

# THE PROVEN ADVANTAGE

No other company in the thermoset industry possesses our combined capabilities in design engineering, compounding, molding, machining, finishing, painting, coating, assembly and program management of sophisticated thermoset composites. We have the breadth of technical capability and decades of proven experience delivering solutions to customers.

## Benefits of Composites

- Cost effective solutions
- High strength to weight ratio
- Parts consolidation
- Weight reduction
- NVH noise and vibration reduction
- Low and high temperature performance
- Design flexibility
- Corrosion resistance

## Markets/Applications

- |                      |                    |
|----------------------|--------------------|
| • Aerospace          | • Industrial       |
| • Defense / Military | • Medical          |
| • Marine             | • HVAC             |
| • Transportation     | • Electrical       |
| • Recreational       | • Construction     |
| • Security / Safety  | • Renewable Energy |

## THE Composites GROUP™



### PREMIX

North Kingsville, OH  
440-224-2181  
[www.premix.com](http://www.premix.com)



### HADLOCK

Geneva, OH  
440-466-4876  
[www.hadlockplastics.com](http://www.hadlockplastics.com)



### QUANTUM COMPOSITES

Bay City, MI  
989-922-3863  
[www.quantumcomposites.com](http://www.quantumcomposites.com)

[www.thecompositesgroup.com](http://www.thecompositesgroup.com)

SHAPING THE WORLD WITH COMPOSITES

## THE Composites GROUP™

### PREMIX

### HADLOCK

### QUANTUM COMPOSITES

SHAPING THE WORLD WITH COMPOSITES



Over 500,000 sq. ft. of facilities

Through the combined resources of three solution-based companies, our market-proven expertise and vertical integration of core capabilities make us your total composites source.

Combining seasoned engineering teams, experienced, dedicated employees and unmatched customer service, The Composites Group offers capabilities from materials to prototyping through production and finishing.

**Premix** is the largest North American developer, formulator and manufacturer of thermoset compounds and custom-molded components.

**Hadlock** offers multiple molding technologies as well as precision machining, complete finishing and complex assembly.

**Quantum Composites** specializes in the development, formulation and manufacturing of high-performance Engineered Structural Composites (ESC).

### INTEGRATED COMPOSITES SOLUTIONS



## From Design to Materials to Prototype through Production



### ■ Design & Applications Engineering

- Turnkey conversion of existing designs to composites
- Finite Element Analysis (FEA), Abaqus, NASTRAN & Mechanical
  - Linear, Non-linear, Static, Dynamic, Thermal and Modal Analysis
- Solid Modeling Software – CATIA V4/V5, Pro/E, & SolidWorks
- Mold Flow Analysis
- Detailed fiber reinforcement orientation analysis
- Mechanical, Physical Part/Specimen Testing

### ■ Commercial Materials/Materials Development & Custom Formulations

- Random chopped and continuous fiber reinforcements
- ESC – Engineered Structural Composites
- SMC – Sheet Molding Compound
- TMC – Thick Molding Compound
- BMC – Bulk Molding Compound

Trademarks: Premi-Glas®, Premi-Ject®, Lytex® & AMC™

### ■ Tooling & Prototyping

- Complete tool design, management, sourcing and build
- Tool maintenance on site
- World class sources for molds and equipment
- Prototype options for 1 to 1000 pieces

### ■ Molding Processes

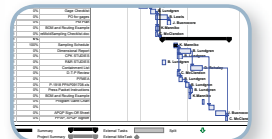
- Compression Molding
- Transfer Molding
- Injection Molding
- Open Molding/Hand Lay-up
- Resin Transfer Molding
- Light RTM

### ■ Secondary/Finishing

- Precision Machining
- Fabricating
- Sub/Complete Assembly
- Finishing Operations
- Painting
- Coating (EMI/RFI)

### ■ Program Management

- Stage Gate Project Management System
- APQP Process
  - PFMEA, DFMEA
  - Control Plans/PPAP
  - Dashboard Sheet Management
  - Timeline Charts - Gantt
  - 8D/5P Disciplined Problem Solving Methodology



### ■ Certification

- **Premix:** ISO/TS 16949:2009
- **Hadlock:** ISO 9001:2008
- **Quantum Composites:** AS 9100 pending
- Registrar-ABS Quality Evaluations, Inc.
- UL Approved Applicator of Copper & Nickel Coatings