Rigid & Flexible Polyurethane Foam and Built-to-Print Composite Parts

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GENERAL PLASTICS MANUFACTURING COMPANY

Where Great Ideas Take Shape.

From deep sea to deep space, we shape great ideas into reality.

Since our founding in 1941, General Plastics Manufacturing Company has been a leading innovator in the plastics industry. We are passionate about continually expanding our expertise, products and services to propel our customers’ success.

Beyond the aerospace and defense partners we have served since our earliest days, we are privileged to support engineers and design teams in many evolving industries. For over 75 years, General Plastics’ high-quality materials and cost-effective solutions have enabled exacting customers around the world to attain their goals, aim higher and redefine what’s possible.

- Aerospace and Defense Applications
- Composite Core Applications
- Radomes and Antenna Applications
- Tooling and Molds
- Prototypes, Models and Signs
- Construction and Medical Applications
- Blast Mitigation Structures
- Nuclear Transportation Crash and Fire Protection
- Marine and Subsea Applications

OUR STEADFAST FOCUS ON EXCEEDING EXPECTATIONS IS BACKED BY OVER 75 YEARS OF PERFORMANCE

Every individual at General Plastics Manufacturing Company proudly stand behind our LAST-A-FOAM® materials and fabricated parts, ensuring unrivaled performance and long-lasting value in your most demanding applications.

We focus on building enduring relationships with our customers, employees and distributor partners. Earning that underlying trust drives everything we do: supplying materials and parts of the highest quality and uniform consistency, developing novel products and cost-effective approaches, ensuring on-time delivery – and delivering exactly what we promise.

Where Great Ideas Take Shape.

HIGH-STRENGTH, LOW-WEIGHT LAST-A-FOAM® SOLUTIONS FOR YOUR MANUFACTURING PROCESS

General Plastics’ LAST-A-FOAM® products, in densities ranging from three to 50 pounds per cubic foot, satisfy a myriad of applications. Ongoing research and development equip us to continually introduce new materials and make our existing products even better.

An onsite team of chemists and engineers with 60 years’ combined experience in plastics chemistry and development of advanced materials allows us to develop and manage our own chemical formulas and raw material supplies, assuring customers of consistent quality backed by certification to ISO 9001:2015/AS9100D. Rigorous inspections and testing, plus certificates of conformance, guarantee that the products you receive meet your drawings and exact specifications.

BEYOND PRODUCING LAST-A-FOAM®, WE’RE YOUR PARTNER IN MANUFACTURING HIGH-PERFORMANCE COMPOSITES PARTS

General Plastics does far more than supply our highly-engineered LAST-A-FOAM® rigid and flexible polyurethane foam. Our customer service, engineering and parts fabrication teams work closely with you from concept to completion. We know better than anyone how our products perform, so we’ll make sure specified products offer the right fit and properties for your project.

Our added-value services including molding, machining, and fabrication and construction of parts and assemblies for diverse commercial, industrial, military and composite-manufacturing companies. We also offer custom foam formulation for specialized needs as well as product testing. We’re your capable, cost-effective and responsive resource for high-performance parts built to satisfy your exacting requirements.

“Our relentless pursuit to improve and deliver sophisticated, high-value materials and parts allow us to consistently provide our customers with unique, timely and cost-effective solutions.”

– Mitch Johnson, Ph.D., President/CEO of General Plastics
General Plastics’ rigid and flexible polyurethane foams are engineered to meet demanding aerospace and defense applications. LAST-A-FOAM® products are also used in missile silos, rockets and rocket motors.

Shaping flyaway solutions for the aerospace industry
General Plastics supplies build-to-print flexible polyurethane foam products and aerospace-grade composite core materials to original equipment manufacturers (OEM) and Tier 1/Tier 2 companies. These customized products are used in the flight deck, passenger cabin walls and ceilings, overhead stow bins, service-class dividers, galleys and lavatories, and as edge closeouts in honeycomb panels.

High-density flexible foam supports essential defense programs
Ideal for military applications, our flexible, high-density polyurethane foams are formulated to absorb large amounts of impact energy at controlled rates while cushioning payloads from high G-stress levels. They have been used extensively as “spring-damper” shock-isolation systems to protect missiles in underground silos and submarine launch tubes. The Minuteman, MX Peacekeeper and Trident programs have all been supported by General Plastics’ LAST-A-FOAM® products.

Unmatched quality, agility and expertise
General Plastics is known for top-quality rigid and flexible foam, as well as foam board products. Our aerospace and defense clients also tap our extensive experience with polycarbonate and acrylic sheets for aircraft passenger window panes and wingtip-lens transparencies. Most important, we offer the scale and knowledge to meet your most complex, demanding supply needs.

**CUSTOM PARTS FOR AEROSPACE & DEFENSE APPLICATIONS**

AEROSPACE APPLICATIONS:
- Interior Parts
- Flight Deck
- Composite Cores
- Tooling Board
- Models & Prototypes
- Transparencies
- Interior Trim
- Vacuum-Form Dies/ Mold Patterns

**COMPOSITE CORE APPLICATIONS**

Enduring performance at the core for your composite applications
Reliably consistent from sheet to sheet, batch to batch and within each block, LAST-A-FOAM® is at the core of top performance. It retains its strength, dimensional stability and chemical properties at delivery, during production and over time. With core material offerings featuring high-strength, low-weight and fire safety solutions, LAST-A-FOAM® has been used over the years in aerospace and automotive applications, antennas and radomes, in the marine and subsea industry, as well as for sports and leisure equipment.

LAST-A-FOAM® products are non-decaying, chemically resistant polyurethane cores that do not absorb water, do not rot, warp, bow or delaminate.

**COMPOSITE CORE APPLICATIONS:**
- Resin Transfer Molding
- Composite Core Panels
- Aircraft Interior Sandwich Core Panels
- Vacuum-Assisted Resin Transfer Molding

**FOR RADOMES & ANTENNAS**

Advanced dielectric material for radomes, antennas and RF communication systems
General Plastics offers a wide range of LAST-A-FOAM® products for use as dielectric material in radome and antenna applications. These high-performance, closed-cell polyurethane foams may be provided in custom densities to satisfy customers’ specific dielectric performance requirements. The materials exhibit ideal dielectric properties, structural strength, durability, and chemical inertness.

Our products display non-dispersive and low-loss properties, where dielectric performance can be guaranteed at every frequency range.

**APPLICATIONS:**
- Radomes and antenna
- High temperature core material
- Aerospace components
- Automotive components
- Electronic packaging insulation
- Electrical isolators
- Protective structures from weather, dust and bird strike
- Spacer material in antenna construction
- Core material for resin-transfer molding
TOOLING & MOLDS

High-performance tooling materials for diverse applications

General Plastics provides tool and mold makers superior-quality LAST-A-FOAM® tooling material, satisfying a wide range of uses from autoclave and composite layup tools to foundry patterns and trim fixtures. Customers may choose from various lines of board materials depending on specific thermal, surface finish and processing pressure requirements. In addition to its versatility, all board choices are noted for its dimensional stability and excellent machinability with anti-static properties. All LAST-A-FOAM® tooling boards are delivered fully cured and ready-to-use.

**TOOLING & MOLDS APPLICATIONS:**
- Layup Tools
- Mold and Foundry Patterns
- Check Fixtures
- Prototype Machining
- High-Temperature Curing Prepregs
- Vacuum Form Tooling
- Pattern Making

**PROTOTYPES, MODELS & SIGNS**

Prototypes, displays and durable signs take artistic shape at General Plastics

General Plastics' LAST-A-FOAM® provides an extremely stable and precise material for product prototypes and design models. Whether you are building a sports car or a topographical map, it is an outstanding creative medium that supports accuracy and fine detail. A "greener," more versatile alternative to wood, these foams are easily shaped to create amusement park façades, movie props and sculptures, or formed into custom-bonded blocks.

This foam has a fine-cell structure that ensures excellent edge definition and allows for easy finishing and painting with nearly any coating system. It can also be bonded using a wide variety of adhesive systems. Whether carved, routed, sandblasted or machined, it is ideal wherever a uniform, grain-free, long-lasting and dimensionally stable material is desired.

Our high-density polyurethane foam has become the worldwide standard for earth-friendly outdoor signage and modeling board. It clearly outperforms wood in 3-D signage and display manufacturing applications. The material’s ease of machining, uniform surface and infinite finish options turn artistic concepts into eye-popping reality. It is completely waterproof and able to withstand extreme heat and cold. It does not warp or bow, and when coated, it neither rots nor decomposes, providing long-lasting durability for exterior applications.

CONSTRUCTION & MEDICAL

Find critical support for construction and life science applications

**Construction**
LAST-A-FOAM® Thermal Column-Bearing Blocks support heavy structural loads while maintaining thermal control within building interiors. Made of proven, high-density rigid cellular polyurethane material, these blocks are ideal for cold-storage facilities. Enduring and inert, they combine high compressive strength with little deflection and extraordinary thermal insulation.

**Medical**
Specially engineered foams are used with medical imaging equipment: core panels for X-ray and diagnostic tables, beds for CT scanners, and calibration materials. They offer a strong, homogeneous background that is transparent to X-rays. Products structured to mimic human bone densities provide artificial media for testing. Our foams also serve as core material for composite prostheses and enable reconstructive procedures.

LAST-A-FOAM® R-9340 HP blocks resist distortion under load over time up to 2,100 psi. This series are designed to support heavy and structural loads while maintaining thermal control within industrial building interiors.

General Plastics’ LAST-A-FOAM® FR-3700 is lightweight and provides homogeneous background that is transparent to X-Rays.
BLAST MITIGATION

Blast mitigation structures contain blasts – and costs

Explosion protection systems created by General Plastics are being used successfully by our partners in multiple U.S. locations. The Blast-Tamer® wall system, which incorporates advanced-technology polyurethane foam, is designed to mitigate inadvertent explosion in ordnance storage facilities. It absorbs and disperses blast energy upward, not to adjoining compartments.

Approved by the Department of Defense Explosive Safety Board, the system allows the storage of several types of explosives in a single space. It can improve the capacity of an earth-covered magazine by up to 800 percent compared to conventional barricade systems, containing costs while containing blasts.

- Reduces storage-site “clear-zone” size requirements
- Installs easily, long-lasting with no maintenance required
- Retrofits many existing structures of different sizes and shapes

NUCLEAR CONTAINERS

Proven containment systems for nuclear material transportation

General Plastics has protected nuclear transportation packages from fire and collision for over 40 years. Proven impact resistance coupled with excellent fire protection properties, LAST-A-FOAM® outperforms wood and other polymeric materials in nuclear material applications and transporting extremely hazardous waste. This closed-cell foam with intumescent properties meets NQA-1 and MIL-1-45208A specifications. The material is biologically inert and offers life cycle traceability.

NUCLEAR CONTAINMENT APPLICATIONS:
- Drum Containers
- MAP-12, OPUS
- Travellers
- TruPact I II III
- UX-30 Containers
- Impact Limiters
- Steel Ballast Closures
- Spent Fuel Casks

LAST-A-FOAM® marine and subsea buoyancy foams are specially formulated to meet the demands of the boating, recreational and subsea industries.

General Plastics’ marine foam provides structural strength and moisture resistance making it a great alternative to wood components. This non-decaying product bonds easily with fiberglass laminating resins, cuts easily and will not absorb water. Applications include core material for transoms, hulls and bulkheads.

The hydrostatic pressure-resistant subsea foam has excellent mechanical and insulation properties and is optimal for shallow to mid-water subsea buoyancy systems, marine and underwater robotic applications.

MARINE APPLICATIONS:
- Core Material for Transoms, Hulls and Bulkheads
- Industrial freezer Insulation
- I/O Motor Mounts
- Composite Tooling

SUBSEA APPLICATIONS:
- Underwater Buoyancy
- Underwater Robotics (ROV/AUV)
- Pipeline Flotation
- Underwater Pumps for Offshore Drilling Rigs

General Plastics has manufactured and supplied protective foam Type A and B nuclear transportation containers for more than 40 years.
LAST-A-FOAM® RF-2200

This series provides an RF-transparent protective layer for radomes and antenna applications requiring optimal performance of insulation materials and extended processing capabilities. It is a high-performing, closed-cell polyurethane foam used in applications where low dielectric constant and low heat loss is necessary.

LAST-A-FOAM® R-3300

Machinable, hydrostatic pressure-resistant foams provide buoyancy for underwater flotation to depths of 1,200 ft (uncocooned foam) offering outstanding resistance to penetration by water and other liquids. They are also used in resin-transfer molding as a core material.

LAST-A-FOAM® FR-3700

This flame-retardant PU foam is tougher and less friable than the FR-6700 (see below) which enables cutting of crisp edges, making it well-suited to machining complex shapes for composite cores. It provides exceptional protection for hazardous cargo and payloads as an impact- and fire-insulation liner in transport or packaging containers. It also serves as human bone test media. FR-3700 meets BMS 8-133 requirements.

LAST-A-FOAM® FR-3800 FST

Halogen-free and lightweight foam core which satisfies fire, smoke and toxicity (FST) requirements for aerospace cabin interiors. It complies with the Ohio State University (OSU) 65/65 heat release standard, FAA flame and smoke regulations, and aircraft manufacturer toxicity requirements for interiors. Used in conjunction with other materials, it contributes to both aesthetics and safety, while remaining cost-effective.

LAST-A-FOAM® FR-4300

The FR-4300 foam series is ideal for composite panel cores and other structures where compound-curved surfaces or other details can be made with low-cost heat-forming methods.

LAST-A-FOAM® FR-4500

This high-density tooling board series is tough, grain-free and machinable. Ready-to-use with no outgassing or cure inhibition, it is ideal for styling and design models, master models, masters for composite and layup tools, and for mold and foundry patterns. The material also serves as an excellent wood alternative for outdoor signage and display manufacturing.

LAST-A-FOAM® FR-4600

This fine cell polyurethane foam is perfect for prototypes and models, 3D displays, and tooling. With our unique microrod technology, it offers the smoothest surface for fine painted finishes with minimal prep work and creates crisp edges and precise details. Ideal for low-density tooling applications.

LAST-A-FOAM® FR-4700

The FR-4700 is a high temperature tooling foam that supports prepreg composite layup tooling for applications up to 400°F. Ready-to-use with no outgassing or cure inhibition, it is ideal for prototype machining, vacuum forming, monolithic, pattern making and short production runs.

LAST-A-FOAM® FR-4800

This tooling core has a higher thermal conductivity than most plastics and a low, reliable CTE similar to aluminum, making it an excellent soft-tooling candidate for replacing costly, heavy metallic tooling. The FR-4800 material supports high-temperature applications up to 420°F (249°C).

LAST-A-FOAM® FR-6700

Flame-retardant, aerospace-grade rigid foam for aircraft composite core withstands process temperatures up to 275°F for short periods of time. It is specifically designed to satisfy requirements for multiple aerospace and military specifications, including BMS 8-133, DMS-1937 and FAR 25.853 (a). Excellent for models and design prototypes, vacuum-form dies and mold patterns, and honeycomb edge closeout.

LAST-A-FOAM® FR-7100

Economical, uniform foam that is easily finished or painted for low-cost core applications, hand-carved models, prototypes, CNC-machined topographical maps, composite layup tools below 200°F and industrial patterns.

LAST-A-FOAM® R-9300

Designed to support structural loads while insulated buildings, this product is provided in a high-density rigid cellular polyurethane block forms. This material combines high compressive strength with little deflection and extraordinary thermal insulation. Ideal for construction applications and are delivered to contractors ready to use.

LAST-A-FOAM® R-9600

This high-density foam material is lightweight yet strong, while providing a homogeneous background that is transparent to X-rays. It is ideal as core panels for X-ray and diagnostic tables, beds for CT scanners, and as calibration materials.

LAST-A-FOAM® TR-Marine

Our marine foam enables boat designers to replace wood components with a top-quality, non-decaying product fully compatible with fiberglass-laminating production methods. This closed cell structure provides structural strength with moisture resistance.

FLEXIBLE FOAM – SHEET STOCK

Our open-cell, flexible polyurethane foams satisfy applications where energy absorption, fire retardancy, appearance and versatility are important. Available in multiple densities, these foams deliver efficiency while absorbing energy at a consistent, controlled rate.

LAST-A-FOAM® EF-4000

This low density foam series is formulated to absorb significant energy while protecting payloads, such as missiles and nuclear submarine launch tubes. In construction, they are used as shock-isolation systems for earthquake-prone buildings. Other applications include shock mounts for delicate equipment in shipping containers and vibration damper pads for mechanical equipment. It is extremely durable and relatively unharmed by environmental factors.

LAST-A-FOAM® TF-5070

The TF-5070 is highly resilient and offers comparable properties to the TF-6070 Series, except that it is flame-retardant, and a slightly higher foam density would be needed under equal circumstances. Applications include “spring-damper” for submarine launch tubes, shock isolation system in construction, impact-mitigating pads for shipping containers and vibration-damper pads for mechanical equipment.