### SURFACE ROUGHNESS BY DIFFERENT PROCESSING METHODS

#### Technical Data

<table>
<thead>
<tr>
<th>Arithmetic average roughness Ra</th>
<th>0.005</th>
<th>0.01</th>
<th>0.025</th>
<th>0.05</th>
<th>0.1</th>
<th>0.2</th>
<th>0.4</th>
<th>0.6</th>
<th>1.0</th>
<th>2.5</th>
<th>5.0</th>
<th>10.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>Me. Height Roughness</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
<td>≤ 5</td>
</tr>
<tr>
<td>Standard of maximum height roughness</td>
<td>0.25</td>
<td>0.50</td>
<td>1.0</td>
<td>2.0</td>
<td>5.0</td>
<td>10.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

#### Meating Value to methods

- Forging
- Die casting
- Machining
- Surface honing
- Chemical polishing
- Electroplating

#### Surface roughness tolerance

- **Functionality tolerance**
  - The tolerance range is the area between two parallel planes separated by distance "t".
- **Accuracy tolerance**
  - The tolerance range is the area within a cylinder of diameter "0.05" or '0.1'.
- **Positional tolerance**
  - The tolerance range is the area contained within a circle of diameter "0.05" or '0.1'.
- **Symmetry tolerance**
  - The tolerance range is the area contained within a circle of diameter "0.05" or '0.1'.
- **Total run-out tolerance**
  - The tolerance range is the area contained within a circle of diameter "0.05" or '0.1'.

#### Symbols and definitions of geometrical tolerances

- **Straightness tolerance**
  - The tolerance range is the area contained within a cylinder of diameter "0.05" or '0.1'.
- **Circularity tolerance**
  - The tolerance range is the area contained within a circle of diameter "0.05" or '0.1'.
- **Cylindricity tolerance**
  - The tolerance range is the area contained within a circle of diameter "0.05" or '0.1'.
- **Profile tolerance of surface**
  - The tolerance range is the area contained within a cylinder of diameter "0.05" or '0.1'.
- **Profile tolerance of line**
  - The tolerance range is the area contained within a cylinder of diameter "0.05" or '0.1'.
- **Parallelism tolerance**
  - The tolerance range is the area contained within a cylinder of diameter "0.05" or '0.1'.
- **Perpendicularity tolerance**
  - The tolerance range is the area contained within a cylinder of diameter "0.05" or '0.1'.
- **Angularity tolerance**
  - The tolerance range is the area contained within a cylinder of diameter "0.05" or '0.1'.
- **Positional angularity**
  - The tolerance range is the area contained within a cylinder of diameter "0.05" or '0.1'.
- **Dual axis angularity**
  - The tolerance range is the area contained within a cylinder of diameter "0.05" or '0.1'.
- **Total run-out**
  - The tolerance range is the area contained within a cylinder of diameter "0.05" or '0.1'.

### Types of geometrical tolerances

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