
mai™ Lab Chem
Malachite Collection
maica™
Pushing the Scientific
Frontier Further

Contents

maiLAB CHEM

High Precision And Accuracy

It bridges the reality and the dreams. It brings the unknowns to the shore of the knowns. It challenges the norms and inspires ideas beyond convention.

Exceeding the expectation of laboratory research and educational quest for exceptionally durable, high performance, versatile laboratory top, maiLab Chem is absolutely capable of contributing breakthroughs in medical, chemical and scientific research.

The extreme straight edges and flat surface structure of maiLab Chem are water-resistant and chemical-resistant. Together with the high number of chemicals tested, they are believed to profoundly enhance the validity of test results and eradicate the variances of findings.

24 Hours Chemical Resistance

The surface is tested against:

a. 91 most common chemicals used in laboratories worldwide.

b. Of which, 49 of the chemicals are listed by SEFA 8 (Scientific Equipment and Furniture Association).

The tests for the 91 chemicals are done for a duration of 24 hours by a third-party internationally accredited TUV SUV PSB Laboratory in Singapore.

Electron Beam Curing (EBC) Technology

EBC is touted for its ability to penetrate the surface of maiLab Chem and to thoroughly cure and close the surface of the thick and multiple acrylic coating layers. As a result, the cross-linkage of the resin molecules helps to create a perfectly closed surface structure that resists chemicals and scuffs.

Excellent Dimensional Stability at Elevated Temperature

The application and careful control of high-temperature, high-pressure and press duration during the production of maiLab Chem, coupled with the EBC cured surface made of multiple layers of acrylic resin, and the virgin-pulp made kraft papers impregnated with thermosetting resin, have enabled the delivery of an excellent dimensional stability at elevated temperature for maiLab Chem.

Extreme Flatness

The stringent manufacturing process makes an impeccably flat surface structure with straight edges possible for maiLab Chem, thereby meeting the strict requirements of laboratory research worldwide.

mai™ Lab Chem

Robust Black Core

maiLab Chem comes with black core that is characteristically representative of superb robustness, sturdiness and strength. Additionally, it meets the expectation for visual appeal, pragmatic application and easy maintenance for use in heavy-duty and high traffic areas.

Multifaceted Resistance

maiLab Chem is fully compliant to EN 438 Part 4 as it has a similar build-up as compact laminates. With a difference of EBC chemical resistant surface paper, it is demonstrable of resistance to not only chemicals but also impact, surface wear, water, heat, steam and cigarette burns. They make maiLab Chem tremendously easy to maintain.

Low in Volatile Organic Compounds (VOC) Emission

maiLab Chem is an environmentally friendly product as it releases an enormously minimal level of VOC because of the use of the acrylic resin and the unique EBC curing process in its production. maiLab Chem is certified for GREENGUARD that proves of its suitability for laboratory environment and GREENGUARD GOLD, an evidence of a stricter level of compliance for the emission of VOC. This scientifically makes maiLab Chem suitable for even laboratories in schools and learning centres, where students of tender age study and learn.

maiTermite Resistance

The absence of moisture and air in the core of maiLab Chem, due to the high-temperature and high-pressure manufacturing process, has virtually made the growth of microbes that breaks up the cellulose of wood materials as food supply for termites impossible. Hence, maiLab Chem prides on termite resistance against Subterranean Termites, a kind of most dangerous termites for buildings, with tests conducted by the Forest Research Institute Malaysia (FRIM).

maiQualities

European Standard
EN 438

EN 438

maiLab Chem is manufactured based on the European Standard EN 438 Part 4.

Singapore Green Label

Certification No. : 035 - 034
MADE FROM RENEWABLE / SUSTAINABLE MATERIALS
Certified under the Singapore GreenLabel
maiLaminate ™ & maiCompact ™

Maica obtains the Singapore Green Label for the category of 'Made from Renewable / Sustainable Materials', with a Certification No of 035-034. maiLab Chem is made of sustainable raw materials as the kraft papers used for production are made of virgin pulps harvested from replanted forests/plantations in contribution to environmental sustainability.

GREENGUARD and GREENGUARD GOLD

GREENGUARD
GREENGUARD GOLD

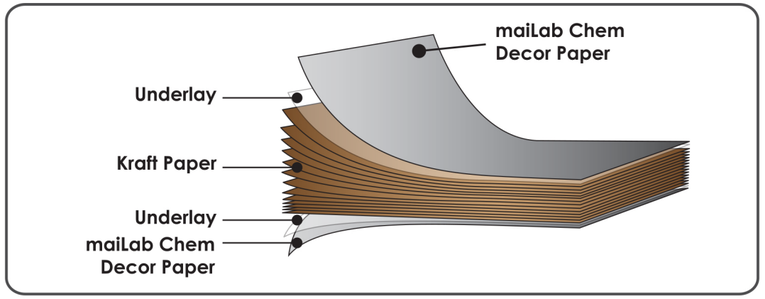
maiLab Chem are certified for GREENGUARD and GREENGUARD GOLD for emitting a very minimal level of Volatile Organic Compounds (VOC). This is attributed to the strict manufacturing specification, application of Electron Beam Curing (EBC) process and the multiple layers of acrylic resin on the chemical resistant surface paper.

Forest Stewardship Council™ (FSC™)

FSC
www.fsc.org
FSC® C126725
The mark of responsible forestry

Forest Stewardship Council™ (FSC™) is a global non-profitable organisation that aspires to steward forests for various social, environmental and economic causes. maiLab Chem is available for Forest Stewardship Council™ (FSC™) Mix label upon request by customers. FSC™ is a member of the International Social and Environmental Accreditation and Labelling (ISEAL) Alliance, a global association of social and environmental standards systems.

maiLab Chem Build-up



Resistance to Water

Resistance to Heat

Resistance to Impact

Resistance to Wear

Resistance to Steam

Resistance to Cigarette Burns

*Applicable to the surface only.

Available:

Size:	1530mm x 3670mm
Thickness:	13mm / 16mm / 20mm / 25mm
Finish:	Chemyx [CX]

M 60100 - CX
Schnee

M 60200 - CX
Asche

M 60300 - CX
Nacht

Chemical Resistance: Test Evaluation

With a 24-hour contact time between the listed chemicals, and the surface of **maiLab Chem**, **maiLab Chem** virtually delivers no 'Failures'.

Test Method:

The test was conducted by applying 2 or 3 drops of each reagent maintained at room temperature on the specimen surface. After that, a glass cover was used to cover the reagent on the specimen surface.

After a period of 24-hour contact time under room temperature, the glass cover was removed. The reagent was rinsed off with water. Then the specimen surface was inspected and evaluated from various angles at a distance of 400 mm.

Rating:

No Effect 5	No visible change of colour / corrosion / damage on surface
Excellent 4	Very slight change of colour, only visible at certain viewing angles
Good 3	Slight change of colour on surface
Fair 2	Moderate change of colour on surface
Failure 1	Corrosion / damage on surface

Chemicals \ Rating	5 No Effect	4 Excellent	3 Good	2 Fair	1 Failure
Acids					
*Acetic Acid (98%)	•				
Acetic Acid (100%)	•				
*Chromic Acid (60%)	•				
*Dichromate Acid (5%)	•				
*Formic Acid (90%)	•				
Hydrochloric Acid (10%)	•				
*Hydrochloric Acid (37%)	•				
*Hydrofluoric Acid (48%)				•	
*Nitric Acid (20%)	•				
*Nitric Acid (30%)	•				
Nitric Acid (65%)		•			
Nitric Acid (65%): Hydrofluoric Acid 37% (Ratio 1:3)			•		
*Nitric Acid (70%)		•			
Perchloric Acid (60%)	•				
*Phosphoric Acid (85%)	•				
Sulphuric Acid (25%)	•				
*Sulphuric Acid (33%)	•				
*Sulphuric Acid (77%)	•				
*Sulphuric Acid (77%): Nitric Acid 70% (Ratio 1:1)		•			
Sulphuric Acid (85%): Nitric Acid 70% (Ratio 1:1)		•			
Sulphuric Acid (85%)	•				
*Sulphuric Acid 96%		•			
Sulphuric Acid (98%)		•			
Bases: No effect on all bases used					
*Ammonia Hydroxide (28%)	•				
*Sodium Hydroxide (10%)	•				
*Sodium Hydroxide (20%)	•				
*Sodium Hydroxide (40%)	•				
*Sodium Hydroxide Flake	•				
Halogens					
Iodine 0.1 N			•		
Iodine Crystal				•	
*Tincture of Iodine				•	

* Chemicals listed by **SEFA 8**

Chemicals \ Rating	5 No Effect	4 Excellent	3 Good	2 Fair	1 Failure
Salts					
Copper Sulphate (10%)	•				
Iron (III) Chloride (10%)	•				
Potassium Iodite (10%)	•				
Potassium Permanganate (10%)				•	
Silver Nitrate (1%)	•				
*Silver Nitrate (saturated)			•		
Sodium Chloride (10%)	•				
Sodium Hypochloride (13%)	•				
*Sodium Sulfide (saturated)	•				
*Zinc Chloride (saturated)	•				
Biologic Stains					
Acridine Orange (1%)		•			
Alizarin Complexone Dihydrate (1%)	•				
Aniline Blue (Water Soluble) (1%)	•				
Basic Fuchsin (1%)		•			
Carbol Fuchsin (1%)			•		
Carmine (1%)	•				
Eosin B (1%)	•				
Gentian Violet (Dye) (1%)	•				
Giemsa Stain (1%)	•				
Kongo Red (1%)		•			
Malachite Green Oxalate (1%)	•				
Methyl Violet 2B (1%)	•				
Methylene Blue (1%)	•				
Safranine O (1%)	•				
Sudan III (1%)	•				
Wright Stain (1%)	•				
Organic Chemicals					
*Amyl Acetate	•				
*Benzene	•				
*Cresol	•				
*Dimethylformamide	•				
*Formaldehyde (37%)	•				
*Furfural			•		
*Gasoline	•				
*Hydrogen Peroxide (30%)	•				
*Methyl Ethyl Ketone	•				
n-Butyl Acetate	•				
*Phenol (90%)	•				
*Xylene	•				

Chemicals \ Rating	5 No Effect	4 Excellent	3 Good	2 Fair	1 Failure
Solvents: No effect on all solvents used					
Acetic Anhydride	•				
*Acetone	•				
Acetonitrile	•				
*Butyl Alcohol	•				
*Carbon Tetrachloride	•				
*Chloroform	•				
*Dichloro Acetic Acid	•				
Dichloromethane	•				
*Diethyl Ether	•				
*Dioxane	•				
*Ethyl Acetate	•				
*Ethyl Alcohol	•				
Ethylene Glycol	•				
*Methyl Alcohol	•				
*Methylene Chloride	•				
Methylisobutylketone	•				
*Mono Chlorobenzene	•				
*Naphthalene	•				
n-Hexane	•				
*Toluene	•				
Tetrahydrofurance	•				
*Trichloroethylene	•				

The ratings of the chemical tests listed above are based on the lowest rating achieved for three different **maiLab Chem** products: **Nacht, Asche and Schnee**.

The individual exceptions to the results are as below:

Item	Chemicals	%	M 60300 Nacht	M 60200 Asche	M 60100 Schnee
a.	*Hydrofluoric Acid	48	Excellent	Fair	Excellent
b.	Nitric Acid 65%: 37% *Hydrochloric Acid	1:3	Excellent	Good	Good
c.	Acridine Orange	1	No Effect	No Effect	Excellent
d.	Kongo Red	1	No Effect	No Effect	Excellent
e.	Iodine 0.1N	-	No Effect	Good	Good
f.	Iodine Crystal	-	Excellent	Fair	Fair
g.	*Tincture of Iodine	-	Excellent	Fair	Fair
h.	*Silver Nitrate	Saturated	No Effect	No Effect	Good
i.	*Furfural	-	Excellent	Good	Good

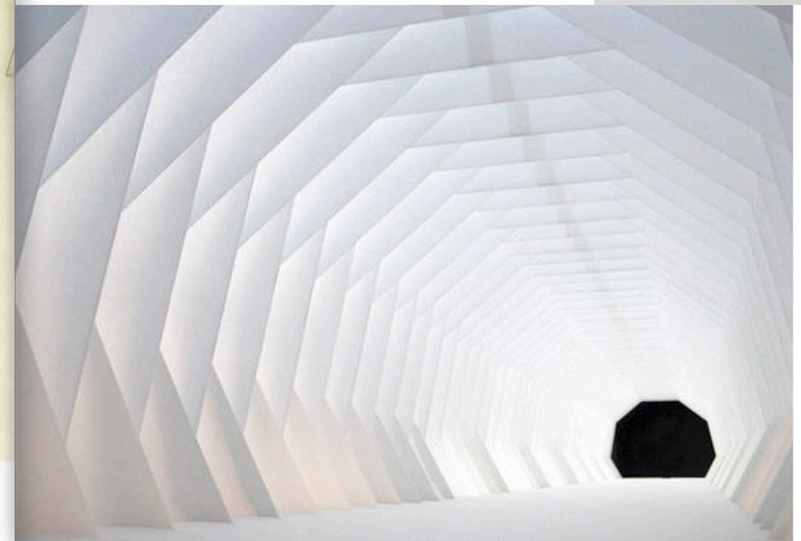
* Chemicals listed by **SEFA 8**

Conventional Laboratory

Contemporary Laboratory

Futuristic Laboratory

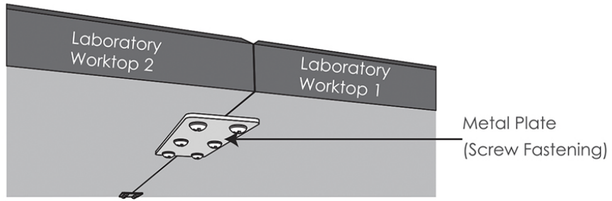
Futuristic Laboratory



Joints & Profiles

A. Permanent Joint

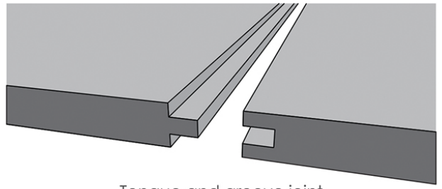
- Permanent joint can be achieved by using mechanical fastening.



Mechanical fastening

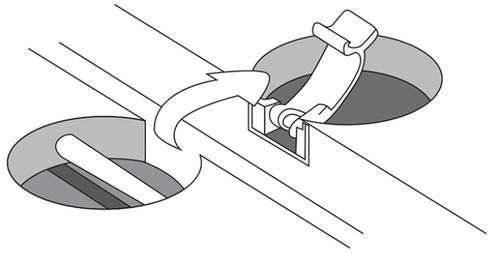
B. Movable Joint

- Movable joint can be achieved using tongue and groove method or hinge lock mounted below the laboratory worktop.



Tongue and groove joint

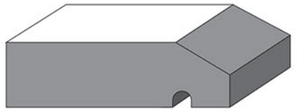
Rebated (groove) or lapping joint



Hinge lock mounted below laboratory worktop

C. Types of Profile

- 3 types of edges are recommended for maiLab Chem.
  The ideal distance for drip groove is about 10mm from the panel edge.



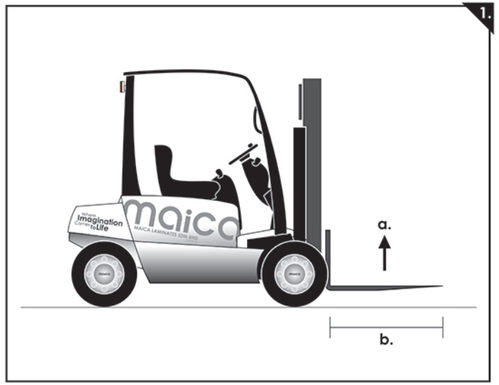
Chamfer edge with drip groove

Radius edge

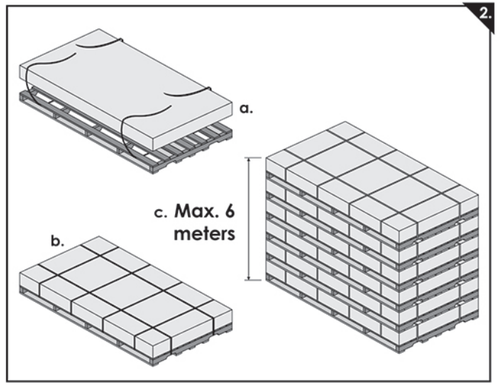
Crescent edge

** The joints and profiles information serves as a guide. It is not intended as any form of warranty for any specific product characteristics or performance.*

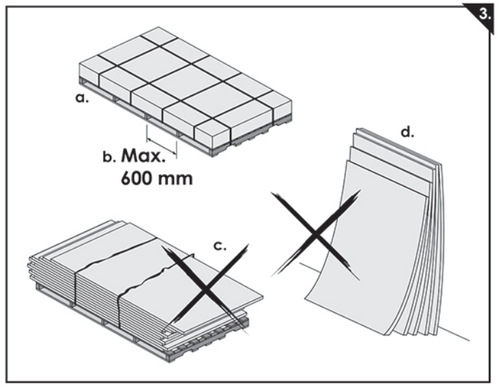
Care, Handling and Storage Guide



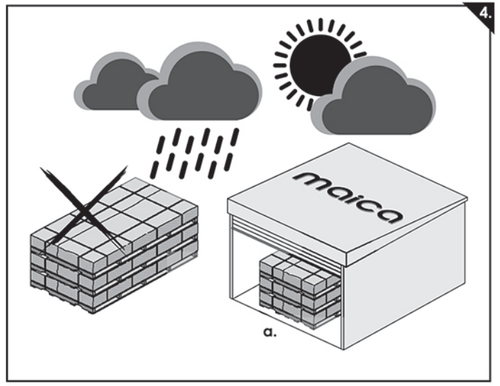
a. Do not stack laminates above the specified forklift load.
b. Ensure appropriate forklift fork length for laminate size and stacking height.



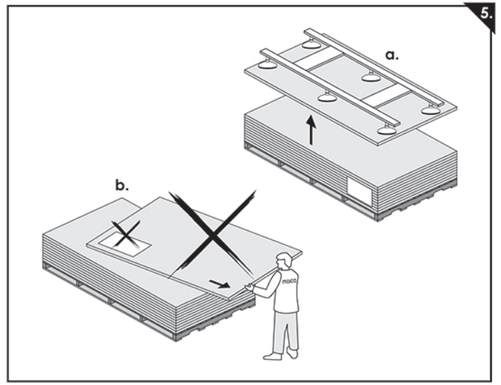
a. Protect corners / edges.
b. Secure tightly.
c. Maximum laminate stacking height - 6 meters.



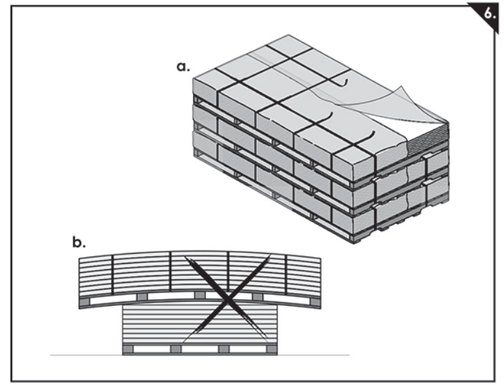
a. Store on flat surface.
b. Pallet / crate's gap space - 600mm.
c. Do not stack haphazardly.
d. Do not lean laminates against the wall or any other vertical surface.



a. Store in a dry and sheltered area.



a. Lift laminates with a vacuum lifter.
b. Do not slide laminates. Always lift them.



a. Protect laminates with moisture impermeable wrap.
b. Do not stack laminates of different sizes on top of one another.

The care, handling and storage information provided above serves as a guide.
It is not intended as any form of warranty for any specific product characteristic.

The passion of Maica goes beyond manufacturing High Pressure Decorative Laminate (HPL) and Compact Laminates. In compliance with the European Standard EN 438, product quality is indisputably its primary focus. Notwithstanding, Green Manufacturing and Green Products have a very special place in the heart of Maica.

Maica is committed to manufacture environmental-friendly products with the use of sustainable raw materials. The use of kraft papers that are made of virgin pulps from non-virgin plantations / forestry has earned Maica the Singapore Green Label for the 'Made from Renewable / Sustainable Materials' category.

In addition, Maica's products are certified for GREENGUARD and GREENGUARD GOLD, the proofs of low chemical emissions that warrant healthy indoor air quality.

Moreover, Maica has secured MyHIJAU for its maiLaminate and maiCompact and that they are accorded with certain Green Building Index (GBI) credit points that come with tax benefits.

Since 2015, Maica has obtained FSC Chain of Custody (CoC) certificate with FSC™ License Code of FSC™ C126725. Maica is ready to produce FSC Mix label maiLaminate and maiCompact upon request by customers.

FSC™ www.fsc.org FSC™ C126725
The mark of responsible forestry

GREENGUARD GOLD

Certification No.: 035 - 034
MADE FROM RENEWABLE / SUSTAINABLE MATERIALS
Certified under the Singapore GreenLabel
maiLaminate™ & maiCompact™

Our products also carry a combination of the following maiQualities

maiAnti BACTERIAL Silver-Ion Technology
maiAnti FUNGI
mai Food Contact Safety
maiAnti SCUFFING
maiAnti FINGERPRINT
mai Termite RESISTANT
mai Chemical RESISTANT

European Standard **EN 438**

Product Specification
Based on European Standard EN 438

Dimensional Tolerances	
Thickness (clause 5) - unit mm (max.) The item marked * is based on Maica's dimensional tolerances because EN438's dimensional tolerances is for lesser than 25.0 mm.	13.0mm : ± 0.60 mm 16.0mm : ± 0.70 mm 20.0mm : ± 0.80 mm 25.0mm : ± 1.00 mm* (t = nominal thickness)
Flatness (clause 9) - unit mm/m (max.) *Provided the laminates are stored in the manner and conditions recommended by the manufacturer, they shall comply with the flatness requirements specified when measured in accordance with EN438-2, Clause 9. The flatness values specified apply to laminates with two decorative surfaces (maiCompact). Limits for laminates with one surface sanded shall be agreed between Maica and customer.*	2.0 ≤ t < 6.0 mm : 8.0 mm/m 6.0 ≤ t < 10.0 mm : 5.0 mm/m 10.0 mm ≤ t : 3.0 mm/m (t = nominal thickness)
Length and width (clause 6) - unit mm *Tolerances for cut-to-size panels shall be agreed between Maica and customer.*	- 0 / + 10 mm
Straightness of edges (clause 7) - unit mm/m (max.) *Tolerances for cut-to-size panels shall be agreed between Maica and customer.*	1.5 mm/m
Squareness (clause 8) - unit mm/m (max.) *Tolerances for cut-to-size panels shall be agreed between Maica and customer.*	1.5 mm/m

Product Specification
Based on European Standard EN 438

Property	Test method (EN 438-2: 2005, clause no.)	Property or attribute	Unit (min. or max.)		EN 438 Values HGS
Resistance to Surface Wear	10	Wear Resistance	Revolutions (min.)	Initial point Wear value	150 350
Resistance to Impact by Large Diameter Ball	21	Drop Height [a]	mm (min.) (t = nominal thickness)	2mm ≤ t < 6mm 6mm ≤ t	1400 1800
Resistance to Scratching	25	Force	Rating (min.)	Textured finishes	3
Resistance to Dry Heat (180°C)	16	Appearance	Rating (min.)	Textured finishes	4
Resistance to Wet Heat (100°C)	EN12721	Appearance	Rating (min.)	Textured finishes	4
Resistance to Immersion in Boiling Water	12	Mass increase Thickness Increase Appearance	% (max.) % (max.) (t = nominal thickness) Rating (min.)	2 mm ≤ t < 5 mm t ≥ 5 mm 2 mm ≤ t < 5 mm t ≥ 5 mm Textured finishes	5.0 2.0 6.0 2.0 4
Dimensional Stability at Elevated Temperature	17	Cumulative Dimensional Change	% (max) (t = nominal thickness)	2 mm ≤ t < 5 mm L [b] 2 mm ≤ t < 5 mm T [c] t ≥ 5 mm L t ≥ 5 mm T	0.40 0.80 0.30 0.60
Resistance to Staining	26	Appearance	Rating (min.)	Groups 1& 2 Group 3	5 4
Lightfastness (Xenon Arc)	27	Contrast	Grey scale rating		4 to 5
Resistance to Water Vapour	14	Appearance	Rating (min.)	Textured finishes	4
Resistance to Cigarette Burns	30	Appearance	Rating (min.)		3
Resistance to Crazing	24	Appearance	Grade (min.)		4
Flexural Modulus	EN ISO 178 [d]	Stress	Mpa (min.)		9000
Flexural Strength	EN ISO 178 [d]	Stress	Mpa (min.)		80
Tensile Strength	EN ISO 527 [e]	Stress	Mpa (min.)		60
Density	EN ISO 1183	Density	kg/m3 (min.)		1350

[a] When tested at the specified drop height, the diameter of indentation shall not exceed 10 mm.

[b] L = in the longitudinal (or machine) direction of the fibrous sheet material (normally the direction of the longest dimension of the laminate).

[c] T = in the cross-longitudinal (cross-machine) direction of the fibrous sheet material (at right angles to direction L).

[d] Machine crosshead speed 2 mm/min

[e] Specimen type 1A. Machine crosshead speed 5mm/min

Maica Laminates Sdn Bhd declares that the mentioned product will meet the above specifications when determined according to the given standards.

Maintenance & Cleaning Instructions

General Cleaning Instructions:

1. Use a clean, damp, non-abrasive cloth and mild soap, non-bleach or household cleaner.
2. Rinse with clear water, using a clean, non-abrasive cotton cloth.
3. Avoid flooding laminate particularly areas near to seams to prevent water from seeping in and consequently causing substrate to swell.
4. Dry laminate surface with a soft, clean, non-abrasive cotton cloth.

For Stubborn Stains:

1. Food stains: Use a mild cleaner, detergent or general purpose cleaner, and a short, soft nylon-bristled brush to gently clean stains.
2. Ink stains: Remove stains immediately, using detergent or glass spray cleaner. Allow cleaner to remain on the stain for several minutes and then blot with a damp cloth before rinse.
3. Solvents such as denatured alcohol, nail polish remover or paint thinner can be used sparingly for very stubborn stains.

Caution: Excessive use of solvents will damage the laminate finish and cause it more susceptible to stains. Do not use cleaning agents containing acid, alkaline or sodium hypochlorite on laminate surface to avoid corrosion or permanent discolouration.

To prolong the lifespan of Maica's laminate surface:

- Do not use laminate surface as a cutting or chopping surface.
- Always remove stains or marks immediately before they set. Once set, they require more aggressive cleaning procedures that may damage laminate surface.
- Place a trivet, insulated hot pad or other protective padding beneath all hot cookware, heat generating appliances or other heated objects instead of putting it directly on laminate surface.
- Do not use steel wool or abrasive pads on laminate surface, and do not place steel wools on it to avoid metal rust stains.
- Do not slide ceramics and abrasive objects across laminate surface as they may cause scratch and premature wear.
- Do not use acidic or abrasive cleaning agents on laminate surface as it may damage surface.
- Do not allow contact between any materials or items contaminated with acidic or abrasive cleaning agents and laminate surface.

Disclaimer

- The samples and products of Maica are manufactured with certain tolerances. They may not originate from the same batch of production. Pigment variation and angle of observation may influence the colour of products. For accurate representation, customers are advised to request samples from our Sales Specialists.
- Sample chips in this catalogue are intended for viewing purpose only. For product tests, please request for actual product samples.
- Maica will not be responsible for any claim arising from any errors in pasting sample chips in the catalogue. Therefore, customers are expected to inspect the products they receive before fabrication or installation.
- Maica disclaims its responsibility for any surface defects that are potentially caused by general wear and tear, or placement of any items with base that is prone to cause scratches, discolouration or any impact that alters the nature and the appearance of the surface of the product, due to the materials they are made of.
- All information in this catalogue is correct at the time of printing. However, Maica reserves the rights to make changes to the information in this catalogue without prior notice.
- The liability of Maica for any potential manufacturing faults is limited to the cost of the products only.
- The investigation of Maica for any product claim is deemed final and conclusive.
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International Sales Enquiries

MAICA LAMINATES SDN BHD (107254-D)
5100, Lorong Mak Mandin 5, Mak Mandin Industrial Estate,
13400 Butterworth, Penang, Malaysia.
T : +604 - 332 7436 / 332 7437 / 332 7439 / 332 7440
F : +604 - 332 6570 (Marketing) / 332 4045 (General)
E : marketing@maica.com.my

Sales & Distribution (Malaysia)

maiHotline
T : +6016 - 416 5687 / +604 - 332 7436
E : kringkring@maica.com.my

MAICA CORPORATION SDN BHD (90632-U)
Administration Office, Penang
5100, Lorong Mak Mandin 5, Mak Mandin Industrial Estate,
13400 Butterworth, Penang.
T : +604 - 324 1436 / 324 5436
F : +604 - 324 9405
E : mchq@maicacorp.com

Butterworth, Penang
902, Jalan Bagan Ajam, Taman Zamrud,
13000 Butterworth, Penang.
T : +604 - 332 7200 / 332 7201
F : +604 - 331 8258
E : maicabtw@maicacorp.com

Petaling Jaya, Selangor
No. 25 & 27, Jalan PJS 7/21, Bandar Sunway,
46150 Petaling Jaya, Selangor.
T : +603 - 5631 5868 (Hotline)
F : +603 - 5631 5889 (General) /
+603 - 5638 3213 (Customer Service)
E : maicapj@maicacorp.com

Johor Bahru, Johor
No. 31 & 33, Jalan Mutiara Emas 5/23, Taman Mount Austin,
81100 Johor Bahru, Johor.
T : +607 - 354 0011 / 353 6185
F : +607 - 353 6187 / 351 1905
E : maicajb@maicacorp.com

Kota Kinabalu, Sabah
No. 2A, Lot 22, Industry E33 Likas, Mile 2 1/2, Jalan Tuaran Likas,
88400 Kota Kinabalu, Sabah.
T : +6088 - 278 897 / 278 898
F : +6088 - 278 808
E : maicasbh@maicacorp.com

Kuching, Sarawak
Lot 128 – 130, Vista Industrial Park, Jalan Muara Tabuan,
93350 Kuching, Sarawak.
T : +6082 - 481 012 / 481 013
F : +6082 - 482 009
E : maicaswk@maicacorp.com

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