



Overmolding

Webinar Series | June 6, 2018 | 1:00 pm EDT



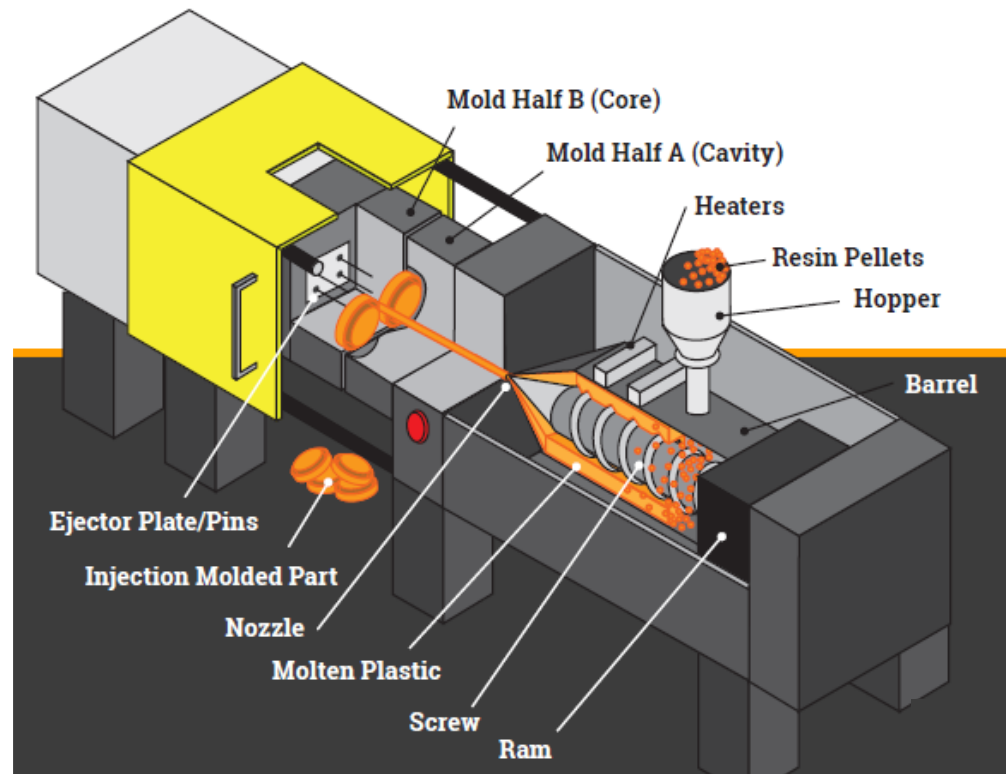
Agenda

- Injection Molding
- What is Overmolding
- Complex Overmold Examples
- Feature Specifications
- Material Evaluation
- Substrate Inefficiencies
- Surface Finishes
- File Preparation

Injection Molding Selection Criteria

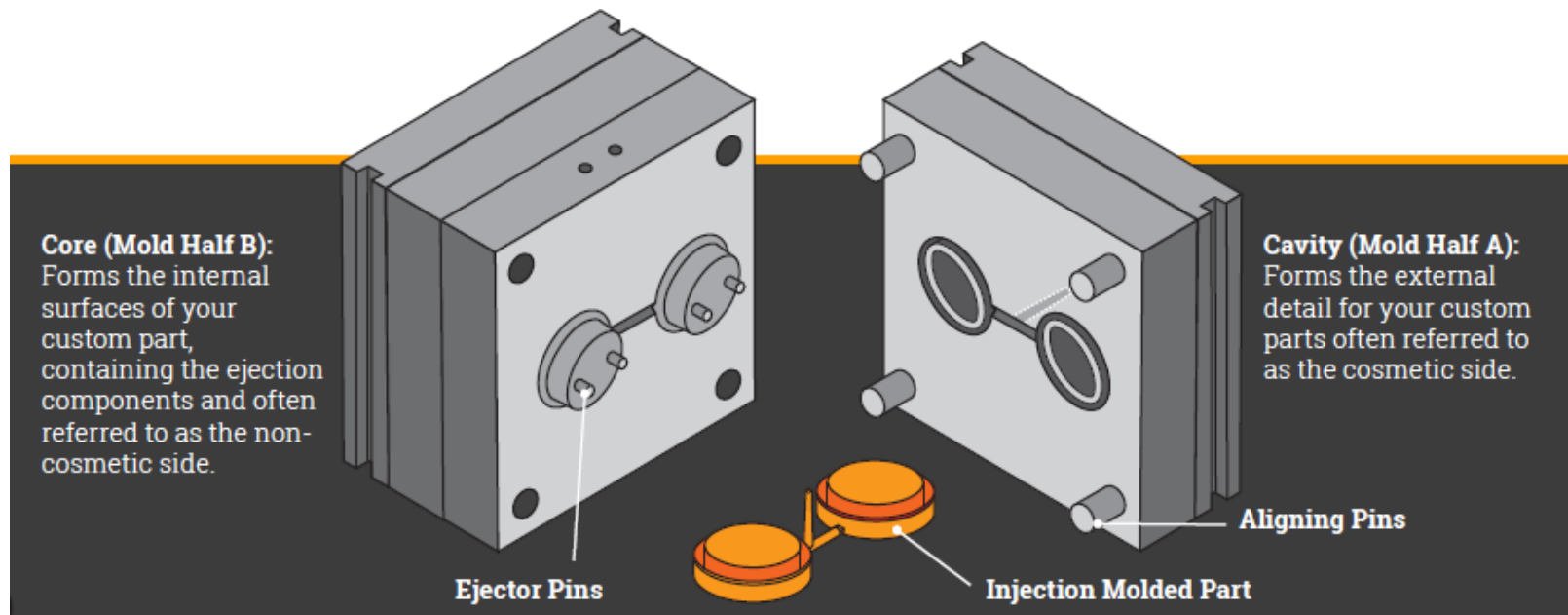
❑ Why choose injection molding?

- ✓ Design integrity
- ✓ Part tolerances
- ✓ Form-fit-function
- ✓ Iteration cycle
- ✓ Cost
- ✓ Repeatability
- ✓ Scale
- ✓ Prototype-to-production
- ✓ Time-to-market

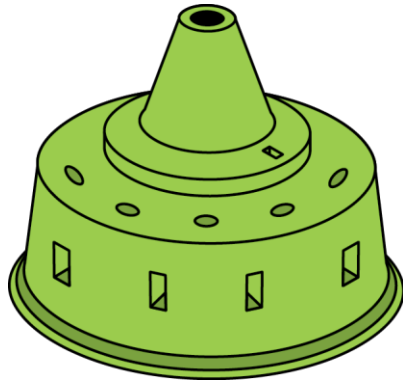


Injection Molding Fundamentals

- ❑ High quality, efficient tooling relies heavily on good part design as well as advanced skills in mold design and the manufacturing of the tool.

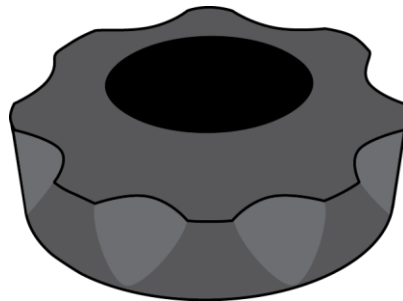


What is Overmolding



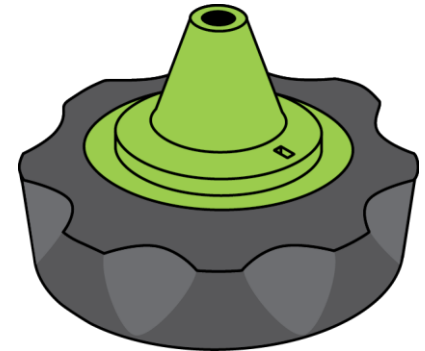
Substrate
1st Shot

+



Overmold
2nd Shot

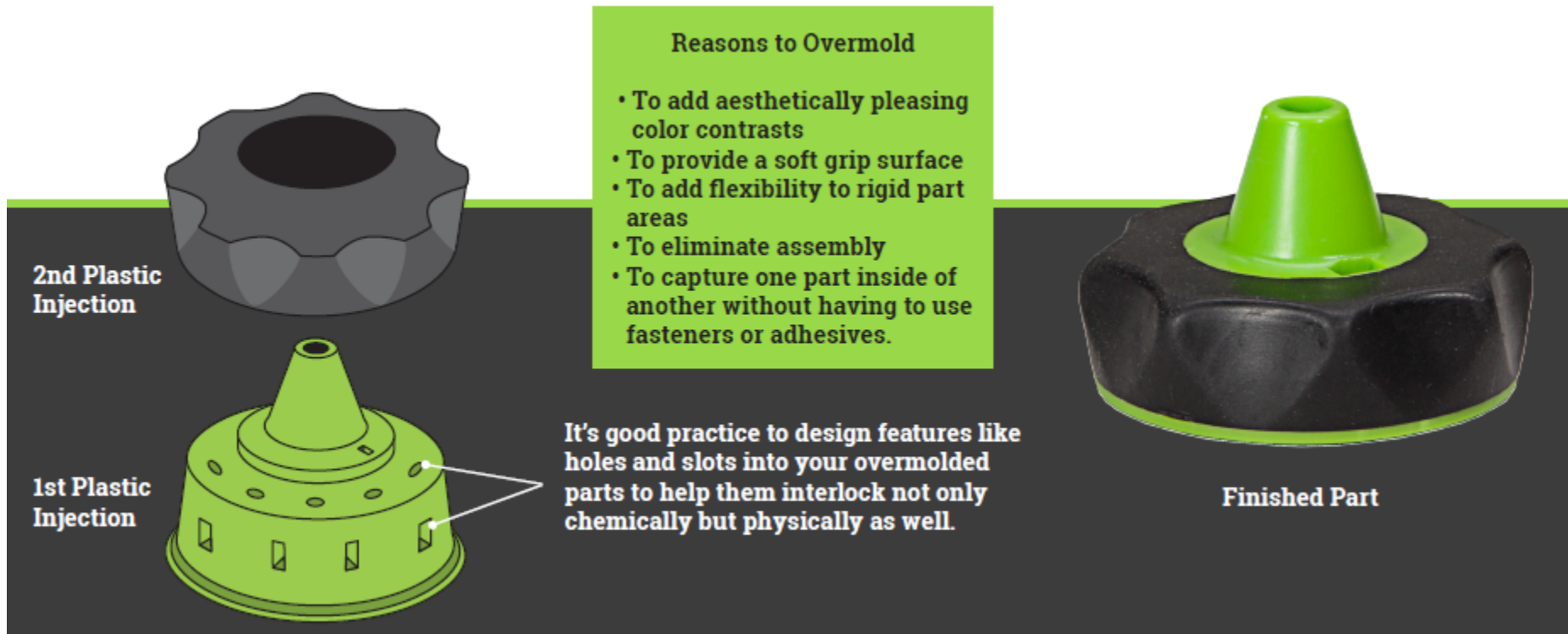
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Assembly

What is Overmolding (cont'd)

- ❑ Overmolding plastic parts can help in wide range of functional and structural uses. A wide range of materials are capable of being overmolded, including both hard and soft plastic resins.

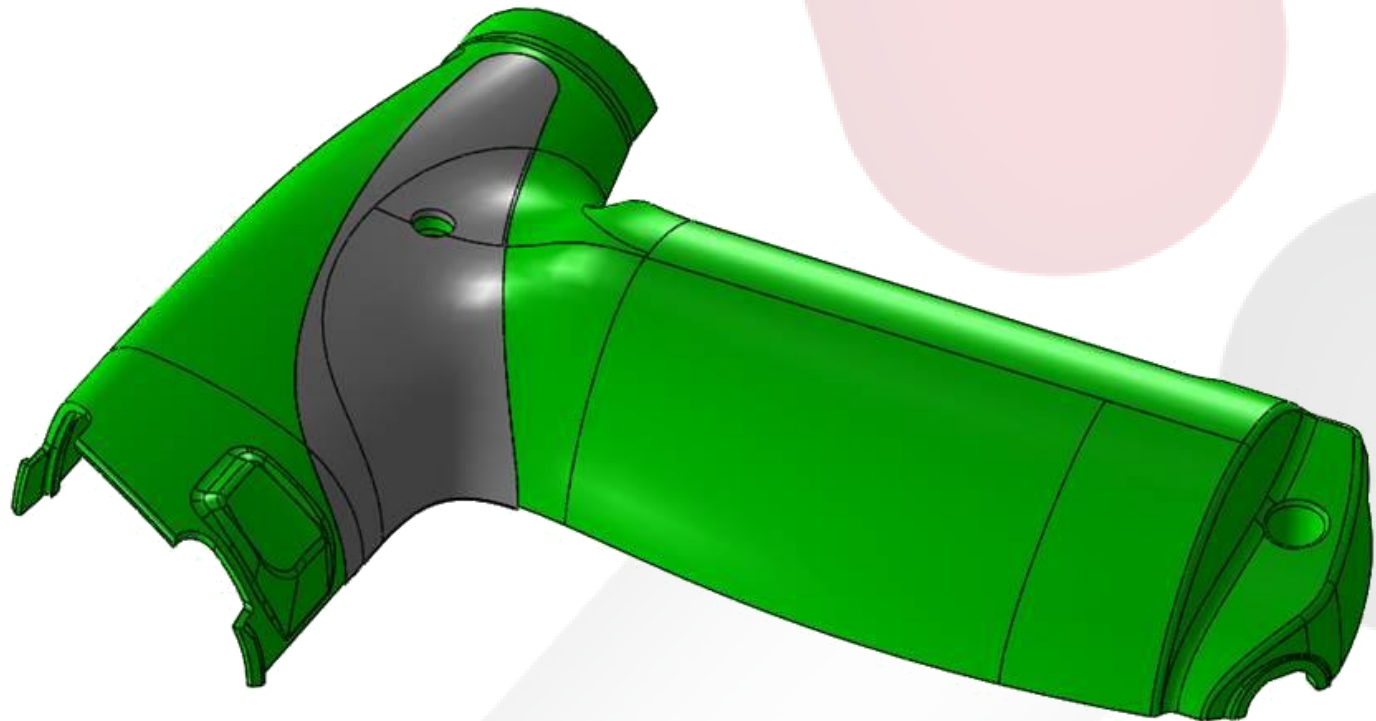


Design Considerations

- Material Evaluation
- Feature Specifications
- Surface Finishes
- File Preparation



Part Example 1



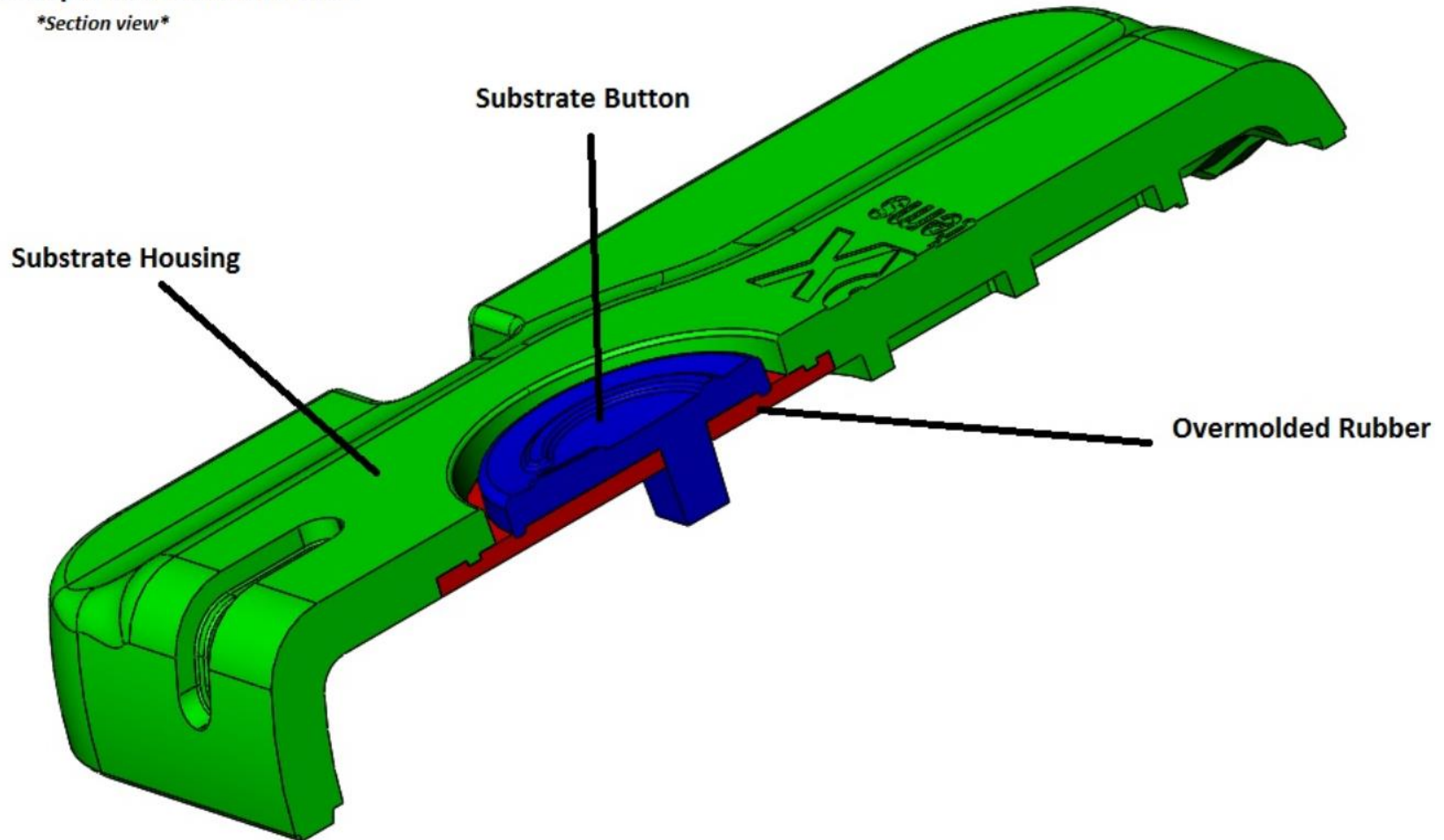
Part Example 1 (Continued)



Part Example 2

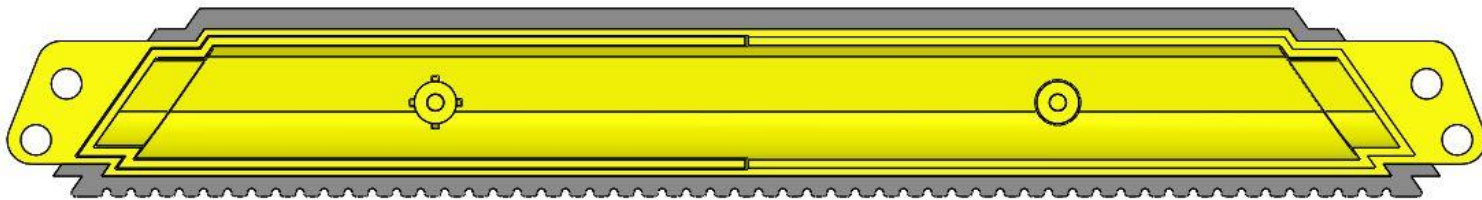
Multiple Substrate Overmold

Section view



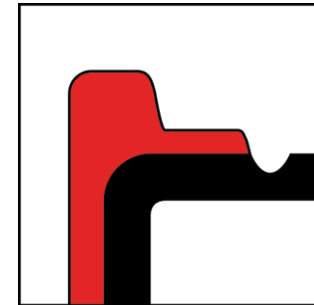
Feature Specifications

- Wall Thickness
 - Nominal Thickness (Good Flow)
 - Minimum Requirements
 - Best practice to be consistent with both substrate and overmold.



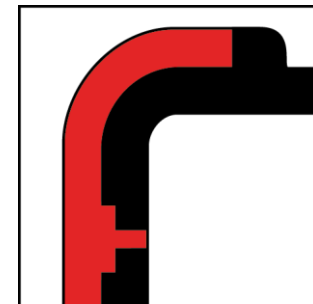
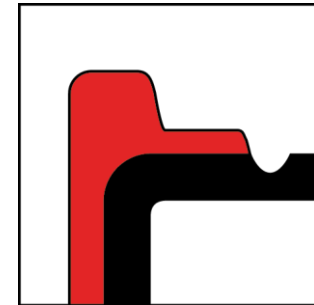
Feature Specifications (cont'd)

- Radii
 - Treat overmold as separate part
 - Eliminate hard flow / sharp corners
 - Must be consistent on both substrate and Overmold



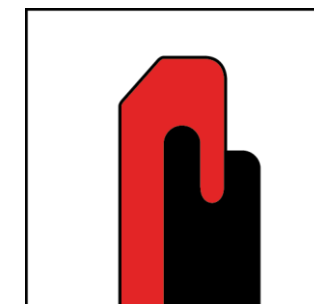
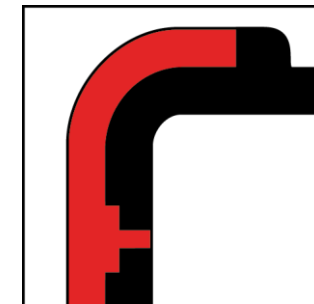
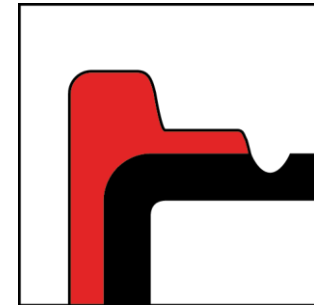
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- Subgates / Gate Location
 - Use through holes to access from design core side of substrate
 - Use mechanical holds as a subgate



Feature Specifications (cont'd)

- Radii
 - Treat overmold as separate part
 - Eliminate hard flow / sharp corners
 - Must be consistent on both substrate and Overmold
- Subgates / Gate Location
 - Use through holes to access from design core side of substrate
 - Use mechanical holds as a subgate
- Shut-offs
 - Use accent groove and hard shut-offs
 - Shutoff insures that the part is clean and free of any flash or mismatch.
 - A stable substrate facilitates an even parting line between substrate and Overmold



Material Evaluation

- Utilize Data Sheets
- Substrate

Preferred Materials (Good bond or adhesion)

- ABS
- PC/ABS
- PC
- Some Nylons

Tough Materials (Lubricity a factor)

- Polypropylene
- HDPE
- LDPE
- Acetal

- 2nd Shot
 - Durometer vs. Flexural Modulus
 - Utilize Data Sheets

[illegible]

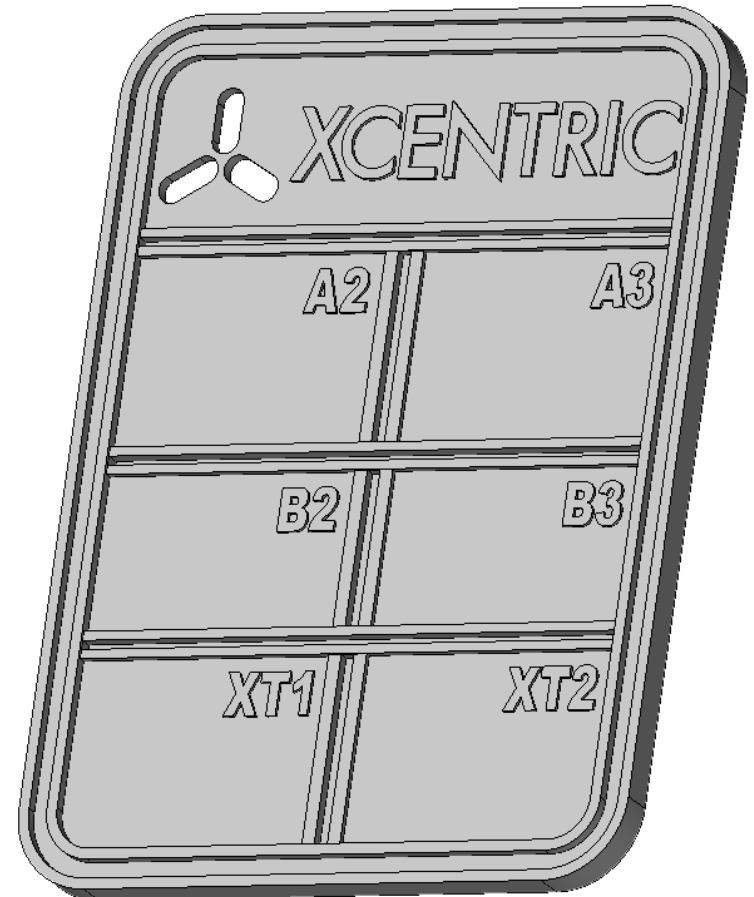


Substrate Inefficiencies

- Consistency in the overmolding process relies on a consistent substrate
- Substrate defects can create molding issues within the overmolding process
 - Warped parts can fault your shutoff on the overmolding
 - Inconsistent shrink on substrate promote irregular substrate sizes
- Concentricity matters.
 - Oblong round parts are problematic

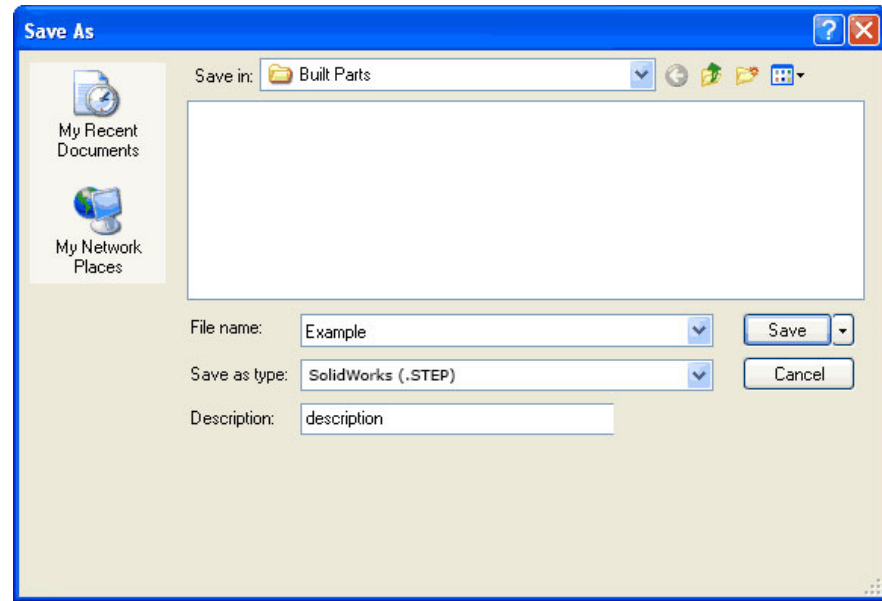
Surface Finishes

- Our Process
 - Expect B3 or Blast
- Polishes will stick
- Keep your part integrity



File Preparation

- Upload three files
 - Assembly file (separate bodies)
 - Two separate files for substrate and overmold





Summary

- Evaluate Materials
 - Do your research
 - Check Data Sheets
- Treat Overmold as Separate Part
 - Nominal wall thickness is critical
 - Radii for good flow
 - Design flow channels / Mechanical holds
 - Use accent grooves and hard shut-offs to prevent flash and peel
- B3 or Blast to prevent sticking
- Files for Quote
 - 3 separate files (one assembly, one substrate and one overmold)
- Design it as you dream it. The right manufacturer can make it come to life.



Q&A



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Call: **(586) 598-4636**

Email: **sales@xcentricmold.com**

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Thank You!