



美亚夹板有限公司

Besgrade Products Sdn. Bhd. (293019-V)

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Gua Musang Branch

Plot No. 125, 126, 127 & 128, Kawasan Perindustrial Gua Musang, 18300 Gua Musang, Kelantan, Malaysia.


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# Technical Data Sheet Plywood (Performance Characteristic) Malaysian Tropical Medium Light Hardwood

Tested Item Type : 4mm Marine Plywood (3 Plies)  
Glue Type : Water Boil Proof (WBP)

| Plywood Type                     |               | 4mm Marine                                     |                   |
|----------------------------------|---------------|--|-------------------|
| Property                         | Test Method   | Value of Test                                  |                   |
| Species                          | -             | Medium Light Hardwood                          |                   |
| Panel Size                       | -             | 1220mm x 2440mm                                |                   |
| No of Plies                      | -             | 3  |                   |
| Bonding / Adhesive               | -             | WBP (Water-boil Proof) / Phenolic Formaldehyde |                   |
| Moisture Content                 | EN 322        | 11.60 %  |                   |
| Density                          | EN 323        | 752.9 kg/m <sup>3</sup>                        |                   |
| Modulus of Rupture (MOR)         | Parallel      | 46.1   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 50.6   | N/mm <sup>2</sup> |
| Modulus of Elasticity (MOE)      | Parallel      | 7264   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 3661   | N/mm <sup>2</sup> |
| Class Grade                      |               | F30/30 E70/30                                  |                   |
| Bonding Quality (Shear Strength) | EN 314 -1     | Passed Rate = 100%                             | Requirement       |
|                                  | EN 314 -2     |  | ≥ 90%             |

This performance characteristic is according to the standard 13986:2004.

Prepared By:   
(Management Representative)







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# Technical Data Sheet Plywood (Performance Characteristic) Malaysian Tropical Medium Light Hardwood

**Tested Item Type : 6mm Marine Plywood (3 Plies)**  
**Glue Type : Water Boil Proof (WBP)**

| Plywood Type                     |               | 6mm Marine                                     |                   |
|----------------------------------|---------------|--|-------------------|
| Property                         | Test Method   | Value of Test                                  |                   |
| Species                          | -             | Medium Light Hardwood                          |                   |
| Panel Size                       | -             | 1220mm x 2440mm                                |                   |
| No of Plies                      | -             | 3  |                   |
| Bonding / Adhesive               | -             | WBP (Water-boil Proof) / Phenolic Formaldehyde |                   |
| Moisture Content                 | EN 322        | 11.60 %  |                   |
| Density                          | EN 323        | 748 kg/m <sup>3</sup>                          |                   |
| Modulus of Rupture (MOR)         | Parallel      | 13.9   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 23.3   | N/mm <sup>2</sup> |
| Modulus of Elasticity (MOE)      | Parallel      | 3265   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 3197   | N/mm <sup>2</sup> |
| Class Grade                      |               | F5/15 E30/30                                   |                   |
| Bonding Quality (Shear Strength) | EN 314 -1     | Passed Rate = 100%                             | Requirement       |
|                                  | EN 314 -2     |  | ≥ 90%             |

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# Technical Data Sheet Plywood (Performance Characteristic) Malaysian Tropical Medium Light Hardwood

Tested Item Type : 9mm Marine Plywood (5 Plies)  
Glue Type : Water Boil Proof (WBP)

| Plywood Type                     |               | 9mm Marine                                     |                   |
|----------------------------------|---------------|--|-------------------|
| Property                         | Test Method   | Value of Test                                  |                   |
| Species                          | -             | Medium Light Hardwood                          |                   |
| Panel Size                       | -             | 1220mm x 2440mm                                |                   |
| No of Plies                      | -             | 5  |                   |
| Bonding / Adhesive               | -             | WBP (Water-boil Proof) / Phenolic Formaldehyde |                   |
| Moisture Content                 | EN 322        | 11.50 %  |                   |
| Density                          | EN 323        | 755 kg/m <sup>3</sup>                          |                   |
| Modulus of Rupture (MOR)         | Parallel      | 41.78  | N/mm <sup>2</sup> |
|                                  | Perpendicular | 68.04  | N/mm <sup>2</sup> |
| Modulus of Elasticity (MOE)      | Parallel      | 4824   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 8861   | N/mm <sup>2</sup> |
| Class Grade                      |               | F25/40 E40/80                                  |                   |
| Bonding Quality (Shear Strength) | EN 314 -1     | Passed Rate = 100%                             | Requirement       |
|                                  | EN 314 -2     |  | ≥ 90%             |

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# Technical Data Sheet Plywood (Performance Characteristic) Malaysian Tropical Medium Light Hardwood

**Tested Item Type : 12mm Marine Plywood (7 Plies)**  
**Glue Type : Water Boil Proof (WBP)**

| Plywood Type                     |               | 12mm Marine                                    |                   |
|----------------------------------|---------------|--|-------------------|
| Property                         | Test Method   | Value of Test                                  |                   |
| Species                          | -             | Medium Light Hardwood                          |                   |
| Panel Size                       | -             | 1220mm x 2440mm                                |                   |
| No of Plies                      | -             | 7  |                   |
| Bonding / Adhesive               | -             | WBP (Water-boil Proof) / Phenolic Formaldehyde |                   |
| Moisture Content                 | EN 322        | 11.50 %  |                   |
| Density                          | EN 323        | 733 kg/m <sup>3</sup>                          |                   |
| Modulus of Rupture (MOR)         | Parallel      | 44.2   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 56.0   | N/mm <sup>2</sup> |
| Modulus of Elasticity (MOE)      | Parallel      | 4256   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 6320   | N/mm <sup>2</sup> |
| Class Grade                      |               | F25/30 E40/60                                  |                   |
| Bonding Quality (Shear Strength) | EN 314 -1     | Passed Rate = 100%                             | Requirement       |
|                                  | EN 314 -2     |  | ≥ 90%             |

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# Technical Data Sheet Plywood (Performance Characteristic) Malaysian Tropical Medium Light Hardwood

Tested Item Type : 15mm Marine Plywood (7 Plies)  
Glue Type : Water Boil Proof (WBP)

| Plywood Type                     |               | 15mm Marine                                    |                   |
|----------------------------------|---------------|--|-------------------|
| Property                         | Test Method   | Value of Test                                  |                   |
| Species                          | -             | Medium Light Hardwood                          |                   |
| Panel Size                       | -             | 1220mm x 2440mm                                |                   |
| No of Plies                      | -             | 7  |                   |
| Bonding / Adhesive               | -             | WBP (Water-boil Proof) / Phenolic Formaldehyde |                   |
| Moisture Content                 | EN 322        | 11.40 %  |                   |
| Density                          | EN 323        | 766 kg/m <sup>3</sup>                          |                   |
| Modulus of Rupture (MOR)         | Parallel      | 44.5   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 53.0   | N/mm <sup>2</sup> |
| Modulus of Elasticity (MOE)      | Parallel      | 3509   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 6455   | N/mm <sup>2</sup> |
| Class Grade                      |               | F25/30 E30/60                                  |                   |
| Bonding Quality (Shear Strength) | EN 314 -1     | Passed Rate = 100%                             | Requirement       |
|                                  | EN 314 -2     |  | ≥ 90%             |

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# Technical Data Sheet Plywood (Performance Characteristic) Malaysian Tropical Medium Light Hardwood

**Tested Item Type : 18mm Marine Plywood (9 Plies)**  
**Glue Type : Water Boil Proof (WBP)**

| Plywood Type                     |               | 18mm Marine                                    |                        |
|----------------------------------|---------------|--|------------------------|
| Property                         | Test Method   | Value of Test                                  |                        |
| Species                          | -             | Medium Light Hardwood                          |                        |
| Panel Size                       | -             | 1220mm x 2440mm                                |                        |
| No of Plies                      | -             | 9  |                        |
| Bonding / Adhesive               | -             | WBP (Water-boil Proof) / Phenolic Formaldehyde |                        |
| Moisture Content                 | EN 322        | 11.50 %  |                        |
| Density                          | EN 323        | 782 kg/m <sup>3</sup>                          |                        |
| Modulus of Rupture (MOR)         | Parallel      | EN 310   | 38.3 N/mm <sup>2</sup> |
|                                  | Perpendicular |  | 60.6 N/mm <sup>2</sup> |
| Modulus of Elasticity (MOE)      | Parallel      |  | 5067 N/mm <sup>2</sup> |
|                                  | Perpendicular |  | 7962 N/mm <sup>2</sup> |
| Class Grade                      |               | F25/40 E50/70                                  |                        |
| Bonding Quality (Shear Strength) | EN 314 -1     | Passed Rate = 100%                             | Requirement            |
|                                  | EN 314 -2     |  | ≥ 90%                  |

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# Technical Data Sheet Plywood (Performance Characteristic) Malaysian Tropical Medium Light Hardwood

**Tested Item Type : 22mm Marine Plywood (11 Plies)**  
**Glue Type : Water Boil Proof (WBP)**

| Plywood Type                     |               | 22mm Marine                                    |                   |
|----------------------------------|---------------|--|-------------------|
| Property                         | Test Method   | Value of Test                                  |                   |
| Species                          | -             | Medium Light Hardwood                          |                   |
| Panel Size                       | -             | 1220mm x 2440mm                                |                   |
| No of Plies                      | -             | 11   |                   |
| Bonding / Adhesive               | -             | WBP (Water-boil Proof) / Phenolic Formaldehyde |                   |
| Moisture Content                 | EN 322        | 11.70 %  |                   |
| Density                          | EN 323        | 739 kg/m <sup>3</sup>                          |                   |
| Modulus of Rupture (MOR)         | Parallel      | 39.9   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 46.1   | N/mm <sup>2</sup> |
| Modulus of Elasticity (MOE)      | Parallel      | 6318   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 8307   | N/mm <sup>2</sup> |
| Class Grade                      |               | F25/30 E60/80                                  |                   |
| Bonding Quality (Shear Strength) | EN 314 -1     | Passed Rate = 100%                             | Requirement       |
|                                  | EN 314 -2     |  | ≥ 90%             |

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# Technical Data Sheet Plywood (Performance Characteristic) Malaysian Tropical Medium Light Hardwood

**Tested Item Type : 25mm Marine Plywood (11 Plies)**  
**Glue Type : Water Boil Proof (WBP)**

| Plywood Type                     |               | 25mm Marine                                    |                   |
|----------------------------------|---------------|--|-------------------|
| Property                         | Test Method   | Value of Test                                  |                   |
| Species                          | -             | Medium Light Hardwood                          |                   |
| Panel Size                       | -             | 1220mm x 2440mm                                |                   |
| No of Plies                      | -             | 11   |                   |
| Bonding / Adhesive               | -             | WBP (Water-boil Proof) / Phenolic Formaldehyde |                   |
| Moisture Content                 | EN 322        | 11.70 %  |                   |
| Density                          | EN 323        | 739 kg/m <sup>3</sup>                          |                   |
| Modulus of Rupture (MOR)         | Parallel      | 30.5   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 30.1   | N/mm <sup>2</sup> |
| Modulus of Elasticity (MOE)      | Parallel      | 5997   | N/mm <sup>2</sup> |
|                                  | Perpendicular | 5968   | N/mm <sup>2</sup> |
| Class Grade                      |               | F20/20 E50/50                                  |                   |
| Bonding Quality (Shear Strength) | EN 314 -1     | Passed Rate = 100%                             | Requirement       |
|                                  | EN 314 -2     |  | ≥ 90%             |

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