



Plaster Mold Casting Design Guidelines – U.S. and Metric

Size

- Can produce parts larger than 40 inches and smaller than 1 inch

Metals

- Aluminum: 356 and most other casting alloys
- Zinc: ZA12 and other Zamac alloys
- Magnesium alloys

Draft

- Draft should be 0° to 2° on average
- Slots and rings: 3° to 5° draft wherever possible
- Straight walls are possible if necessary
- Maximum draft should be allowed whenever possible

General Tolerances for Design

| Size | Machined Tooling | SLA Derived RP Tooling |
|--|----------------------------------|----------------------------------|
| First 2 inches <i>(First 4 cm)</i> | ± .005 inch <i>(± .10 mm)</i> | ± .015 inch <i>(± .30 mm)</i> |
| Each additional inch <i>(Each additional cm)</i> | ± .001 inch <i>(± .01 mm)</i> | ± .003 inch <i>(± .35 mm)</i> |
| Size | Across Parting Line | Flatness & Straightness |
| Up to 8 inches <i>(Up to 150 mm)</i> | ± .010 inch <i>(± .20 mm)</i> | ± .010 inch <i>(± .25 mm)</i> |
| 8 to 15 inches <i>(150 to 250 mm)</i> | ± .015 inch <i>(± .30 mm)</i> | ± .020 inch <i>(± .50 mm)</i> |
| Over 15 inches <i>(Over 250 mm)</i> | ± .030 inch <i>(± .80 mm)</i> | ± .030 inch <i>(± .80 mm)</i> |

- Generally, tolerances adhere to NADCA standards.
- Many tolerances can be improved up to ± .001 inch (*± .025 mm per 2.5 cm*) for special applications.
- Actual expected tolerances are dependent upon specific part geometry and should be discussed with Ultracast's engineering department.