

Resin Transfer Molding (RTM) Process Quick Guide

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What is RTM?

Resin Transfer Molding (RTM) is a closed-mold composite manufacturing process. Dry fiber preforms are placed in a matched mold, the tool closes, and catalyzed resin is injected under pressure to wet out the fiber.

RTM Process Steps

- Preform preparation: cut fiber to net-shape, apply binder
- Mold loading: place preform in lower mold half
- Mold closure: clamp tool set, check peripheral seal
- Resin injection: inject at 1-10 bar, monitor flow front
- Cure: cure in closed mold (heated or ambient)
- Demolding: open tool, extract finished part
- Trim and finish: CNC trim, painting, hardware install

Key Properties vs. Hand Lay-Up

- Surface finish: RTM produces both-side finished parts
- Fiber volume: 50 to 65% (vs. 25 to 45% hand lay-up)
- Consistency: low operator skill dependency
- Tooling cost: \$8,000 to \$40,000 (medium)
- Best volume: 200 to 10,000 units/year

Best Resin Systems for RTM

- Polyester: lowest cost, marine and general industrial
- Vinyl ester: better chemical resistance and impact toughness
- Epoxy: highest mechanical properties, automotive/aerospace

Industries Using RTM

- Automotive: body panels, structural brackets, roof modules
- Marine: deck hardware, hull stringers, console structures
- Medical: CT scanner housings, MRI enclosures
- Wind energy: nacelle covers, spinner fairings

When RTM Makes Economic Sense

RTM becomes cost-competitive above 200 to 500 units per year for medium-complexity parts. Below this volume, hand lay-up typically offers better economics despite lower consistency.

Contact BLG Fiberglass for RTM Quotes

BLG Fiberglass operates a 50,000 sq ft facility in Toronto offering full RTM services. Contact us at blgfiberglass.com/contact for a project assessment.