

## Micro Molding Guidelines



### Micro-Mold® Platform

- Parts up to 1/2" (13 mm) in the largest dimension
- Our smallest part to date is roughly 800  $\mu\text{m}$  (0.031") x 300  $\mu\text{m}$  (0.012") x 380  $\mu\text{m}$  (0.015")
- Thin wall section <.004" (.1 mm)
- Feature aspect ratios around 6:1 or higher
- Part volume .005 in<sup>3</sup> (.08 cm<sup>3</sup>) or less
- Gate size as small as Ø .004" (.01mm)
- Ejector pins as small as Ø .010" (.0254 mm)

#### Note:

- Parts must have a gate and ejection location consideration.
- Material selection can greatly affect the fill and definition of features.

### Small Mold Platform

- Parts up to 9 in<sup>2</sup> (58 cm<sup>2</sup>)
- Our largest part to date is roughly 3.5" (9 cm) in diameter or about 1oz in shot weight.

#### Note:

- Many of the same Micro-Mold® type features can be achieved.
- Material selection on larger parts with finer details is more critical.

### Insert / Lead Frame Platform

- Parts up to 9 in<sup>2</sup> (58 cm<sup>2</sup>)
- Overmold metals, glass, foil, fabric, ceramic flex-circuits, film, other plastics
- Insert material can be as thin as 50  $\mu\text{m}$  (.002")

#### Note:

- Many of the same Micro-Mold® type features can be achieved.
- Material selection on larger parts with finer details is more critical.

### Common Thermoplastics

- PEEK, Ultem®/Extem®, LCP, PC, Nylons
- TPE / TPU
- Filled materials: glass, carbon, etc.
- Optical Grade
- Medical Grade
- Attenuated Material

These micro molding guidelines reflect some of the capabilities we've been asked to produce and are to give a general idea of what can be accomplished. Each project is unique in size, shape and material and any one of those can greatly affect the molding capabilities. In some cases it can even exceed the general guide.

See how you can challenge us!



1711 SE Oralabor Road  
Ankeny, IA 50021 USA

+1 515-964-5741

[www.accu-mold.com](http://www.accu-mold.com)



**MICRO**  
**SOLUTIONS**  
**FOR BIG**  
**INNOVATIONS™**

FDA Compliant Site  
ISO 13485  
ISO 9001  
ISO14001



[www.accu-mold.com](http://www.accu-mold.com)



#### WORLD-CLASS FACILITIES



Ankeny, IA USA

Accumold was founded in 1985 with a single focus, to mold very small parts that other companies could not produce. The same mission continues to drive us today. Our expertise in micro-molding, and our commitment to innovation is centered on producing your critical components accurately, cost-effectively, and in a timely fashion. You often demand micron tolerances, intricate geometries, and extremely small features. Our experience and capabilities in these areas are what make us the **World Leaders in Micro-Mold® Manufacturing Solutions**.

## Capabilities

Micro-Mold® parts from about 13 mm (0.5") and smaller.

Small Mold parts up to about 9 cm (3.5") in diameter.

## Expertise

Lead Frame  
Insert/ Overmolding  
Microfluidics  
Thin-Wall Molding

2-Shot Micro Molding  
Micro Optics  
Use of Engineering Grade Resins  
-PEEK, Ultem®/Extem®, LCP, PC, Nylon

## Additional Services

- » Custom Automation & Packaging
- » Clean Room Molding (Class 7 & Class 8)
- » High- Volume Manufacturing (100+ million)
- » Secondary Operations & Light-Assembly
- » Micro 3D Printing

## Key Markets Served

Medical Device  
Micro Optics  
Emerging Technologies

Micro Electronics  
Automotive Electronics

#### INSERT MOLDING



#### HIGH-VELOCITY MANUFACTURING



#### DELICATE MEDIA OVERMOLDING



#### MICRO OPTICS



#### DfMM™ EXPERTS



**Design for Micro Molding (DfMM™)** is a fundamental consideration, as the rules of the game are so different when designing miniature parts or parts with very precise elements and tight tolerances.

Our engineering team works closely with your design engineers to improve and determine manufacturability. Detailed design reviews with your team ensures expectations are met for the final piece part.

Each micro molding project is unique in terms of geometric complexity, shape, and can be made in a wide range of materials, all of which will ultimately affect the ability to manufacture.

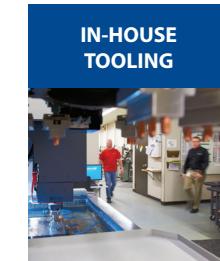
Dimensionally at Accumold we can accommodate:

- The smallest part to date is 800 µm x 300 µm x 380 µm (0.031" x 0.012" x 0.015").
- Thin wall sections (< 100 µm / 0.004" - highly material dependent).
- Gates can be as small as 100 µm (0.004")
- Ejector pins can be as small as 250 µm (0.010")

It is vital to have an understanding of how shrink rates will affect the part, and to be cognizant of parting line mismatch. This may seem like a lot of rules, but we work with you as a product development partner early in the design cycle to ensure optimized results.

Choice of materials can also have a dramatic influence on DfMM™. When micro molding, mission-critical components often require exotic or highly engineered compounds. Soft durometer or elastomeric resins are also prominent. Direct experience with these materials in the context of micro molding is another part of valuable know-how needed to maximize the performance of the resin/part design combination and to ensure successful DfMM™.

## Services Offered



#### IN-HOUSE TOOLING

**In-House Tooling & Mold Building:** Great tools make great parts. Being truly vertically integrated with tool design and build in-house is a must in order to control this delicate process from the start to finish. Cross-functional teams work to build tools that are capable of molding production ready parts that are right first time. Our dedicated in-house maintenance team is also crucial to keep our production running like clockwork.

**Automation & Packaging:** Molding micron sized parts is impressive, but conveying and packaging them is no small feat. Understanding fit, form and function, our team develops entire systems to protect and deliver quality parts to your specifications. Our automation team is devoted to designing and developing bespoke solutions just for you.

**24/7 Production, Tooling & Quality Inspection:** Our team of experts meet around the clock to keep up with the demand in production and tooling. Our customers from across the world require high-quality parts, quick turn-around and constant communication no matter where they may be. At Accumold fulfilling this demand has become a way of life.



#### 24/7 PRODUCTION

## Technical Highlights

- » Accumold builds high-speed, automated micro manufacturing cells with in-line inspection and packaging.
- » Accumold can measure the surface finish and surface profiles with our in-house white-light interferometers.
- » Our state-of-the-art Quality Department uses laser and optical metrology with sub-micron accuracy.

**Contact us** today or visit our web site to learn more about how Accumold can help you on your next project.

[www.accu-mold.com](http://www.accu-mold.com)  
+1 515-964-5741