AZW

LABORATORY WORKTOP

www.azamwira.com

ABOUT US

YOUR LABORATORY WORKTOP, OUR EXPERTISE

AZAM WIRA established since the Year 2001. With over 15 Years within the laboratory industry, we are confident in our Laboratory worktop systems. We are committed to our client's design concept and cater to their needs and strive our best to convey their expectations.

AZAM WIRA specializes in lab grade laboratory worktops. We provide these products and services to all corporate, commercial, government, private sectors and residential clients.

All our laboratory worktops are designed and engineered to provide durable and environmentally friendly that enable us to adapt to suit our clients need. We supply and install mainly throughout Malaysia from small-scale retail to big-scale projects such as Medical Centres, Medical Universities, Schools and all kind of Research Laboratory.

Our laboratory worktop are of high-quality materials to ensure durability and with custom designed cutting edges of your choices in order to provide your desirable laboratory.

FOR ENQUIRIES:

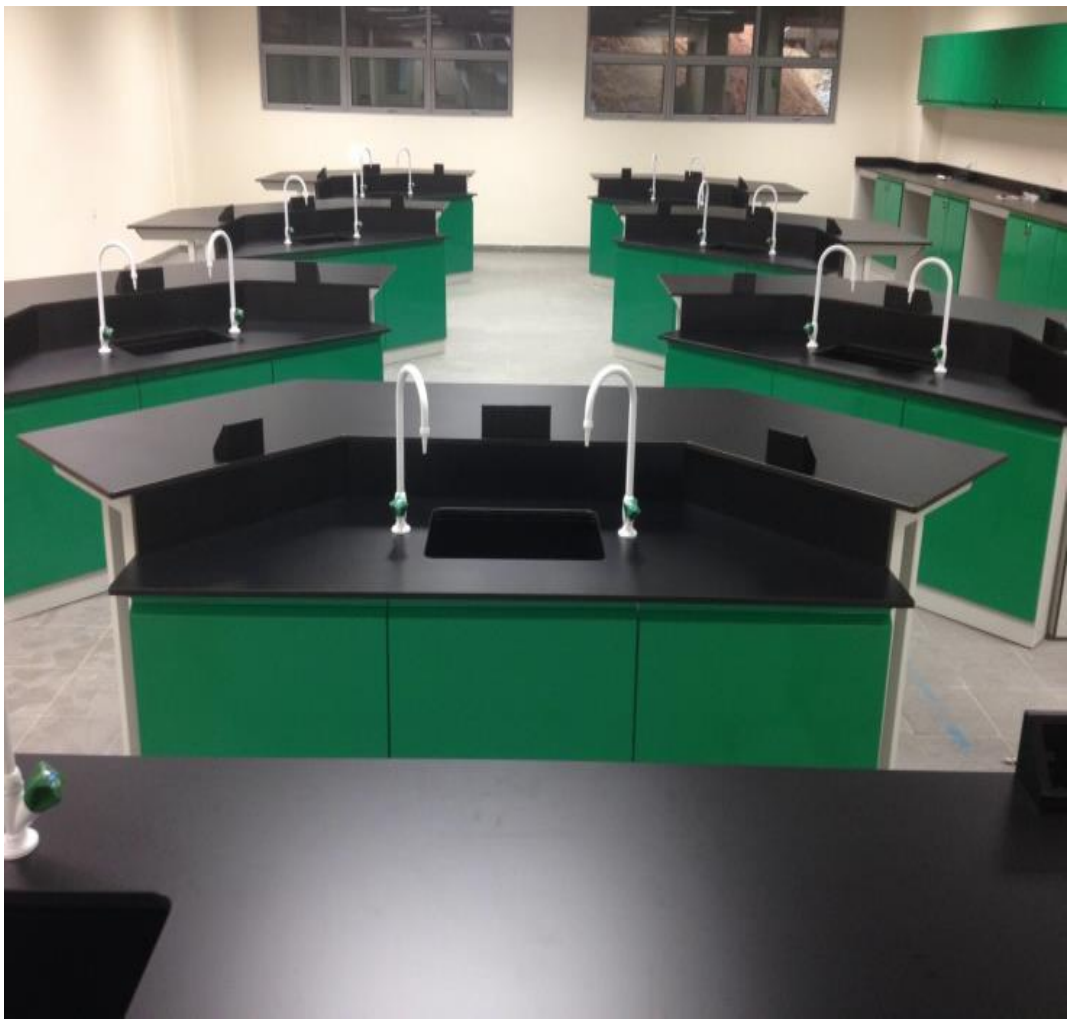
CONTACT US

www.azamwira.com

No 25, Jalan Perindustrian Suntrack,
Hub Perindustrian Suntrack,
Off Jalan P1A, Seksyen 13,
Bandar Baru Bangi,
43650, Selangor Darul Ehsan.

Tel : **03 - 8920 8969**
Fax : **03 - 8920 8967**
Email : **enquiries@azamwira.com**

AZW PHENOLIC RESIN WORKTOP



SPECIFICATIONS

THICKNESS
12mm , 18mm and 25mm High Pressure Laminated Board with Melamine surface on both side.

COLOUR
AZW Black , Grey & White colour

AZW laboratory worktop comes in various colours and customizable to suite clients specifications.

AZW BACKSPLASH PANEL

SPECIFICATIONS

THICKNESS
6mm or 10mm High Pressure Laminated Board with Melamine surface on both side.

HEIGHT
Overall 1840mm

IRONMONGERIES
Screw & Screw Caps

COLOUR
Wide selection of AZW solid & woodgrain colours

AZW BACKSPLASH PANEL

SPECIFICATIONS :

Design Basis

Drawings and specification are based on customized size of AZW Backsplash.

Manufacturer and Fabricator :

Panels by Polytec , Fabricated by Azam Wira Sdn Bhd

Model:

AZW Backsplash Panel fabricated from solid phenolic composite material.

Colors:

BACKSPLASH PANEL : Wide range of AZW colours available with extended lead time. Standard stock range colours at shorter lead time.

Core : Black

Backsplash:

1. **Material : 6mm thick solid phenolic composite material.**
2. **Corners : Rounded / Square corners**
3. **Edges : Standard profile is straight edge with no profile.**
4. **Panel Fastening : Screw & Screw caps**

Hardware :

1. **Screw : 9 (nine) to 12 (twelve) nos of screw per panel**

Dimensions :

Consist of 1 nos of wall mounted Backsplash panel.

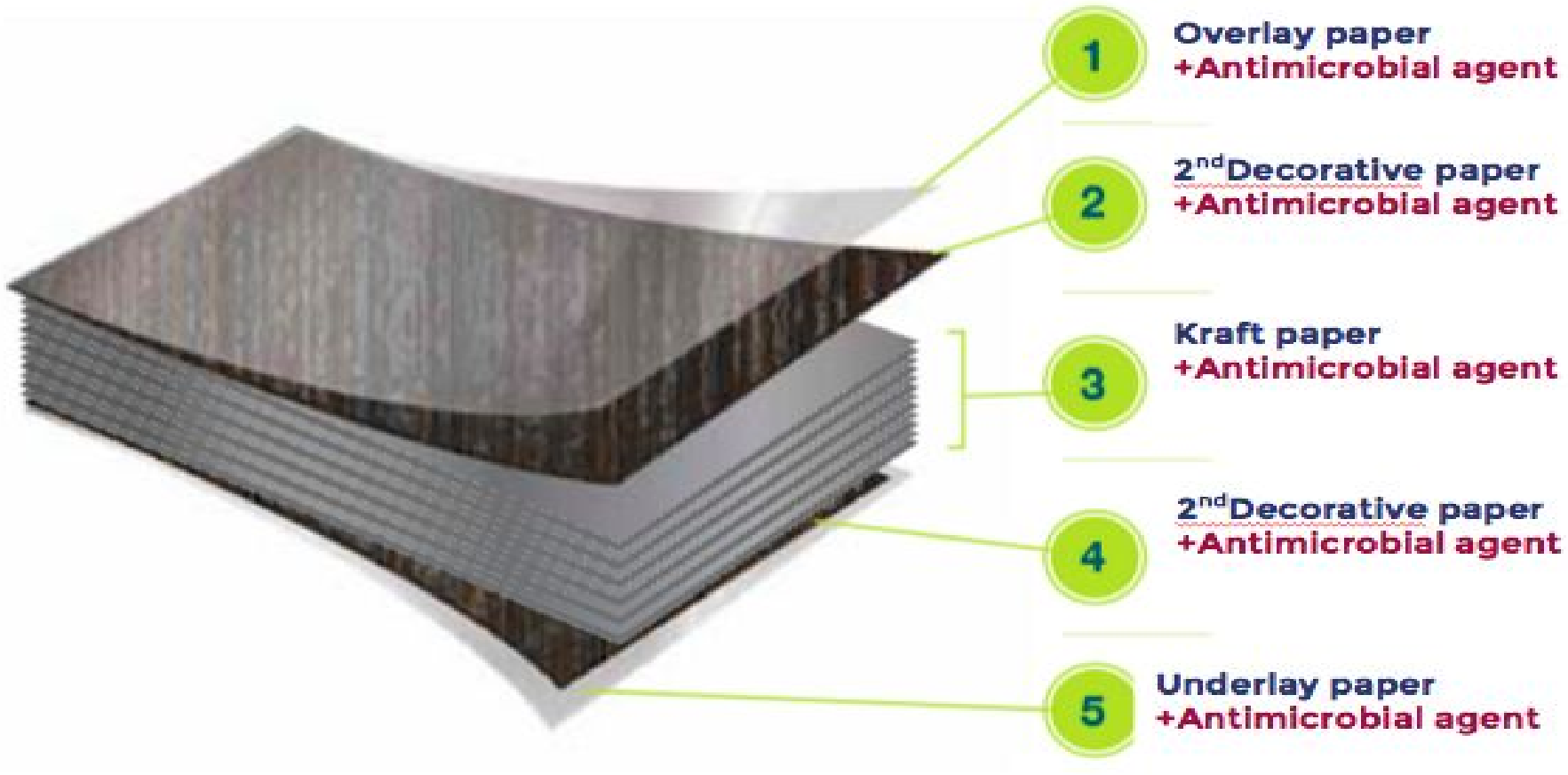
Each panel size is 800mm(W) x 2100mm (H)

A. **Overall Height : 2100mm**
B. **Overall Width : 800mm**

MATERIAL & PRODUCT SPECIFICATIONS

Solid Phenolic HPL Panel Material :

Decorative papers impregnated with the melamine resin on faces with antimicrobial agent and integrally compression molded within a core consisting of solid phenolic resin impregnated kraft papers.



CHARACTERISTICS OF AZW PANELS

AZW Laboratory Worktop is tested by the Standard Industrial Research Institute of Malaysia and Singapore Productivity and standard Boards (PSB) to DIN EN-1 & ISO 4586-1

Resistance to chemicals
Resistance to colour change in Xenon Arc Light
Resistance to cigarette burns
Resistance to steam
Dimensional Stability at 20°C
Resistance to stain
Resistance to Termites
Resistance to heat
Resistance to boiling water
Abrasion Resistance
Scratch Hardness
Modulus of Elasticity
Impact Resistance
Moisture Resistance Grade
Tensile Strength

TECHNICAL DATA

PHYSICAL PROPERTY	TEST METHOD	UNIT	TYPICAL TESTING RESULT
GROSS DENSITY	DIN 53479	KG/M^3	1430
THICKNESS TOLERANCE	DIN 16926	MM	+/- 0.50
THICKNESS SWELLING (24 HOUR AT 20 +/-1°C)	EN 317	%	0.07
FLEXURAL STRENGTH	BS 2782	N/MM^2	>120
TENSILE STRENGTH : MACHINING DIRECTION CROSS DIRECTION	BS 2782	N/MM^2	>130 >90
RESISTANCE TO SURFACE WEAR (TABER ABRASION TEST)	EN 438-2	CYCLES	>500
RESISTANCE TO IMPACT	EN 438-2	N	>40
RESISTANCE TO SCRATCHING	EN 438-2	N	>4
RESISTANCE TO COLOUR CHANGE IN XENON LIGHT #	EN 438-2	-	BLUE WOOL STANDARD NO. 6
RESISTANCE TO IMMERSION IN BOILING WATER (100°C FOR 2 HOURS) : WEIGHT CHANGE THICKNESS CHANGE	EN 438-2	%	0.44 0.28
RESISTANCE TO DRY HEAT (180°C)	EN 438-2	-	NO VISIBLE CHANGE
RESISTANCE TO CIGARETTE BURNS “LUCKY STRIKE” BRAND “CAMEL” BRAND “MALBORO” BRAND	EN 438-2	-	NO VISIBLE CHANGE NO VISIBLE CHANGE NO VISIBLE CHANGE
RESISTANCE TO STEAM (1 HOUR)	EN 438-2	-	NO VISIBLE CHANGE
COEFFICIENT OF THERMAL CONDUCTION	DIN 52612	W/mK	0.3
SURFACE HARDNESS-MICRO VICKERS	DETERMINED USING MITUTOYO MVK G1 HARDNESS TESTER WITH 100GF LOAD	-	60
DIMENSIONAL STABILITY AT ELEVATED TEMPERATURE	EN 438-2	%	0.32
DIMENSIONAL STABILITY AT 20%	EN 438-2	%	0.15
SURFACE SPREAD OF FLAME	BS 476-7	-	CLASS ONE

MATERIAL DATA

NO VISIBLE EFFECT ON THE SURFACE IF REMOVED AFTER 24 HOURS		
Acetic Acid 100%	Calcium Carbonate (Saturated)	Copper Sulphate , 10%
Acetone	Hydrogen peroxide , 3%	Ethanol
Alcohol	Lactose Monohydrade (Saturated)	Diethyl Ether
Ammonia 25%	Lead (II) Acetate Trihyrate , 42%	Ethyl Acetate
Ammonia Chloride 10%	Lead (II) Nitrate (Saturated)	Formaldehyde , 37%
Ammonium Thiocyanate, 41%	Trisodium Phosphate , 10%	Glycerine
Ammonium Sulphate, 33%	Magnesium Chloride	Sodium Carbonate
Amyl Acetate	Formalin (>40%)	Sodium Chloride
Methyl Ethyl Ketone , 100%	Potassium Chloride (Saturated)	Sodium Nitrate
N- Hexane	Potassium Hydroxide (49% - 50%)	Sodium Phosphate
Barium Chloride (Saturated)	Natrium Acetate (24%)	Sodium Sulphate (Saturated)
Barium Sulphate, 25%	Potassium Sulphate (Saturated)	Starch Soluble (Saturated)
Benzene	Isopropanol	Sryrene
Chromic Acid Mixture	Sodium Acetate (Saturated)	Thymol (Saturated)
Dichloromethane , 99%	Calcium Chloride Dihydrate , 41%	Magnesium Sulphate Heptahydrate , 43%
Boric Acid (Saturated)	Calcium Hydroxide (Saturated)	Toluene , 99%
N- Butyl Acetate	Chloral Hydrate , 54%	Methanol
Cadmium Acetate Dihydrate (Saturated)	Chloroform , 99.5%	Ammonia Water , 28%
Calcium Sulphate Hydrate (Saturated)	Citric Acid , 30%	Phenol , 95%
Potassium Bromate (Saturated)	Tetrachloromethylene , 99%	Zinc Chloride
Potassium Bromide , 30%	Xylene	Zinc Sulphate Heptahydrate , 34.66%

MATERIAL DATA

NO VISIBLE EFFECT IF REMOVED IMMEDIATELY		
Hydrofluoric Acid , 15%	Silver Nitrate , 5%	Hydrochloric Acid , 37%
Hydrogen Bromide	Sulphuric Acid , 60%	
Formic Acid , 94%	Nitric Acid , 60%	

NO VISIBLE EFFECT IF COMPLETELY REMOVED AFTER 10 MINUTES		
Aluminium Chloride	Oxalic Acid	Sodium Thiosulphate
Feric Chloride	Phosphoric Acid , 15%	Potassium Nitrate
Hydrogen Peroxide , 30%	Potassium Dichromate	Sodium Sulphite
Iodine , 25%	Potassium Iodine	Sodium Hydroxide , 49%- 50%
Mercury (II) Chloride	Potassium Permanganate	
Methylene Blue	Sodium Hypochlorite , 5.7%	

AZW SOLID COLOUR

POLAR WHITE

ARTIC WHITE

NATURAL WHITE

PARCHMENT

NEW ANTIQUE WHITE

SAND BEIGE

ROSA BEIGE

MOUNTAIN PEPPER

YELLOW

CITRUS

BLUSH PINK

VINTAGE RED

BLACK PLUM MATT

GREEN TEA

LIME GREEN

KHAKI

LEATHER

FOSSIL

AZUR BLUE

MARINE BLUE

SKY BLUE

NORDIC BLUE

NILE VERDANT

TEAL BLUE

COOL GREY

WARM GREY

DUST GREY

OYSTER GREY

NEW GRIGIO GREY

NEW SLATE GREY

STORM

EBONY BLACK

SIRIM QAS International Sdn.Bhd. (Company No.: 410334-X)
No.1, Persiaran Dato' Menteri, P.O.Box 7035, Section 2,
40911 Shah Alam, Selangor Darul Ehsan, Malaysia
Tel. no: 03-5544 5853 / 5544 5854
Fax. no: 03-5544 5855

TEST REPORT

REPORT NO.: 2010CB0385	PAGE : 1 OF 6

Applicant	:	AZAM WIRA SDN BHD No : 10, Jalan Tembaga SD5/2H, Sri Damansara Industrial Park, 52200 Kepong Kuala Lumpur
Manufacturer	:	AZAM WIRA SDN BHD
Product	:	Phenolic Resin Board (High Pressure Laminated)
Reference Standard/ Method of test	:	1) BS EN 438-2: 2005 High-pressure decorative laminates (HPL) – Sheet based on thermosetting resins (Usually called Laminates) – Part 2: Determination of properties 2) ISO 178: 2001, Plastic – Determination of Flexural 3) ISO 1183-1: 2004, Plastic – Methods for determining the density of non-cellular plastics – Part 1: Immersion methods, liquid pyknometer methods and titration method.
Description of sample	:	One model of Phenolic Resin Board (High Pressure Laminated) was received for testing. Brand: Azam Wira Model: Azam Wira – AZW 12 mm
Date received	:	14th December 2009
Job no./Ref. no.	:	J20095045089/SQAS/CBMT/T.REC/CSL/08
Issued date	:	0 4 MAR 2010

Approved Signatories

SIRIM QAS INTERNATIONAL SDN. BHD. Civil & Construction Section

(HANON NAZIR MOHD BASIR)
Senior Technical Executive

(TN. HJ. MOHD FAUZI ISMAIL)
Head
Civil & Construction Section
Testing Services Department

TEST REPORT

REPORT NO.: 2010CB0385	PAGE : 2 OF 6

TEST RESULT:

Product : Phenolic Resin Board (High Pressure Laminated)
Method of Test : BS EN 438-2: 2005,
High-pressure decorative laminates (HPL) – Sheet based on thermosetting resins (Usually called Laminates) –
Part 2: Determination of properties

Clause	Determinations /Test Methods	Test Results
4.0	Assessment of appearance	The sample did not show any defects such as smudges, smears, fingerprints, scratches, foreign particles, damage or any other form of blemish evident within the decorative surface.
5.0	Determination of thickness	<u>Thickness (mm)</u> 1) 12.199 mm 2) 12.145 mm 3) 12.187 mm **Average: 12.177 mm**
9.0	Determination of flatness	**Maximum: 0.21 mm**
12.0	Resistance to immersion in boiling water	<u>Changes in Thickness (%)</u> 1) 1.61 % 2) 1.70 % 3) 1.27 % **Average: 1.55 %** <u>Changes in Mass (%)</u> 1) 1.20 % 2) 0.97 % 3) 0.72 % **Average: 0.96 %** Examination for change in appearance: **Rating 5: No visible change**

SIRIM QAS INTERNATIONAL SDN. BHD. Civil & Construction Section

04 MAR 2010

TEST REPORT

REPORT NO.: 2010CB0385	PAGE : 3 OF 6

TEST RESULT:

Product : Phenolic Resin Board (High Pressure Laminated)
Method of Test : BS EN 438-2: 2005,
High-pressure decorative laminates (HPL) – Sheet based on thermosetting resins (Usually called Laminates) –
Part 2: Determination of properties

Clause	Determinations /Test Methods	Test Results
17.0	Dimensional stability at elevated temperature	Dry-Heat & High-Humidity Test Changes in Length for the machine direction (%) 1) 0.18 % 2) 0.06 % 3) 0.05 % 4) 0.14 % **Cumulative Dimensional Changes: 0.43 %** Changes in Length for the Cross machine direction (%) 1) 0.01 % 2) 0.10 % 3) 0.01 % 4) 0.06 % **Cumulative Dimensional Changes: 0.18 %**

SIRIM QAS INTERNATIONAL SDN. BHD.
Civil & Construction Section

04 MAR 2010

TEST REPORT

REPORT NO.: 2010CB0385	PAGE : 4 OF 6

TEST RESULT:

Product : Phenolic Resin Board (High Pressure Laminated)
Method of Test : BS EN 438-2: 2005,
High-pressure decorative laminates (HPL) – Sheet based on thermosetting resins (Usually called Laminates) –
Part 2: Determination of properties

Clause	Determinations /Test Methods	Test Results
18.0	Dimensional stability at ambient temperature	Low-Humidity & High-Humidity Test Changes in Length for the machine direction (%) 1) 0.05 % 2) 0.04 % 3) 0.38 % 4) 0.30 % **Cumulative Dimensional Changes: 0.77 %** Changes in Length for the Cross machine direction (%) 1) 0.11 % 2) 0.07 % 3) 0.33 % 4) 0.24 % **Cumulative Dimensional Changes: 0.75 %**

SIRIM QAS INTERNATIONAL SDN. BHD.
Civil & Construction Section

04 MAR 2010

SIRIM QAS International Sdn.Bhd. (Company No. 410334-X)
CHEMICAL & CONSUMER SECTION, Building 16, No 1, Persiaran Dato' Menteri, P.O.Box 7035, Section 2, 40911 Shah Alam
Selangor Darul Ehsan, Malaysia
Tel no 03-55446651/55446658 Fax no 03-55446688

TEST REPORT

REPORT NO. : 2010KD0105	PAGE : 1 OF 4

Applicant	:	Civil and Construction Section Building 22, SIRIM QAS International Sdn. Bhd.
Manufacturer	:	AZAM WIRA SDN. BHD.
Product	:	Phenolic Resin Board (High Pressure Laminated)
Reference standard / Method of test	:	1) BS EN 438 : Part 2 : 2005 Resistance to chemicals 2) ASTM G 22 : 1996 Resistance of Plastic to Bacteria
Description of sample	:	Received one (1) sample of Phenolic Resin Board (High Pressure Laminated) for testing. The sample was marked as : **Azam Wira**
Date received	:	16th December 2009
Job No.	:	JD095080890
Issue date	:	17th February 2010

Approved Signatory

(ROHAIDAH IBRAHIM, *AMIC*)
IKM A/1700/3994/99
Senior Technical Executive

(HAHNAS MAHBUT)
Head
Chemical & Consumer Section (CEST)
Testing Services Department
SIRIM QAS International Sdn. Bhd

TEST REPORT

REPORT NO.: 2010CB0385	PAGE : 2 OF 6

TEST RESULT:

Product : Phenolic Resin Board (High Pressure Laminated)
Method of Test : BS EN 438-2: 2005,
High-pressure decorative laminates (HPL) – Sheet based on thermosetting resins (Usually called Laminates) –
Part 2: Determination of properties

Clause	Determinations /Test Methods	Test Results
4.0	Assessment of appearance	The sample did not show any defects such as smudges, smears, fingerprints, scratches, foreign particles, damage or any other form of blemish evident within the decorative surface.
5.0	Determination of thickness	<u>Thickness (mm)</u> 1) 12.199 mm 2) 12.145 mm 3) 12.187 mm **Average: 12.177 mm**
9.0	Determination of flatness	**Maximum: 0.21 mm**
12.0	Resistance to immersion in boiling water	<u>Changes in Thickness (%)</u> 1) 1.61 % 2) 1.70 % 3) 1.27 % **Average: 1.55 %** <u>Changes in Mass (%)</u> 1) 1.20 % 2) 0.97 % 3) 0.72 % **Average: 0.96 %** Examination for change in appearance: **Rating 5: No visible change**

SIRIM QAS INTERNATIONAL SDN. BHD.
Civil & Construction Section

04 MAR 2010

SIRIM QAS International Sdn.Bhd. (Company No.: 410334-X)
CHEMICAL TESTING SECTION, Building 16, No.1, Persiaran Dato' Menteri, P.O Box 7035, Section 2, 40911 Shah Alam,
Selangor Darul Ehsan, Malaysia
Tel. no: 03-55446651/55446658 Fax. no: 03-55446688

TEST REPORT

REPORT NO. : 2006KL0447	PAGE : 1 OF 2

Applicant	:	AZAM WIRA SDN. BHD. No. 10, Jalan Tembaga SD5/2H Sri Damansara Industrial Park 52200 Kuala Lumpur
Product	:	Phenolic Resin Worktop
Reference standard / Method of test	:	BS EN 438 : Part 2 : 1991 Decorative high-pressure laminates (HPL) - sheets based on thermosetting resins
Description of sample	:	Received one (1) sample of Phenolic Resin Worktop for testing. The sample was marked as : Brand : **AW** Model : **AW-LG**
Date received	:	24th April 2006
Job No.	:	J20065080411
Issue date	:	28th April 2006

.....
(ROHAIDAH IBRAHIM, *AMIC*)
Senior Technical Executive

.....
(HAHNAS MAHBUT)
Manager
Chemical Testing Section
Building 16
SIRIM QAS International Sdn. Bhd.

TEST REPORT

REPORT NO. : 2006KL0447	PAGE : 2 OF 2

Test Results

Sample : Phenolic Resin Worktop
Brand : AW
Model : AW-LG

Table A : Chemical Resistance Test - Solutions removed after 24 hours

No.	*Tests*	*Results*
1.	Ammonium Chloride, 10	No visible change
2.	Potassium Carbonate, 10%	No visible change
3.	Potassium Chloride, 10%	No visible change
4.	Potassium Iodide, 10%	No visible change
5.	Sodium Carbonate, 5%	No visible change
6.	Chloroform	No visible change
7.	Carbon Tetrachloride	No visible change
8.	Sodium Bicarbonate, 5%	No visible change
9.	Sodium Chloride, 5%	No visible change
10.	Potassium Ferricyanide, 5%	No visible change
11.	Ammonium Hydroxide, 10%	No visible change
12.	Ethanoic Acid, 5%	No visible change
13.	Barium Chloride Dihydrate, 10%	No visible change
14.	Trisodium Phosphate, 1%	No visible change

Table B : Chemical Resistance Test - Solutions removed after 10 minutes

No.	*Tests*	*Results*
1.	Silver Nitrate, 5%	Marked change of gloss and/or colour
2.	Hydrochloric Acid, 10%	Slight change of gloss and/or colour only visible at certain angle
3.	Sulfuric Acid, 10%	Slight change of gloss and/or colour only visible at certain angle
4.	Nitric Acid, 10%	Slight change of gloss and/or colour only visible at certain angle
5.	Hydrogen Peroxide, 3%	No visible change
6.	Saturated Calcium Hydroxide solution	No visible change
7.	Phosphoric acid, 85%	No visible change
8.	Caustic Soda	No visible change

Table C : Chemical Resistance Test - Solutions removed immediately after application

No.	*Tests*	*Results*
1.	Sulfuric Acid, 96%	No visible change
2.	Nitric Acid, 65%	No visible change
3.	Hydrochloric Acid, 37%	No visible change

ROHAIDAH IBRAHIM, AM
Senior Technical Executive
Chemical Testing Section
SIRIM QAS International Sdn. Bhd.

TEST REPORT

REPORT NO. : 2006KL0447	PAGE : 2 OF 2

Test Results

Sample : Phenolic Resin Worktop
Brand : AW
Model : AW-LG

Table A : Chemical Resistance Test - Solutions removed after 24 hours

No.	*Tests*	*Results*
1.	Ammonium Chloride, 10	No visible change
2.	Potassium Carbonate, 10%	No visible change
3.	Potassium Chloride, 10%	No visible change
4.	Potassium Iodide, 10%	No visible change
5.	Sodium Carbonate, 5%	No visible change
6.	Chloroform	No visible change
7.	Carbon Tetrachloride	No visible change
8.	Sodium Bicarbonate, 5%	No visible change
9.	Sodium Chloride, 5%	No visible change
10.	Potassium Ferricyanide, 5%	No visible change
11.	Ammonium Hydroxide, 10%	No visible change
12.	Ethanoic Acid, 5%	No visible change
13.	Barium Chloride Dihydrate, 10%	No visible change
14.	Trisodium Phosphate, 1%	No visible change

Table B : Chemical Resistance Test - Solutions removed after 10 minutes

No.	*Tests*	*Results*
1.	Silver Nitrate, 5%	Marked change of gloss and/or colour
2.	Hydrochloric Acid, 10%	Slight change of gloss and/or colour only visible at certain angle
3.	Sulfuric Acid, 10%	Slight change of gloss and/or colour only visible at certain angle
4.	Nitric Acid, 10%	Slight change of gloss and/or colour only visible at certain angle
5.	Hydrogen Peroxide, 3%	No visible change
6.	Saturated Calcium Hydroxide solution	No visible change
7.	Phosphoric acid, 85%	No visible change
8.	Caustic Soda	No visible change

Table C : Chemical Resistance Test - Solutions removed immediately after application

No.	*Tests*	*Results*
1.	Sulfuric Acid, 96%	No visible change
2.	Nitric Acid, 65%	No visible change
3.	Hydrochloric Acid, 37%	No visible change

ROHAIDAH IBRAHIM, AM
Senior Technical Executive
Chemical Testing Section
SIRIM QAS International Sdn. Bhd.

Test Report No. S09MEC02129/2/YWA
dated 06 May 2009
(QM-1108-102)

PSB Singapore

Choose certainty.
Add value.

Note: This report is issued subject to TÜV SÜD PSB's "Terms and Conditions Governing Technical Services". The terms and conditions governing the issue of this report are set out as attached within this report.

SUBJECT:

Fire propagation test on "Polytec" Material for Wall / Door / Ceiling Construction submitted by Polytec Laminates Sdn Bhd on 26 Mar 2009.

TESTED FOR:

Polytec Laminates Sdn Bhd
No. 1 Jalan Teknologi Utama
Kawasan Perindustrian Mengkibol
86000 Kluang
Johor
Malaysia

Attn: Ms Noor Azlian Bt Mohd Azmie

DATE OF TEST:

02 May 2009

PURPOSE OF TEST:

To determine the Index of Performance of the material when it is exposed to the conditions of the test specified in British Standard 476 : Part 6 : 1989 "Method of test for fire propagation for products".

The test was conducted at TÜV SÜD PSB fire test laboratory located at No. 10 Tuas Avenue 10, Singapore 639134.

PSB TEST
Your Peace of Mind

ilac-MRA
ACCREDITED LABORATORY
SAC-SINGLAS

LA-2007-0383-A
LA-2007-0383-A-1
LA-2007-0381-F
LA-2007-0382-B
LA-2007-0383-G
LA-2007-0384-B
LA-2007-0385-E
LA-2007-0386-C

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests/Calibrations marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory.

Laboratory:
TÜV SÜD PSB Pte. Ltd.
Testing Services
No.1 Science Park Drive
Singapore 118221

Phone : +65-6885 1333
Fax : +65-6776 8670
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg : 199002697R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-01/05
The Franklin, Singapore 118223
TÜV®

PSB Singapore

DESCRIPTION OF SPECIMENS:

Six pieces of specimen, said to be "Polytec" (12mm thick x 1420kg/m^3) Material for Wall / Door / Ceiling Construction comprising of Compact Laminates, each of nominal size of 225mm x 225mm were submitted.

TEST PROCEDURE:

Three specimens, backed with calcium silicate board, were tested with either face exposed to the specified heating conditions, in an apparatus conforming to paragraph 5 and illustrated in Figures 1 to 3 of the Standard.

The calibration and test procedures were as defined in paragraphs 8 and 9, respectively, of the specification. The apparatus was calibrated prior to test and the actual calibration curve obtained is shown in Figure 1 of this report.

The mean temperature rise above ambient obtained from three specimens is also shown in Figure 1 (i.e. with the actual calibration curve). The mean temperature readings for the material and the calibration curve were obtained at the following intervals from the start of the test: at 1/2 minute intervals up to 3 minutes, at 1 minute intervals from 4 to 10 minutes, and at 2 minutes intervals from 12 to 20 minutes.

PSB Singapore

From these readings, the index of performance for the material was determined as follows:

$$s_1 = \sum_{t=0.5}^{t=3} \frac{\Theta_s - \Theta_c}{10t}; \quad s_2 = \sum_{t=4}^{t=10} \frac{\Theta_s - \Theta_c}{10t}$$

$$\text{and} \quad s_3 = \sum_{t=12}^{t=20} \frac{\Theta_s - \Theta_c}{10t};$$

$$S = s_1 + s_2 + s_3$$

where S = Index of performance for each of the specimens tested and s_1, s_2 and s_3 are sub-indices

t = Time in minutes from the origin at which readings are taken.

Θ_s = Temperature rise in deg. C for the specimen at time, t

Θ_c = Temperature rise in deg. C for the calibration sheet at time, t

In computations only the positive value of $\frac{\Theta_s - \Theta_c}{10t}$ was used.

PSB Singapore

RESULTS OF TEST:

The following test results were obtained for each specimen tested:

Specimen	Sub-Indices			Index of Performance
	s_1	s_2	s_3	S
A	0.5	10.1	5.5	16.1
B	1.1	10.8	5.3	17.2
C	1.4	11.5	4.4	17.3

CONCLUSION:

The test results obtained, as an average of the 3 samples tested are as follows:

Index of overall performance, I = 16.9
(Fire propagation index)

Sub-index, i_1 = 1.0

Sub-index, i_2 = 10.8

Sub-index, i_3 = 5.1

REMARKS:

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Ong Kian Huat
Associate Engineer

Chan Long Toa
Product Manager
(Fire Safety & Security Products)
Mechanical Centre

PSB Singapore

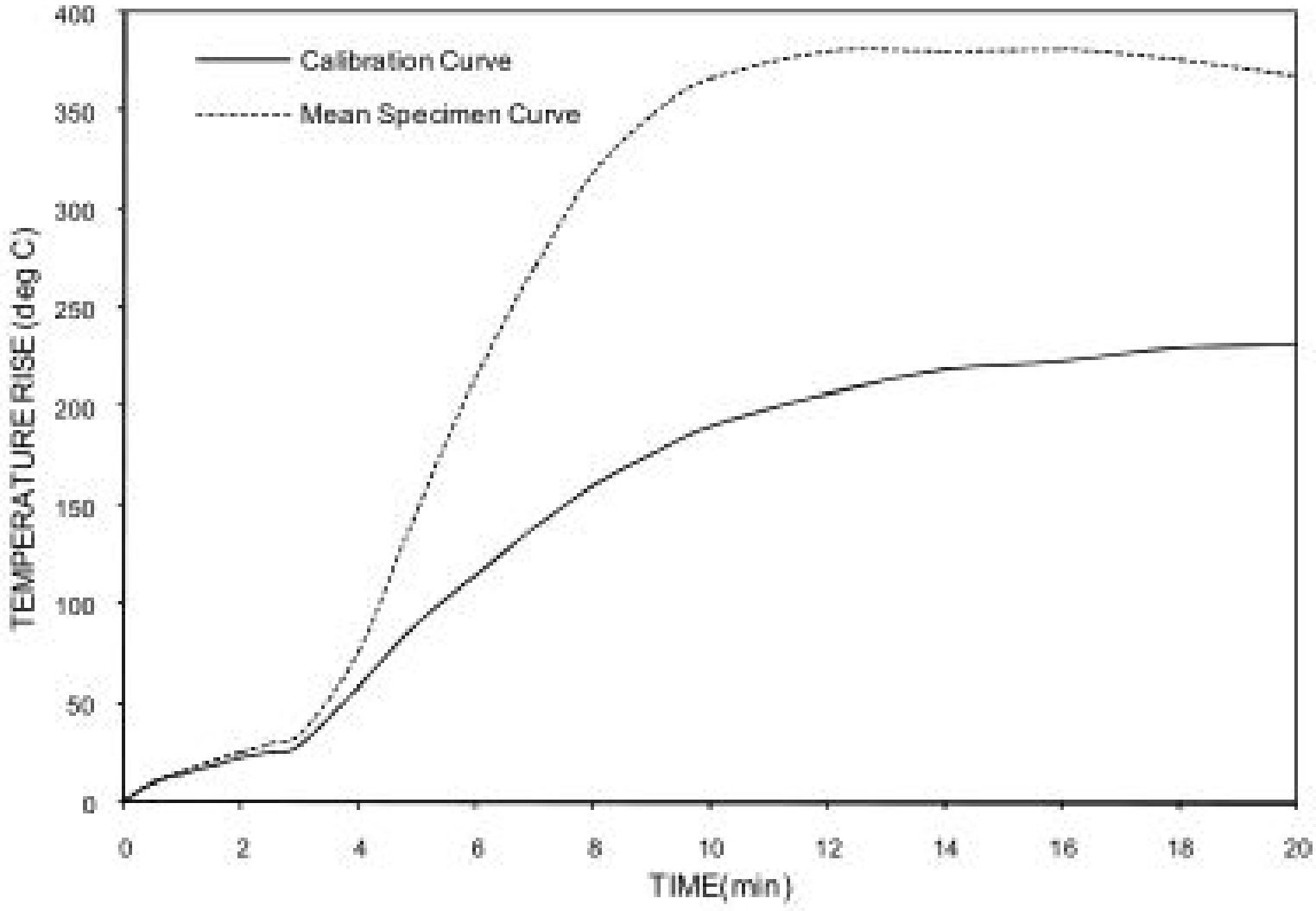


FIGURE 1 : COMPARISON OF MEAN SPECIMEN AND CALIBRATION CURVES

Test Report No. S09MEC02129/2/YWA
dated 06 May 2009
(QM-1108-102)

PSB Singapore

This Report is issued under the following conditions:

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March 2009

Test Report No. S09MEC02129/1/OKH
dated 06 May 2009
(QM-1108-102)

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SUBJECT:

Large scale surface spread of flame test on "Polytec" Material for Wall / Door / Ceiling Construction submitted by Polytec Laminates Sdn Bhd on 26 Mar 2009.

TESTED FOR:

Polytec Laminates Sdn Bhd
No. 1 Jalan Teknologi Utama
Kawasan Perindustrian Mengkibol
86000 Kluang
Johor
Malaysia

Attn: Ms Noor Azlian Bt Mohd Azmie

DATE OF TEST:

08 Apr 2009

PURPOSE OF TEST:

To determine the tendency of the surface of a material or a combination of materials to support the spread of flame across its surface and to classify the surface according to the test given in British Standard 476 : Part 7 : 1997.

The test was conducted at TÜV SÜD PSB fire test laboratory located at No. 10 Tuas Avenue 10, Singapore 639134.

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ACCREDITED LABORATORY
SAC-SINGLAS

LA-2387-8389-A
LA-2387-8389-A-1
LA-2387-8381-F
LA-2387-8382-B
LA-2387-8383-G
LA-2387-8384-G
LA-2387-8385-E
LA-2387-8386-C

The results reported herein have been performed in accordance with the laboratory's terms of accreditation under the Singapore Accreditation Council - Singapore Laboratory Accreditation Scheme. Tests/Calibrations marked "Not SAC-SINGLAS Accredited" in this Report are not included in the SAC-SINGLAS Accreditation Schedule for our laboratory.

Laboratory:
TÜV SÜD PSB Pte. Ltd.
Testing Services
No.1 Science Park Drive
Singapore 118221

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Fax : +65-6776 8670
E-mail: testing@tuv-sud-psb.sg
www.tuv-sud-psb.sg
Co. Reg : 199002667R

Regional Head Office:
TÜV SÜD Asia Pacific Pte. Ltd.
3 Science Park Drive, #04-01/05
The Franklin, Singapore 118223

DESCRIPTION OF SPECIMENS:

Nine pieces of specimen, said to be "Polytec" (12mm thick x 1420kg/m^3) Material for Wall / Door / Ceiling Construction comprising of Compact Laminates, each of nominal size of 885mm x 270mm were submitted.

TEST PROCEDURE:

Prior to test, the specimens were prepared and conditioned in accordance with paragraphs 5.3 to 5.6 of the standard and secured to a specimen holder as described in paragraph 6.3.

Six specimens, backed with calcium silicate board, were tested with either face exposed to the specified thermal radiation from the apparatus described in paragraph 6.1 of the standard. The intensity of the radiated heat incident on the specimen varies with distance from the hotter end, so that when the specified calibration panel is mounted in the place to be occupied by the specimen, the irradiance of the radiometer is as given in Table 1. The test was terminated when the flame front reached the 825mm reference line, or after 10 minutes has elapsed, whichever is the shorter.

Table 1 : Irradiance Along Horizontal Reference Line on the Calibration Board

Distance along reference line from inside edge of specimen holder	Irradiance kW/m^2		
mm	specified	min.	max.
75	32.5	32.0	33.0
225	21.0	20.5	21.5
375	14.5	14.0	15.0
525	10.0	9.5	10.5
675	7.0	6.5	7.5
825	5.0	4.5	5.5

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RESULTS OF TEST:

Specimen No.	1	2	3	4	5	6
Spread of flame at first 1½ minutes (mm)	0	0	0	0	0	0
Distance (mm)	Time of spread of flame to indicated distance (minutes • seconds)					
Start of flaming	nil	nil	nil	nil	nil	nil
75	-	-	-	-	-	-
165	-	-	-	-	-	-
190						
215						
240						
265						
290						
375						
455						
500						
525						
600						
675						
710						
750						
785						
825						
865						
Time of maximum spread of flame (minutes • seconds)	-	-	-	-	-	-
Distance of maximum spread of flame (mm)	0	0	0	0	0	0
Comments	None					

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Classification of Surface Spread of Flame

Classification	Spread of flame at 1.5 min.		Final spread of flame	
	Limit (mm)	Limit for one specimen in sample (mm)	Limit (mm)	Limit for one specimen in sample (mm)
Class 1	165	165 + 25	165	165 + 25
Class 2	215	215 + 25	455	455 + 45
Class 3	265	265 + 25	710	710 + 75
Class 4	Exceeding the limits for class 3			

CONCLUSION:

In accordance with the class definitions specified in the Standard, the test results show that the sample tested has a Class One Surface Spread of Flame.

REMARKS:

The test results relate only to the behaviour of the test specimens of the product under the particular conditions of test; they are not intended to be the sole criterion for assessing the potential fire hazard of the product in use.

Ong Kian Huat
Associate Engineer

Chan Lung Toa
Product Manager
(Fire Safety & Security Products)
Mechanical Centre

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