## MARVEL

<table>
<thead>
<tr>
<th>Size</th>
<th>120x270 cm</th>
<th>120x240 cm</th>
<th>75x155 cm</th>
<th>120x120 cm</th>
<th>45x80 cm</th>
<th>75x75 cm</th>
<th>36x60 cm</th>
<th>36x60 cm</th>
</tr>
</thead>
<tbody>
<tr>
<td>47 1/4&quot;x103 1/2&quot;</td>
<td>5.5mm</td>
<td>47 1/4&quot;x94 1/2&quot;</td>
<td>5.5mm</td>
<td>47 1/4&quot;x94 1/2&quot;</td>
<td>5.5mm</td>
<td>39 1/2&quot;x25 1/2&quot;</td>
<td>5.5mm</td>
<td>39 1/2&quot;x25 1/2&quot;</td>
</tr>
</tbody>
</table>

### Caratteristiche Tecniche

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Method of Test</th>
<th>Test Method</th>
<th>Requisite per dimensione normativa N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length and width</td>
<td>IS 10545-6</td>
<td>± 15 mm</td>
<td>±0.05 mm</td>
</tr>
<tr>
<td>Thickness</td>
<td>IS 10545-8</td>
<td>± 0.5 mm</td>
<td>±0.05 mm</td>
</tr>
<tr>
<td>Straightness of sides</td>
<td>IS 10545-2</td>
<td>± 0.75 mm</td>
<td>±0.075 mm</td>
</tr>
<tr>
<td>Rectangularity (Measurement only on short edges when L &gt; 3)</td>
<td>ISO 10545-2</td>
<td>≤ 0.5%</td>
<td>≤ 0.5%</td>
</tr>
<tr>
<td>Surface flatness</td>
<td>IS 10545-5</td>
<td>≤ 15 mm/m²</td>
<td>≤ 0.5%</td>
</tr>
<tr>
<td>Moisture absorption (mass %)</td>
<td>IS 10545-5</td>
<td>≤ 0.5%</td>
<td>≤ 0.5%</td>
</tr>
<tr>
<td>Water absorption level (mass %)</td>
<td>IS 10545-5</td>
<td>≤ 3%</td>
<td>≤ 3%</td>
</tr>
<tr>
<td>Breaking strength</td>
<td>IS 10545-4</td>
<td>≤ 350 N/mm²</td>
<td>≤ 350 N/mm²</td>
</tr>
<tr>
<td>Modulus of Rupture</td>
<td>IS 10545-4</td>
<td>≤ 35 N/mm²</td>
<td>≤ 35 N/mm²</td>
</tr>
<tr>
<td>Flexural strength</td>
<td>IS 10545-4</td>
<td>≤ 3000 N/m²</td>
<td>≤ 3000 N/m²</td>
</tr>
<tr>
<td>Thermal shock resistance</td>
<td>IS 10545-4</td>
<td>≥ 2000 N/m²</td>
<td>≥ 2000 N/m²</td>
</tr>
<tr>
<td>Thermal shock resistance (temperature)</td>
<td>IS 10545-4</td>
<td>≥ 0.5%</td>
<td>≥ 0.5%</td>
</tr>
<tr>
<td>Dilatation of water retention (mm/mm)</td>
<td>IS 10545-10</td>
<td>≤ 0.075 mm/m²</td>
<td>≤ 0.075 mm/m²</td>
</tr>
<tr>
<td>Frost resistance</td>
<td>IS 10545-12</td>
<td>≤ 0.5%</td>
<td>≤ 0.5%</td>
</tr>
<tr>
<td>Bond Strength</td>
<td>IS 10545-6</td>
<td>175 mm³</td>
<td>175 mm³</td>
</tr>
<tr>
<td>Reaction to fire</td>
<td>IS 10545-6</td>
<td>A1 - A1</td>
<td>A1 - A1</td>
</tr>
<tr>
<td>Resistance to household chemicals and swimming pool salts</td>
<td>ISO 10545-13</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td>Resistance to low concentrations of acids and alkalis</td>
<td>ISO 10545-13</td>
<td>LA</td>
<td>LA</td>
</tr>
<tr>
<td>Resistance to high concentrations of acids and alkalis</td>
<td>ISO 10545-13</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td>Resistance to staining for glazed tiles</td>
<td>ISO 10545-14</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Pendulum Friction Test</td>
<td>Pendulum Friction Test</td>
<td>≤ 36 Dry / 24 Wet</td>
<td>≤ 36 Dry / 24 Wet</td>
</tr>
<tr>
<td>Dynamic Coefficient of friction</td>
<td>Dynamic Coefficient of friction (DCOF)</td>
<td>≤ 0.49 Wet</td>
<td>≤ 0.49 Wet</td>
</tr>
</tbody>
</table>

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### Safety characteristics

- **BS 7976**: Pendulum Friction Test
- **AC 4366**: Dynamic Coefficient of friction (DCOF)
- **ANSI A137.1**: Dynamic Coefficient of friction (DCOF)
- **I.C.E.C. 081**: Coefficient of friction (COF)

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### Regulatory features

- **ISO 10545-5**: Water absorption level (mass %)
- **ISO 10545-8**: Moisture absorption (mass %)
- **ISO 10545-4**: Breaking strength
- **ISO 10545-6**: Modulus of Rupture
- **ISO 10545-10**: Dilatation of water retention
- **ISO 10545-12**: Frost resistance
- **EN 138 Annex F**: Resistance a flaccide al Carico di Ristora
- **EN 10545-9**: Thermal shock resistance

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### Chemical features

- **ISO 10545-13**: Resistance to household chemicals and swimming pool salts
- **ISO 10545-13**: Resistance to low concentrations of acids and alkalis
- **ISO 10545-13**: Resistance to high concentrations of acids and alkalis
- **ISO 10545-14**: Resistance to staining for glazed tiles

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### Physical properties

- **EN 1348**: Reaction to fire
- **EN 1130**: Bond strength
- **DIN 51130**: Pendulum Friction Test
- **DIN 51097**: Dynamic Coefficient of friction (DCOF)
- **BS 7976**: Pendulum Friction Test
- **AC 4366**: Dynamic Coefficient of friction (DCOF)

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### Conformity with standards

- **ISO 10545-1**: Pendulum Friction Test
- **ISO 10545-2**: Dynamic Coefficient of friction (DCOF)
- **ISO 10545-3**: Water absorption level (mass %)
- **ISO 10545-5**: Moisture absorption (mass %)
- **ISO 10545-6**: Modulus of Rupture
- **ISO 10545-10**: Dilatation of water retention
- **ISO 10545-12**: Frost resistance
- **EN 138**: Resistance a flaccide al Carico di Ristora
- **EN 10545-9**: Thermal shock resistance

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### Additional information

- **ISO 10545-10**: Modulus of Rupture
- **ISO 10545-12**: Frost resistance
- **EN 138**: Resistance a flaccide al Carico di Ristora
- **EN 10545-9**: Thermal shock resistance
- **ISO 10545-10**: Dilatation of water retention
- **ISO 10545-12**: Frost resistance
- **BS 7976**: Pendulum Friction Test
- **AC 4366**: Dynamic Coefficient of friction (DCOF)
- **DIN 51130**: Pendulum Friction Test
- **DIN 51097**: Dynamic Coefficient of friction (DCOF)

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### Compliance with norms

- **ISO 10545-1**: Pendulum Friction Test
- **ISO 10545-2**: Dynamic Coefficient of friction (DCOF)
- **ISO 10545-3**: Water absorption level (mass %)
- **ISO 10545-5**: Moisture absorption (mass %)
- **ISO 10545-6**: Modulus of Rupture
- **ISO 10545-10**: Dilatation of water retention
- **ISO 10545-12**: Frost resistance
- **EN 138**: Resistance a flaccide al Carico di Ristora
- **EN 10545-9**: Thermal shock resistance

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### Additional data

- **BS 7976**: Pendulum Friction Test
- **AC 4366**: Dynamic Coefficient of friction (DCOF)
- **DIN 51130**: Pendulum Friction Test
- **BS 7976**: Pendulum Friction Test
- **AC 4366**: Dynamic Coefficient of friction (DCOF)
**Deviazione ammissibile, in % oppure mm, della dimensione media di ogni piastrella (2 oppure 4 lati) dalla dimensione di fabbricazione (W).**

The permissible deviation, in % or mm, of the average size for each tile (2 or 4 sides) from work size (W).

**Deviazione ammissibile, in % oppure mm, dello spessore medio di ogni piastrella dallo spessore riportato nella dimensione di fabbricazione (W).**

The permissible deviation, in % or mm, of the average thickness for each tile from the work size thickness (W).

***Deviazione massima ammissibile di rettilineità, in % oppure mm, in rapporto alle dimensione di fabbricazione (W) corrispondenti.***

The maximum permissible deviation of straightness, in % or mm, related to the corresponding work sizes (W).

****Deviazione massima ammissibile di ortogonalità, in % oppure mm, in rapporto alle dimensione di fabbricazione (W) corrispondenti.***

The maximum permissible deviation from rectangularity, in % or mm, related to the corresponding work sizes (W).

c.c. Deviazione massima ammissibile della curvatura del centro, in % oppure mm, in rapporto alla diagonale calcolata secondo le dimensioni di fabbricazione (W).**

The maximum permissible deviation from centre curvature, in % or mm, related to diagonal calculated from the work sizes (W).

e.c. Deviazione massima ammissibile della curvatura dello spigolo, in % oppure mm, in rapporto alle dimensioni di fabbricazione (W) corrispondenti.***

The maximum permissible deviation from edge curvature, in % or mm, related to the corresponding work sizes (W).

w. Deviazione massima ammissibile dello svergolamento, in % oppure mm, in rapporto alla diagonale calcolata secondo le dimensioni di fabbricazione (W).**

The maximum permissible deviation from warpage, in % or mm, related to diagonal calculated from the work sizes (W).

(1) Determinazione della resistenza allo scivolamento delle superfici pedonabili; non si applica alle pavimentazioni sportive ed alle pavimentazioni stradali veicolari.

Determination of slip resistance of pedestrian surfaces; it does not cover sports surfaces and road surfaces for vehicles (skid resistance).

(2) Le prestazioni anti-slip vengono garantite al momento della consegna del prodotto.

Anti-slip performance is guaranteed at the time of delivery of the product.

(3) However, tiles with a DCOF of 0.42 or greater are not necessarily suitable for all projects.

The specifier shall determine tiles appropriate for specific project conditions, considering by way of example, but not in limitation, type of use, traffic, expected contaminants, expected maintenance, expected wear, and manufacturers’ guidelines and recommendations.

(4) For further details, please refer to outdoor design general catalogue.

(5) Only for products with 20 mm thickness.

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