

Injection Molding Resin Selection Workbook



When designed intelligently, injection molded parts can offer product designers durable, light-weight, and cost-effective alternatives to metal parts. But ensuring that an injection molded part lives up to this potential depends in large part on choosing the best resin. Every resin manufacturer publishes in-depth specifications on the properties of their products, but trying to sort out which ones are right for the performance of a specific part can be overwhelming. Unfortunately, there's no simple formula or algorithm to follow to select the most appropriate resin for a particular part or application.

That's why Ferriot's veteran team of engineers works closely with our customers to help them choose the resin that best suits their design goals, performance and budget specifications. We typically have more than 150 varieties of resin in stock at any given time and can obtain non-stock resins from the industry's leading resin manufacturers quickly to address unique requirements.



To streamline the process and move your components into production as seamlessly as possible, we have developed this Injection Molding Resin Selection Workbook. Taking the time to note your requirements in advance of meeting with your Ferriot representative will not only speed the selection process but help ensure that the resin chosen is the most appropriate and cost-effective one for the design of the mold and the injection molding process to be used.



Part geometry

Is your part designed to be injection molded? _____

Particular geometries can be difficult to injection mold. Part size, shape and wall thickness could make the part especially prone to warpage, bow, and other defects. The sooner our engineers can review the part's configuration with Moldflow® analysis and suggest changes to optimize its moldability, the earlier we can begin to narrow the list of appropriate resins.



Design goals for the part (check all that apply)

- Reduce weight by replacing another material (such as sheet metal, wood, concrete, or fiberglass) with plastic
- Consolidate an existing assembly into fewer parts
- Incorporate molded-in assembly features
- Improve strength-to-weight ratio
- Cut manufacturing costs
- Eliminate painting or other surface treatment operations
- Improve impact resistance
- Improve chemical resistance
- Other _____



Describe the key physical attributes required of the finished part

- Chemical and environmental resistance: _____
- Electrical properties: _____
- Flexible strength: _____
- Impact strength: _____
- Temperature operating range: _____
- Flammability: _____
- Fatigue resistance: _____
- Surface texture: _____



Required approvals (check all that apply)

Depending on your part's use, it may need to be tested and approved by various governmental and/or private agencies. Ferriot can help ensure your part is in compliance with the appropriate agencies by noting such requirements as soon as possible.

- UL, CSA, DIN _____
- WEEE, RoHS, ECO _____
- NSF _____
- ASTM _____
- EPA _____
- FDA _____
- AHAM _____
- OSHA, NIOSH _____
- AMMA _____
- Federal Regulations, ANSI, SAE, FMVSS _____
- Other global agencies _____
- ISO Standards for Medical _____



Appearance

Must the molded part color-match or texture-match a component made by some other method?: _____

Do you require a custom color?: _____

Must the part be transparent?: _____

Does it require a surface finish (painted, plated, hard coat, texture, etc.)?: _____

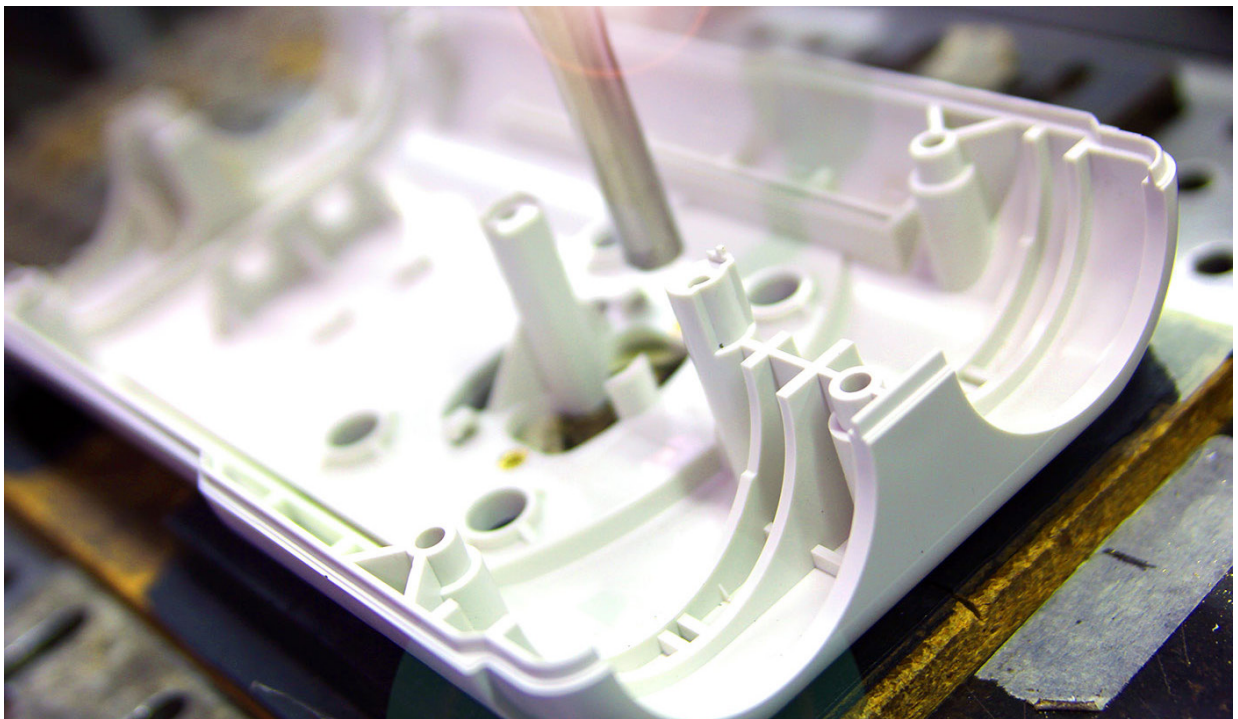
Required markings (logos, warnings, instructions, control labels): _____



Chemical exposure (check all that apply)

Help us ensure the resin you choose for your part can stand up to the chemicals it will encounter over its lifespan, including during manufacturing/assembly and in its intended environment.

- | | | | |
|--|--|--|--|
| <input type="checkbox"/> Adhesives | <input type="checkbox"/> Cooking greases | <input type="checkbox"/> Lubricants | <input type="checkbox"/> Printing dyes |
| <input type="checkbox"/> Automotive fluids | <input type="checkbox"/> Cutting oils | <input type="checkbox"/> Mold releases | <input type="checkbox"/> Other: _____ |
| <input type="checkbox"/> Cleaning solvents | <input type="checkbox"/> Degreasers | <input type="checkbox"/> Paints | |





Electrical performance

Depending on your part's use, it may need to be tested and approved by various governmental and/or private agencies. Help us help you ensure your part is in compliance with the appropriate agencies by noting such requirements as soon as possible.

What will the impact of its electrical environment be on your part?: _____

Will the part be subjected to any electrical load?: _____

Will your part require EMI/RFI shielding or UL testing?: _____



Radiation exposure

HID lamps, fluorescent lights, gamma sterilization units and other artificial sources emit radiation. This radiation can affect the strength and appearance of the parts. **If that is likely for your part, consider UV-stabilized resins.**



Size tolerance

Tolerances on many parts must be tight to ensure proper fit and function of an assembly.

Note the tolerances your part must adhere to as well as any information you can provide on end-use temperature, creep, load, environment, etc.:



Temperature limits

A molded part's impact and tensile strength, creep resistance, modulus, and other material properties often vary greatly depending on temperature. Note the full range of end-use environment temperatures and consider possible extremes.



Lot size

Number of parts to be produced in each production run and Estimated Annual Usage (EAU):

This will help determine mold cavitation and the most appropriate press to use, thereby helping to determine the most cost-effective lot size.

Ready to Learn More? To learn more about how to optimize your injection molded parts development process, complete our Online Quote Form, available at <http://info.ferriot.com/request-a-quote>. Or, if you prefer, call us at **(330) 786-3000** for immediate attention.