Rotational Molding

PL ET 370

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Rotational Molding

- Current Areas of Use
  - Large Tanks
  - Trash Containers
  - Kayaks
  - Toys
  - Large Housings

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Slide 4

Rotational Molding
- Powdered Resin
- 4 Stage Process
  - Load Resin
  - Heat Mold
  - Cool Mold
  - Unload

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Rotational Molding
- Mold Rotation
  - Axis Speeds MUST be Different
  - Cannot be multiples of each other
    - Common Ratio 3:1
  - Low Speeds
    - Less than 60 rpm

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Rotational Molding
- Advantages
  - Inexpensive Tooling
  - Lower Part Cost
  - Irregular Surfaces Easily Molded
  - Low Stress Parts
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Rotational Molding

- Advantages
  - Relatively Uniform Wall Thickness
  - Good Surface Finish
  - Double Wall Construction

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Rotational Molding

- Disadvantages
  - Extremely High Cycle Time
  - Limited Materials
  - Secondary Operations

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Rotational Molding

- Disadvantages
  - Warpage of Flat Walls
  - Low Tolerance
Rotational Molding

- Common Problems Associated with Processing
- Thick Spots in Inside Corners
- Warpage on Flat Surfaces

Rotational Molding

- Radii

<table>
<thead>
<tr>
<th>Material</th>
<th>Ideal</th>
<th>Minimum</th>
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<tbody>
<tr>
<td>Polyethylene</td>
<td>0.500</td>
<td>0.250</td>
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<tr>
<td>PVC</td>
<td>0.375</td>
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<tr>
<td>Nylon</td>
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<td>0.500</td>
</tr>
<tr>
<td>Polycarbonate</td>
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<td>0.750</td>
</tr>
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</table>

NOT GOOD

GOOD
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Rotational Molding

- Ribs

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Rotational Molding

- Wall Separation

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Rotational Molding

- Corner Angle Limits
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Rotational Molding

- New Technology
- Energy Alternatives
- CAE Analysis
- In Mold Decoration

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Rotational Molding

- Molds
  - Cast Aluminum
  - Sheet-Metal
  - Aluminum
  - Steel - Stainless Steel
  - Machined Metal