

# Product Specification

mailInvisible-T

## SECTION 1:

### Product and Company Identification

#### MANUFACTURER:

Maica Laminates Sdn Bhd  
5100, Lorong Mak Mandin 5  
Mak Mandin Industrial Estate  
13400 Butterworth, Penang, Malaysia.

#### MANUFACTURER'S EMERGENCY CONTACT:

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#### PRODUCT DESCRIPTION:

Maica Laminates Sdn Bhd declares that mailInvisible-T (**Maica High Pressure Decorative Invisible-Touch Laminate**) conforms with the specifications of the EN438.

**mailInvisible-T** can be produced as either high pressure laminate (referred to in this document as Thin Laminates) or Compact Laminates.

## SECTION 2:

### Inspection requirements

#### SPECIFICATIONS: GENERAL INSPECTION REQUIREMENTS:

Viewing distance	Approximately 150 cm.
Light conditions	Intensity 800 – 1000 lux over the whole area.
Light type	Overhead white fluorescent lights, of colour temperature approximately 5000 K.

#### SPECIFICATIONS: INSPECTION REQUIREMENTS OF COLOUR, PATTERN AND SURFACE FINISH:

Colour and Pattern	When inspected in daylight or D65 standard illuminant, and under tungsten illuminant, there shall be no significant difference between the corresponding colour or pattern reference sample held by the supplier and the specimen under test.
Surface Finish	When inspected at different viewing angles, there shall be no significant difference between corresponding surface-finish reference sample held by the supplier and the specimen under test.

# Product Specification

mailInvisible-T

## SECTION 2:

### Inspection requirements (continued)

#### SPECIFICATIONS: VISUAL INSPECTION

Dirt, spots and similar surface defects	Max. 1 mm <sup>2</sup> /m <sup>2</sup> and is proportional to the sheet size. Total admissible area of contamination may be concentrated in one spot or dispersed over an unlimited amount of smaller defects.
Fibres, hairs and scratches	Max. 10 mm/m <sup>2</sup> and proportional to the sheet size. Total admissible length of contamination may be concentrated in one defect or dispersed over an unlimited amount of smaller defects.
Edge quality:	
1) Thin laminates - moisture marks, lack of gloss, corner damage	Can be present on all 4 edges of the laminate, provided the defect-free length and width are at least the nominal size minus 20 mm.
2) Compact Laminates – edge chipping	Maximum 3 mm on each side.
Reverse side (for Thin Laminates)	Shall be suitable for adhesive bonding (e.g. sanded). In the case of sanded backs, slight chatter marks are allowed.

#### SPECIFICATIONS: DIMENSIONAL TOLERANCES FOR THIN LAMINATES (thickness < 2.0mm):

Property	Test method (EN 438-2:2005, clause no.)	Unit	Values
Thickness	5	mm (max.)	0.5 mm ≤ t ≤ 1.0 mm : ± 0.10 mm 1.0mm < t < 2.0mm : ± 0.15 mm (t = nominal thickness)
Flatness <sup>a)</sup>	9	mm/m (max.)	60.0 mm/m
Length and Width <sup>b)</sup>	6	mm	- 0 / + 10.0 mm
Straightness of edges <sup>b)</sup>	7	mm/m (max.)	1.5 mm/m
Squareness <sup>b)</sup>	8	mm/m (max.)	1.5 mm/m

- a) Provided the laminates are stored in the manner and conditions recommended by the manufacturer, they shall comply with the flatness requirements specified in the above table when measured in accordance with EN 438-2:2005, Clause 9.
- b) Tolerances for cut-to-size panels shall be agreed between supplier and customer.

# Product Specification

mailInvisible-T

## SECTION 2: Inspection requirements (continued)

### SPECIFICATIONS: DIMENSIONAL TOLERANCES for Compact Laminates (thickness $t \geq 2.0\text{mm}$ ):

Property	Test method (EN 438-2: 2005, clause no.)	Unit	Values
Thickness	5	mm (max.)	$2.0\text{ mm} \leq t < 3.0\text{ mm}$ : $\pm 0.20\text{ mm}$
			$3.0\text{ mm} \leq t < 5.0\text{ mm}$ : $\pm 0.30\text{ mm}$
			$5.0\text{ mm} \leq t < 8.0\text{ mm}$ : $\pm 0.40\text{ mm}$
			$8.0\text{ mm} \leq t < 12.0\text{ mm}$ : $\pm 0.50\text{ mm}$
			$12.0\text{ mm} \leq t < 16.0\text{ mm}$ : $\pm 0.60\text{ mm}$
			$16.0\text{ mm} \leq t < 20.0\text{ mm}$ : $\pm 0.70\text{ mm}$
			$20.0\text{ mm} \leq t < 25.0\text{ mm}$ : $\pm 0.80\text{ mm}$
			$25.0\text{ mm} \leq t$ : to be agreed between supplier and customer. ( $t$ = nominal thickness)
Flatness <sup>a)</sup>	9	mm/m (max.)	$2.0\text{ mm} \leq t < 6.0\text{ mm}$ : 8.0 mm/m
			$6.0\text{ mm} \leq t < 10.0\text{ mm}$ : 5.0 mm/m
			$10.0\text{ mm} \leq t$ : 3.0 mm/m ( $t$ = nominal thickness)
Length and Width <sup>b)</sup>	6	mm	- 0 / + 10.0 mm
Straightness of edges <sup>b)</sup>	7	mm/m (max.)	1.5 mm/m
Squareness <sup>b)</sup>	8	mm/m (max.)	1.5 mm/m

- a) Provided the laminates are stored in the manner and conditions recommended by the manufacturer, they shall comply with the flatness requirements specified in the above table when measured in accordance with EN 438-2:2005, Clause 9. The flatness values specified in the above table apply to laminates with two decorative surfaces. Tolerances for laminates with single decorative surface shall be agreed between supplier and customer.
- b) Tolerances for cut-to-size panels shall be agreed between supplier and customer.

## SECTION 3: Alphabetical Classification System

First letter	H (Horizontal Grade) or V (Vertical Grade) or C (Compact Grade)
Second letter	G (General Purpose)
Third letter	S (Standard Grade)

# Product Specification

## mailInvisible-T

### SECTION 4: mailInvisible-T General Requirements

Property	Test method (EN 438-2: 2005, clause no.)	Property or attribute	Unit (min. or max.)	Thin laminates	Compact laminates
Resistance to Surface Wear	10	Wear resistance	Revolutions (min)		
			Initial point Wear value	150 350	150 350
Resistance to Impact by Small Diameter Ball	20	Spring Force	N (min.)	20	-
Resistance to Impact by Large Diameter Ball	21	Drop Height	mm (min.)		
			$t < 2.0$ mm	800	-
			$2.0$ mm $\leq t < 6.0$ mm	-	1400
			$6.0$ mm $\leq t$	-	1800
			(where t = nominal thickness)		
		Indent Diameter	mm (max.)	10	10
Resistance to immersion in boiling water	12	Appearance	Rating (min) Other finishes	4	4
		Mass Increase	% (max) $2.0$ mm $\leq t < 5.0$ mm $t \geq 5.0$ mm	-	5.0 2.0
		Thickness Increase	% (max) $2.0$ mm $\leq t < 5.0$ mm $t \geq 5.0$ mm	-	6.0 2.0
Resistance to Scratching	25	Force	Rating (min.)	3	3
Dimensional Stability at Elevated Temperature	17	Cumulative Dimensional Change	% (max)		
			$t < 2.0$ mm		
			L <sup>a)</sup>	0.55	-
			T <sup>b)</sup>	1.05	-
			$2.0$ mm $\leq t < 5.0$ mm		
			L <sup>a)</sup>	-	0.40
			T <sup>b)</sup>	-	0.80
			$t \geq 5.0$ mm		
			L <sup>a)</sup>	-	0.30
			T <sup>b)</sup>	-	0.60
Resistance to Dry Heat (180°C)	16	Appearance	Rating (min.) Other Finishes	4	4
Resistance to Wet Heat (100°C)	EN12721:1997	Appearance	Rating (min.) Other Finishes	4	4
Resistance to Staining	26	Appearance	Rating (min.)		
			Group 1 & 2 Group 3	5 4	5 4

# Product Specification

## mailinvisible-T

### SECTION 4:

### mailinvisible-T General Requirements (continued)

Property	Test method (EN 438-2: 2005, clause no.)	Property or attribute	Unit (min. or max.)	Thin laminates	Compact laminates
Resistance to Water Vapour	14	Appearance	Rating (min.) Other Finishes	4	4
Resistance to Cigarette Burns	30	Appearance	Rating (min.)	3	3
Resistance to Cracking under Stress (thin laminate)	23	Appearance	Rating (min.)	4	-
Resistance to crazing (compact laminate)	24	Appearance	Rating (min)	-	4
Light fastness (xenón arc)	27	Contrast	Grey scale rating (min)	4 to 5 <sup>c)</sup>	4 to 5 <sup>c)</sup>
Flexural Modulus <sup>f)</sup> (compact laminate)	EN ISO 178 <sup>d)</sup>	Stress	Mpa (min)	-	9000
Flexural Strength <sup>f)</sup> (compact laminate)	EN ISO 178 <sup>d)</sup>	Stress	Mpa (min)	-	80
Tensile Strength (compact laminate)	EN ISO 527 <sup>e)</sup>	Stress	Mpa (min)	-	60
Density	EN ISO 1183	Density	kg/m <sup>3</sup> (min)	1350	1350

- a) L = in the longitudinal (or machine) direction of the fibrous sheet material (normally the direction of the longest dimension of the laminate).
- b) T = in the cross-longitudinal (cross-machine) direction of the fibrous sheet material (at right angles to direction L).
- c) Extraneous darkening and/or photochromism are due to the shock effect of accelerated exposure and are not characteristics of natural exposure.
- d) Machine crosshead speed : 2 mm/min.
- e) Specimen type 1A : Machine crosshead speed 5 mm/min.
- f) The test results can be affected by the sample handling and by the humidity absorption from the air during the step previous to the conditioning.

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