	ND	≥2H	
Side table	ND	ND	NA	ND	≥30 cycles	ND	≥2H	
Meeting table	ND	ND	NA	ND	≥30 cycles	ND	≥2H	
Partition	NA	NA	NA	ND	≥30 cycles	ND	≥2H	
Cabinets	ND	ND	NA	ND	≥30 cycles	ND	≥2H	
PUBLIC USE								
School furniture	NA	NA	NA	ND	≥30 cycles	ND	≥2H	
Hospital, Doctor's office and Dental office	ND	ND	NA	ND	≥30 cycles	ND	≥2H	
Bar, Cafe and Restaurant	ND	ND	NA	ND	≥30 cycles	ND	≥2H	
Dining hall	ND	ND	NA	ND	≥30 cycles	ND	≥2H	
Audience furniture, Church furniture	NA	NA	NA	ND	≥30 cycles	ND	≥F	

NOTE: NA – Not applicable. ND – Not defined. Characteristic to be determined in accordance with the understanding between supplier and customer.

5 - RESULTS:

The tests were carried from August 14th to 15th, 2014

5.1 - FILM RESISTANCE OF UV LIGHT:

SAMPLE		RESULTS	
		ΔE	Evaluation according to ABNT NBR 14535
01	Madeirado claro	0,54	Estable
	Madeirado escuro	0,53	Estable
02	Branco	0,75	Estable

NOTE: The test results are only valid for the sample conditions at the moment of the test.

Bento Gonçalves, August 25th, 2014.


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