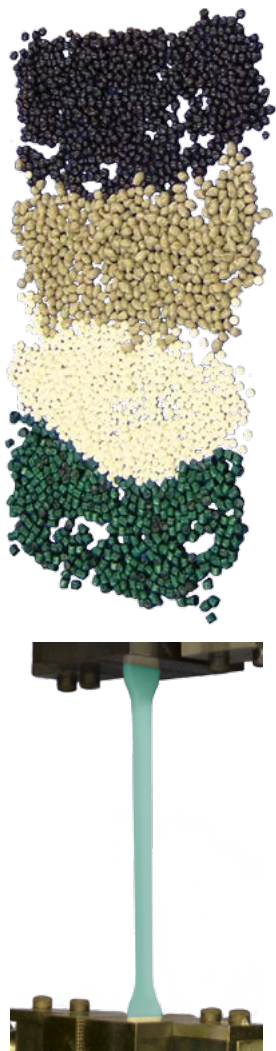


3M Advanced Materials Division

3M Custom Thermoplastic Compounding Services

**Expanded capabilities,
more capacity – for fast
development and scale-
up of your material needs.**



3M offers you the convenience and fast response made possible by full-service, in-house custom thermoplastic compounding.

With our Hebron, Kentucky facility, 3M has enhanced its capability to meet the plastic industry's need for increasingly specialized and sophisticated polymer materials.

Custom thermoplastic compounding gives our customers the ability to create formulations geared to providing specific properties or functions which are not inherent in the base polymer. Enhancements can range from making the base polymer easy to extrude, to adding properties specific to the requirements of an application; for example, reducing weight and/or improving dimensional stability.

We are able to dedicate compounding lines to your applications, as well as create new processes for making a product. Products can be made using your formulation, or we can develop a formulation to meet your needs. 3M's custom compounding facility includes a laboratory and all equipment to make and test any thermoplastic material, allowing us to assist you with your R&D programs.

The Hebron custom compounding facility works closely with 3M's Advanced Materials Division laboratory facilities in Oakdale, MN, which develop advanced ingredient and additive technologies for a variety of resin systems.



With 3M custom compounding services, customers now have the ability to purchase thermoplastic compounds pre-formulated with any of 3M's advanced polymer additive technologies. Improve processing and enhance properties with materials such as 3M™ Fire Retardant Additives, lightweight, high-strength 3M™ Glass Bubbles, and more – made to order, all in one step.

Facilities

- 60,000 sq. ft. plant
- Twin screw compounding lines
- Single screw compounding lines
- Corrosion-protected compounding equipment
- Underwater, strand and hot face pelletizing
- Testing laboratory
- ISO 9001-2000 Certified

Custom Compounded Products

- Micropellets
- Antistatic Plastics
- Conductive Polymers
- Polyester Resins
- Additive Masterbatches
- Lubricants
- Custom Products
- Colors/Color Blends
- Purge Polymers
- Lightweight Glass Bubble Masterbatches

Typical Base Resins Processed

- | | | |
|--------|-------|--------|
| • PVC | • TPU | • PFA |
| • PP | • ABS | • ETFE |
| • PE | • SAN | • FEP |
| • HDPE | • PET | • PVDF |
| • TPE | • PC | • THV |
| • TPV | • PVA | |

3M's expertise in thermoplastic product development can help you decrease your development time and speed your product to commercial reality. We use a four-step process to provide the material you need:

- 1. Define the project** – What are the target properties necessary for end product use? Will a thermoplastic material be suitable? What are the environments for this product? What are the cost factors that must be satisfied?
- 2. Material selection** – What properties give this product its best function? What processing is required? What materials satisfy these requirements? Will there be any manufacturing restraints? Are all of the ingredients available, or is additional information needed? Is regulatory approval or compliance needed? What is the probable cost?
- 3. Prototyping** – Does the selected material have the proper flow behavior for the product to be made on a commercial line? Are there special tooling requirements? What are the apparent needs for production? Are there special measurements needed for the product? What are the approximate costs to begin? Are all the materials and machinery readily available?
- 4. Production** – Which process makes the most sense for the product? How much prototyping is needed prior to production? Is the proper machinery available? What production rates are needed? What will the actual costs be for the product? What steps are needed for optimization? Will any post-forming actions be needed? When will production start?



3M is one of the world's leading fluoropolymer suppliers, with operations or representation in more than 50 countries. 3M products, including PTFE resins and compounds, fluoroplastics, fluoroelastomers, polymer processing additives, and high-strength, lightweight glass bubble products are used in a broad range of industries and markets, from transportation and chemical processing to architectural components and semiconductor manufacturing.

Our in-house custom thermoplastic compounding services allow us to help customers meet their growth objectives.

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3M Advanced Materials Division

3M Center
St. Paul, MN 55144 USA

Phone 1-800-367-8905
Web www.3M.com/advancedmaterials

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