

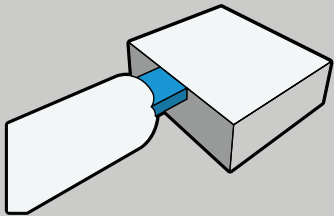
# Gate types and guidelines for injection molding

Selecting the right gate often involves equal parts experience and intuition. Simulation brings speed and clarity to the process. It enables mold engineers to quickly compare the advantages of these and many other gate styles as well as optimize gate dimensions once the right choice is clear.

## Manual Trim

Requires an operator to separate parts from runners.

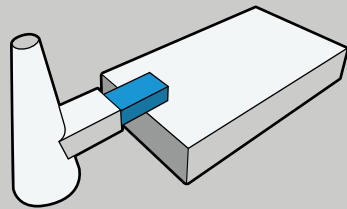
### 1. Edge



Used for large surfaces and thin walls

- Located on the parting line, typically with a rectangular cross section
- Fills from the side, top, or bottom
- Thickness: 50 to 80% of wall thickness
- Land: 0.5 to 1.5 mm
- Width: 200 to 400% of land

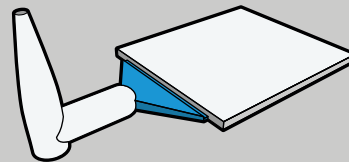
### 2. Overlap



Helps eliminate the risk of jetting

- Similar to an edge gate but overlaps the part wall surface
- Thickness: 0.4 to 6.4 mm
- Width: 1.6 to 12.7 mm

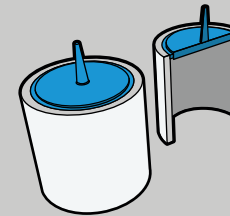
### 3. Fan



Controls warpage and dimensional stability

- Promotes a uniform flow front into wide parts to reduce stress and improve orientation
- Thickness: 50 to 70% of wall thickness
- Land: 100 to 150% of gate thickness
- Body: 100% of wall thickness
- Width: 200% of runner diameter (minimum)

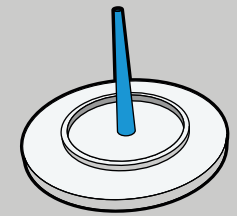
### 4. Diaphragm



Preserves concentricity and eliminates weld lines

- Ideal for cylindrical parts with an open inside diameter
- Thickness: 50 to 70% of wall thickness
- Land: 0.5 to 1 mm
- Body: 125% of wall thickness

### 5. Sprue



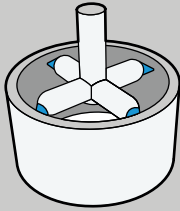
Simplest, oldest gate style

- Circular cross-section, slightly tapered, merges into the part with its largest cross-section
- Commonly used on single cavity molds
- Inlet diameter:  $\sim 1/32$ " or 1 mm larger than nozzle orifice
- Taper: 1 to 4°
- Outlet: larger in diameter than wall thickness

## Automatic Trim

Uses features in the tool to shear off the gate during ejection.

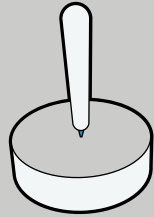
### 6. Spoke/Spider



Perfect for  
tube-shaped parts

- Easy de-gating but produces weld lines between gates
- Thickness: 0.8 to 4.8 mm
- Width: 1.6 to 6.4 mm
- Diameter: 30 to 70% of wall thickness
- Taper: 10 to 30°

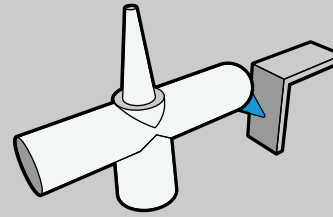
### 7. Pin



Used in  
three-plate molds

- Facilitates symmetric filling
- Reduces long flow paths to ensure packing in all part areas
- Must be small enough to be torn away without damaging the surface
- Diameter: 40 to 50% of wall thickness
- Land: 0.5 to 1 mm

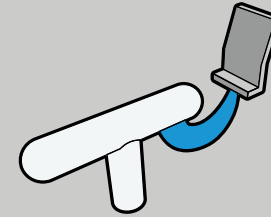
### 8. Tunnel



Specified for  
cylindrical parts

- Cone-shaped gate also called a submarine gate
- Angled, tapered tunnel machined from the end of the runner to the cavity
- Multiple tunnel gates into interior walls can replace a diaphragm gate
- Diameter: 30 to 70% of wall thickness
- Taper: 10 to 30°

### 9. Cashew



Reaches very  
difficult areas

- Curved to reach areas that can't be reached by standard tunnel gates
- Material must have good ductility due to the distortion required for ejection
- Diameter: 30 to 70% of wall thickness
- Taper: 10 to 30°

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