



AIDIMA

Reference: 1105020-01i
Order sheet: 21100907

REPORT MADE BY AIDIMA's LABORATORIES

ON THE REQUEST OF:

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CONCERNING:

PRODUCT: LUXE DOOR

TESTING: SEVERAL

DATE OF THE RECEPTION OF SAMPLES: 5/05/2011
STARTING DATE: 9/05/2011
FINISHING DATE: 13/05/2011

THIS REPORT CONSISTS OF 9 PAGES NUMBERED ACCORDINGLY.

The test samples will remain at AIDIMA over a period of three months from the date of issuing this report. That period having expired, it will be destroyed, so any claim on it must be made within these limits.

1. DESCRIPTION AND IDENTIFICATION OF THE TESTED OBJECT. EXAMINATION PRIOR TO TESTING

Same model pieces furniture doors, identified as LUXE DOOR by the client.

The sample is referenced by AIDIMA as: 1105020-01.

2. ORIGIN OF THE SAMPLE

Sample supplied by the customer.

3. ASKED FOR TEST

- Chemical stress
- Resistance to cold liquids
- Crack resistance
- Surface soundness
- Light fastness
- Behaviour against hot poot
- Behaviour of moist heat
- Behaviour against cigarette
- Behaviour against scratching
- Behaviour against water vapor
- Behaviour impact stress (largue diameter steel ball)
- Screw withdrawal resistance

4. ADAPTATION OF THE TEST, METHOD OR PROCEDURE TO STANDARD

The test method is carried out according to standard:

Chemical stress	DIN 68 861-1:81
Resistance to cold liquids	UNE EN 12720:09
Crack resistance	UNE EN 14323:04
Surface soundness	UNE EN 311:02
Light fastness	UNE EN 14323:04
Behaviour against hot poot	UNE EN 12722:09
Behaviour of moist heat	UNE EN 12721:09
Behaviour against cigarette	UNE EN 14323:04
Behaviour against scratching	UNE EN 14323:04
Behaviour against water vapor	UNE EN 14323:04
Behaviour impact stress (largue diameter steel ball)	UNE EN 14323:04
Resistance to axial withdrawal of screws	UNE EN 320:94

5. DESCRIPTION OF THE TEST METHOD

CHEMICAL STRESS

It consists of placing the sample in contact with a number of staining agents, normally used, over a period of time and specific contact conditions for each of these agents.

Some drops of each product were placed on two points of the surface and remain covered with watch glass a period of time specified for each staining agent.

After this period, samples were washed and examined to determine any surface marks according to the following rating scale:

Appearance	Assessment
▪ No visible change	0
▪ Visible variations of brightness, and / or color.	1
▪ Slight change in the brightness and / or color. Test surface is not affected.	2
▪ Strong mark. Test surface without changes.	3
▪ Strong mark and test surface damaged.	4
▪ Strong alteration of test surface and/or removal.	5

Staining agents are the folwing:

- Vinegar (16 h)
- Citric acid 10% solution (16 h)
- Sodium carbonate 10% solution(16 h)
- Ammonia 10% solution(16 h)
- Ethanol 48% solution (16 h)
- Wine (16 h)
- Beer (16 h)
- Coke drink (16 h)
- Coffee (16 h)
- Tea (16 h)
- Redcurrant (16 h)
- Milk (16 h)
- Water (16 h)
- Heptane (16 h)
- Acetone (16h/10 seg.)
- Ethyl butyl acetate (16h/10 sec.)
- Butter (16 h)
- Oil (16 h)
- Mustard (16 h)
- Sodium chloride 5% solution (16h)
- Onion juice (16 h)
- Lipstick (16 h)
- Fenol al 0.5% (16 h)
- Ball point ink (16 h)
- Hair colouring (16 h)
- Detergent (16 h)
- Cleansing agents (16 h)

RESISTANCE TO COLD LIQUIDS

Disc of soft filter paper saturated with the test liquids are placed on the test surface and covered with an inverted glass dish. The test liquids are: acetic acid 10% aqueous solution, acetone, ammonia 10% aqueous solution, citric acid 10% aqueous solution, cleansing agent, coffee, disinfectant (fenol 0,5%), ink, ethanol 48% aqueous solution, condensed milk, etil-butyl acetate 1:1 (V/V), olive oil, paraffin oil, sodium carbonate 10% and sodium chloride 5% aqueous solutions, tea, desioned water and acid and basic perspiration.

After a test period of 16 hours at room temperature, glasses and paper discs are removed and any remaining of test liquid is soaked up with the absorbent paper. For 16h to 24h the test surface is kept in the test atmosphere. After this period the test surface is washed by lightly rubbing with the cleaning cloth soaked first in cleansing solution and then only in water and wiped with an absorbent cloth.

Past 30 minutes the area tested is assessed from various angles. Then, possible discolorations, changes in gloss or colour, structural attack and other possible defects are evaluated according to the rating code in the following table:

Description	Assessment
<ul style="list-style-type: none"> No change. The test area is not unlike the adjacent surrounding area. 	5
<ul style="list-style-type: none"> Change slight. The test area can be distinguished from the surrounding area adjacent only when the light source is reflected in the test area to the observer's eye, for example, discoloration, change brightness and colour. No changes in the structure of the surface, for example, deformation, swelling or bulging of the fiber, cracking, blistering. 	4
<ul style="list-style-type: none"> Moderate change. The test area can be distinguished from adjacent surrounding area, so visible from various viewing angles, for example, discoloration, change brightness and color. No changes in the structure of the surface, for example, deformation, swelling or bulging of the fibre, cracking, blistering. 	3
<ul style="list-style-type: none"> Significant change. The test area can be distinguished from adjacent surrounding area, so visible from any angle of view, for example, discoloration, change brightness and color y/o slight changes in surface structure, for example, deformation, swelling or bulging of fiber, cracking, blistering. 	2
<ul style="list-style-type: none"> Strong change. The surface structure has clearly changed, and / or discoloration, change brightness and color, and / or surface material is removed in whole or in part, and / or polyamide fiber cloth has been attached to the surface. 	1

RESISTANCE TO CRACKING

Square test specimens (250 ± 2) mm, are taken from the test sample and are placed in an oven at a temperature of 70 °C in a period of 24 hours. After this period, and once cooled to room temperature, specimens are examined with the naked eye and under x6 magnification to determine the presence and extent of any cracking. The result is expressed as the following scale:

Damage nature	Rating
• Without fissures	5
• Isolated capillary fissures	4
• Capillary fissures spread randomly over all the surface	3
• In addition to grade 3, one or two little fissures <25mm are visible on the surface at a distance of 400mm	2
• Visible fissures located in the total surface	1

SURFACE SOUNDNESS

Squared pieces are taken from sample. A steel standardized cylinder is glued at one side of each piece doing a circular slot. Load necessary to pull off steel cylinder is measured by a universal test machine.

Strength value to pull off the surface SS in N/mm^2 is calculated using the following formula:

$$SS = \frac{F}{A}$$

where,

F is the maximum load in Newton

A is the cylinder surface in mm^2

This value is calculated to the nearest 0,01 N/mm^2 .

LIGHT FASTNESS

This test determines the resistance to change color of the laminate to be tested under the action of light from a xenon lamp under the following conditions:

- Black panel temperature: $(65 \pm 3)^\circ C$
- Relative humidity of the chamber: $(50 \pm 5)\%$
- Duration of test: when the contrast between the exposed and unexposed portions of the blue wool reference 6 is equal to grade 4 on the grey scale, as defined in EN 20105-A02.

The assessment is given based on the gray scale pattern and is expressed in terms of the contrast being greater than, equal to or less than grade 4 of the grey scale.

RESISTANCE TO DRY HEAT

An aluminium block of dimensions given, is preheated to the specified temperature (100°C), and allowed to cool for 20 minutes on the surface to be tested. After this time, clean surface using a soft tissue and kept at room temperature for at least 16 hours. The test surface is evaluated in observation camera from different angles as the rating scale showed at resistance to cold liquids (page 4).

RESISTANCE TO WEAT HEAT (85°C)

An aluminium block of dimensions given, is preheated to the specified temperature (85°C), and allowed to cool for 20 minutes on the surface to be tested, by interposing a nylon fabric or cloth soaked in distilled water. After this time, clean and dry surface using a soft tissue and kept at room temperature for at least 16 hours. The test surface is evaluated in observation camera from different angles as the rating scale showed at resistance to cold liquids (page 4).

RESISTANCE TO CIGARETTE BURNS

Three burning blond cigarettes of different brands, are placed in full-length contact with the sample horizontal surface, once cigarettes are ignited and let it burn to consume a length of approximately 10mm.

The cigarettes continue burning until an additional 20mm. After this occurs, any superficial combustion residues are removed and the area is cleaned with a soft cloth moistened with ethanol. The surface is examined with the naked eye for any changes according to the following rating scale:

Rating	Appearance
5	<ul style="list-style-type: none"> ▪ No visible change
4	<ul style="list-style-type: none"> ▪ Slight change of gloss only visible at certain viewing angles and/or slight brown stain.
3	<ul style="list-style-type: none"> ▪ Moderate change of gloss and/or moderate brown stain
2	<ul style="list-style-type: none"> ▪ Severe brown mark, but no destruction of the surface.
1	<ul style="list-style-type: none"> ▪ Blistering and/or cracks.

SCRATCH RESISTANCE

The scratch resistance is expressed as the minimum applied load, by a diamond scratching point of defined geometry, wich produces a continuous surface scratch, visible to the naked eye.

The scratch resistance of the laminate under test is expressed in Newtons.

WATER VAPOUR RESISTANCE

A specimen of 100 mm side is taken from the test sample, and is placed over the neck of a flask containing boiling water, so that the decorative surface is exposed to the water vapour. After (60 ± 2) minutes, the specimen is removed and allowed to recover for 24 hours, assessing any change in appearance as the following table:

Damage nature	Rating
• No visible change	5
• Slight change of gloss and/or colour only visible at certain viewing angles	4
• Moderate change of gloss and/or colour	3
• Marked change of gloss and/or colour	2
• Blistering and/or delamination	1

BEHAVIOUR IMPACT STRESS (LARGE DIAMETER STEEL BALL)

The specimen is placed in the clamping frame in a ball free fall test apparatus. The specimen is covered with a sheet of carbon paper with its coated faced in contact with the decorative surface. Drop height of the ball is adjusted at 60cm.

The steel ball of (324.0 ± 5.0) g (42.8 ± 0.2) mm falls on the specimen, catching the ball on the first rebound so that multiple impacts do not occur.

If cracking is evident, or the carbon imprint is greater than 10mm diameter the electromagnet of the ball is lowered and the ball is dropped again. If not, the ball is dropped from a height higher than 10cm, trying to the distance between two impacts, and between them and the edge of the specimen have a measure at least of 50mm.

The impact resistance of the laminate under test is defined as the maximum height for which no visible surface cracking or imprint greater than 10mm diameter occurs in five successive strikes.

SCREW WITHDRAWAL RESISTANCE

Test specimens of $(150 \times 50 \times \text{own thickness})$ mm are taken from sample. Holes of 2mm diameter are made in the face and in the edge of the center specimen and in each hole a wood thread screw according to UNE EN 320 is inserted.

Finally, samples are placed in the dynamometer so that a screw traction force is applied on the sample to get its extraction.

Screw withdrawal resistance is expressed in N by the arithmetic mean value of all specimens.

6. OBTAINED RESULTS

TEST	RESULT
Chemical stress Assessment Class	Lipstick: 3 The rest: 0 1B
Resistance to cold liquids (assessment)	5
Resistance to carcking (ratting)	5
Sourface soundness (N/mm ²)	1,3 (0,1) ¹⁾
Light fastness Blue scale grade Grey scale grade	8 5
Resistance to dry heat (assessment)	5
Resistance to weat heat (assessment)	5
Resistance to cigarette burns (ratting)	3
Scratch resistance (N)	7,5
Resistance to water vapour (ratting)	4
Impact stress Drop height (cm)	110
Screw withdrawal resistance (N) Face Edge	788 542

1) The average values are given, and the values into brackets are the standard deviation

The result of the test/s only concerns to the tested object.

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