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EASTERN STATES EXPOSITION
WEST SPRINGFIELD, MA

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Holistic Plastic Part Design

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The Benefits of Plastic Materials

- Lightweight
- Corrosion resistant
- Aesthetic properties
- Optical properties
- Complex geometries
- Inexpensive
- Durable
- Sealing characteristics
- Friction and wear
- Good insulators

Common Plastic Part Challenges

- Don't perform as expected.
- Quality problems
- Lots of "no-quotes"
- Parts are out of tolerance.
- Changing materials doesn't solve the problem.



Holistic View of Plastic Part Design

- Required performance
- Operating environment
- Material
- Part geometry
- Manufacturing method



- Impact
- Mechanical loads
- Fatigue
- Temperature





The effects of temperature (high and low)

- Change in modulus
- Change in elongation
- Creep behavior
- Thermal expansion
- Degradation



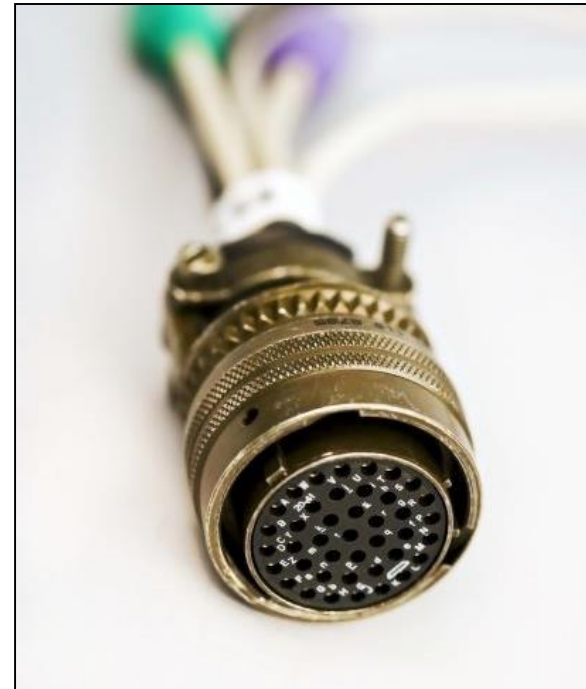
Considerations for Plastic Part Design

- Friction and wear
- Chemical exposure
- UV, other Radiation



Considerations for Plastic Part Design

- Electrical properties
- Water / humidity
- Vacuum
- Aesthetics



Chemical Attack and ESC



Degradation from UV



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Aesthetics / Light Management

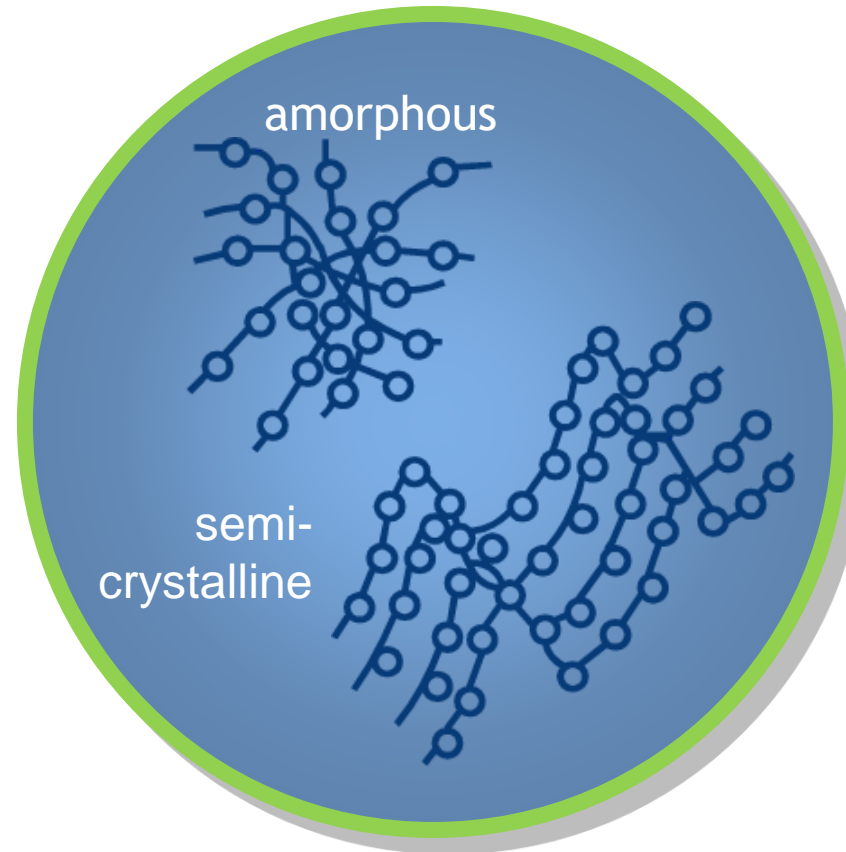


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Thermoplastic Material Selection

AMORPHOUS

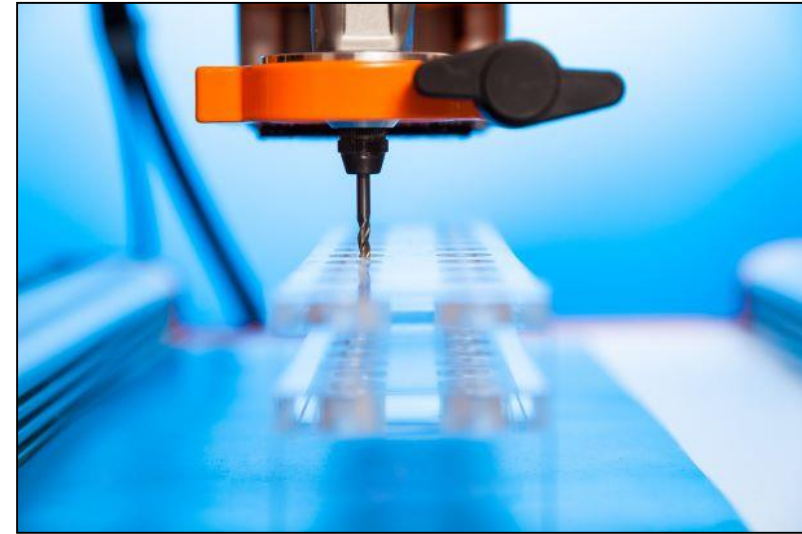
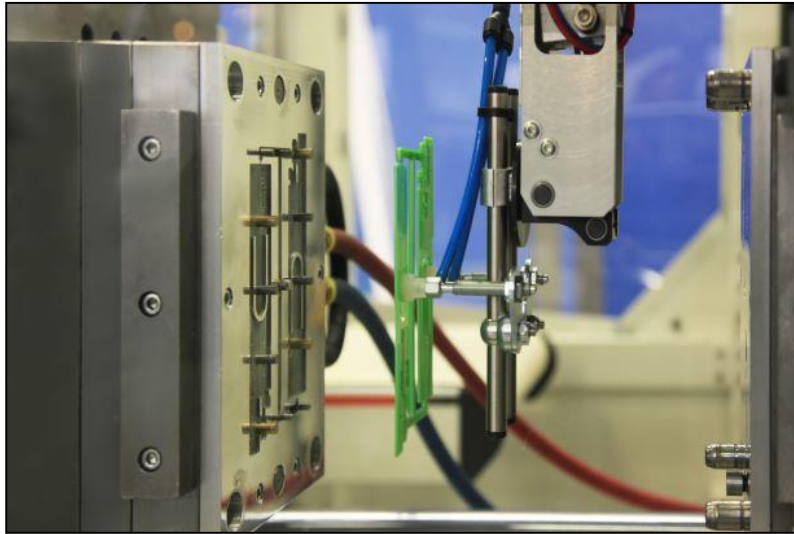
- Ultem®
- Polycarbonate
- Acrylic
- ABS
- Polystyrene



SEMI-CRYSTALLINE

- PEEK
- Teflon®
- Delrin®
- Nylon
- Polyethylene

Manufacturing Method



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Geometry (function and processing)



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Questions to ask

- What base polymer?
- Additives and fillers?
- Manufacturing method?
- Part geometry?



Thank you for your time today! Questions?



Please visit the “*ask the expert*” section of our website www.curbellplastics.com for help with your application.

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