

A guide to custom profiles.

Extruding Foam

At Industrial Thermo Polymers Limited (ITP), we extrude foam.. In foam extrusion, the molten polyethylene is pushed through a very small opening (the die) and the foam expands by a factor of up to 30 times creating the profiled shape. Foam is extruded in a continuous process allowing the profile to be cut on-line to specific lengths and packaged into cartons.

Custom Profiles

‘Custom Profiles’ is a broad category including tubes, rods and planks. It also includes specialized shapes that are extruded with a specific application or function in mind.

ITP produces custom profiles for many industries, including:

- Packaging (dunnage, protective packaging, U-shapes and edges);
- Automotive;
- Mattress and Furniture;
- Specialty Products;
- Recreational & Fitness;
- Medical;
- Floats & Oil Booms;
- Post Padding;
- Fabricated and Assorted Products.

We welcome new enquiries from all sources! This information package is provided so that prospective customers can understand our business and to determine if there is a strong fit between your application and the products we can provide.

ITP is a “job-shop” not a stocking distributor for custom profiles

In terms of custom profiles, ITP produces only on a customer-specific basis. We design specific profiles based on specific customer applications. We do NOT stock small quantities of products for sale.

Products such as Backer Rod, Pipe Insulation and Pool Noodles are sold through stocking distributors. If you are looking for these products, please contact a Sales Co-ordinator in our Sales department to determine the name and contact information of the distributor in your area.

The Sales Process

For prospective customers the process of introducing a new project to ITP and carrying it through to fruition can be confusing. From first enquiry through to full production, these are the steps that most projects go through.

➤ **STEP 1: Preliminary Quotation**

Technical and application information is gathered and transferred to ITP. The request for quote sheet includes most of the basic information required before a project can be evaluated and a preliminary quotation created. If required, a drawing is created by ITP and accompanies the Quotation package. The package reflects ITP's understanding of your project including dimensions and tolerances.

➤ **STEP 2: Sample Run**

ITP offers you the opportunity to review finished samples of your profile before moving forward with a full production run. This is achieved by ordering a sample order. The sample order is an order for one carton of your profile, the cost associated with a sample run will be noted on your quotation. ITP does not charge a tooling cost, but estimates the set up and development time associated with your specific profile to arrive at this cost. Our R&D department then takes charge of the job, creating dies to achieve your final shape.

Note: ITP reserves the right to confirm our price quotation based on the results gathered during the sample run.

➤ **STEP 3: Regular Production Run**

The project has been transferred from the R&D team to the operations group and the product can be ordered as required thereafter. Always refer to the ITP Part ID

number to assure that your part is repeated consistently. *Allow 3 weeks lead time for regular orders.*

The following is a glossary of the information required that will help ITP understand your project and make the best evaluation.

1	E-mail	Show your e-mail address. The quotation package and most of the communications from ITP will be done by e-mail.
2	F.O.B. location	State the delivery location. Our normal terms of quotation are 'FOB: customer location'. We require that all foam products be transported in vented trailers between ITP and our customer. As not all carriers are equipped with vented trailers, ITP accepts the responsibility of arranging transport with appropriate carriers.
3	Application / Notes	Use this area to describe the application including certification requirements and other information you consider appropriate.
4	Tube or Rod specifications	Enter the ID, OD, wall thickness and length in the correct locations. If you wish, hand-draw the profile as you visualize it in the area provided. Show dimensions.
5	Rectangular specifications	Enter the width, depth and length in the correct location. If you wish, hand-draw the profile as you visualize it in the area provided. Show dimensions.
6	+/- (Tolerances)	A space is provided to show the tolerances on your dimensions. Otherwise, ITP standard tolerances will be used.
7	Critical Y/N	Which dimensions are critical? Indicate Yes or No.
8	Density	Density is a measurement of the mass of foam per volume (pounds/cubic foot). This reflects in the hardness of the foam. ITP uses ranges of density, typically: 2# (1.5 – 2.5), 4# (3.5 – 4.5), 6# (5.5 – 6.5) and 9# (8.5 – 9.5).
9	Color	For polyethylene foam, the 'natural' color is white. This tends to soften any strong color pigments that are added. Black is the most popular color for most foam applications.
10	Release Quantity	Estimate the size of a typical production run of the requested profile in terms of the rate at which you

		would use it in your operations. ITP provides a 3-tier pricing structure in our quote. This allows you to take advantage of the best price according to the volume of the required production run.
11	Estimated Yearly Quantity	Estimate the annual volume that you require. This will assist in establishing the best pricing structure for your project. Add any related comments in the Notes section.
12	Slit	Tubes can be slit longitudinally as a part of the extrusion process.
13	FR	Flame retarding agents can be added when required.
14	UV	Agents can be added to reduce breakdown of the foam when exposed to ultraviolet radiation from the sun.
15	Modifiers	Special modifiers can be added to improve the strength or flexibility of the foam.
16	T-Seal	Tubes can be slit and a special self-sealing liner applied as a part of the extrusion process. At the customer's location, the liner is removed to expose self-sealing adhesive such that the tube can be wrapped around a pipe or other material. The minimum wall thickness is 3/8" to which the T-Seal can be applied.
17	Skinned	The purpose of skinning is to change the surface of the extruded polyethylene. A hot air blower is applied to the surface of the profile immediately after extrusion making the surface shiny.
18	Cell Structure	Cell structure refers to the approximate number of cells in a cubic inch of foam. Finer cell structure tends to make the foam softer while coarser cell structure tends to make it firm. Options include: F fine, M medium and C coarse.
19	Pallet	A number of transportation options are available. Many companies have specified programs based on the logistical policy of their warehouse or trucking partners. Since foam is generally light-weight, FLOOR LOADING is a popular way of maximizing the capacity of shipping trailers. We use a STANDARD one-way wooden pallet with dimensions 36" X 54".
20	Pallet Max Height	We use 96" as the maximum height for the packing of pallets to allow room for entering and exiting

		trailers. Please advise if a different height is required.
21	Packaging	We use cartons for the packaging and shipping of most our products. Other packaging options may be considered such as polybags, spools, etc.
22	Pieces / Carton	Cartons are filled to capacity where possible. Advise if you require a specific number of pieces per carton.
23	Special Requests or Requirements	Indicate any special requirements for your application such as: stretch-wrap (for packaging), label on part, label on carton, certificates required, etc. Use the Notes section to explain any other requirements.

Minimum Order Information

For all custom profile accounts, the minimum order / minimum production run size is **\$5,000.00 or more**. This minimum charge may increase depending on the part complexity.

The ITP Quotation has 3 pricing tiers for your convenience. Generally, Tier 3 is the largest level and is based on a truckload volume. Tier 2 is 50% of a truckload. Tier 1 is the *Minimum* volume permitted.

Custom profiles are extruded in a continuous process. The specific die and mandrel must be mounted into the ‘cold’ extruder as a part of the setup process. Once installed, the extruder is warmed to operating temperatures and the foam is blown out through the die. The equipment must be calibrated and adjusted to achieve the specifications of the profile. It may take up to five hours of setup time before the first finished profile comes off the line. The costs related to setup time are accrued across the cost of the production run. As a result, the economic implications for small production runs are significantly higher (on a per linear foot basis) than full truckload volumes where the setup costs are shared across the entire production run.

Blown Foam and the 10-day Cure Time

At ITP, the blowing agent for all of our polyethylene foam is isobutane, a stable, colorless gas. Once a product is extruded, it is held in our warehouse for a period of 10-days. During this time the blowing agent is released by the foam and replaced with ambient air. ITP’s warehouse and production facilities are designed specifically for this function including ELC detection equipment and regulated air exchange.

The lead-time for custom profile orders is 21-days to allow for this 10-day cure time.

Although all of our products are tested for residual butane before shipment, ITP policy requires that shipments of finished goods between our production facility and the customer's location be done in vented trailers. A vented trailer has two open fresh air ports that allow cross-ventilation of the trailer during transport. We recommend that our customers adopt a similar policy when transporting foam in volumes of ½ truckload or greater.

Quality Control and Product Inspection

The Quality Assurance team will have samples drawn of all custom profiles as a part of the production process. This is in accordance with ITP's ISO 9001 requirements. Note that for small tubes and rods under normal extrusion conditions, an estimated 5% or less of the product will fall outside the statistical norm of the product and will not be captured by ITP Quality Assurance procedures. Consideration should be given to this factor at the time of order.

Notes on Polyethylene

Consult "Hawley's Condensed Chemical Dictionary" for a complete description.

- CAS: 9002-88-4
- Properties: Thermosetting white solid, high-temperature-resistant, excellent resistance to chemical and to creep, high impact and tensile strength, high electrical resistivity, insoluble in organic solvents at room temperature, does not stress-crack. Combustible.
- Melting point: 240°F.
- Becomes soft at 180°F.
- Becomes brittle at -30°F.
- Density of foam 1.5 to 12 pounds per cubic foot (based on specifications).

MSDS sheets available from Web site (www.tundrafoam.com) or by contacting ITP Inside Sales Co-ordinator.

Frequently Asked Questions

Q1 – How do I set up an account with ITP?

A1 – Please ask an Inside Sales Co-ordinator to provide you with a blank Credit Application form. Complete ALL sections of the form and return it to ITP. Note that our standard terms are Net 30 Days. Alternately, ITP accepts payment by bank transfer, cheque, MasterCard and Visa.

Q2 – Why can't I buy small quantities of foam profiles from ITP's inventory?

A2 – ITP creates custom profiles on a customer-specific basis only. We do not retain small volumes of custom profiles for sale. Our agreement with our customers precludes supplying their product to other accounts. Other products such as Backer Rod, Pipe Insulation and Pool Noodles can be purchased directly through our respective distributors. Contact our sales department for the distributor nearest to your location.

Q3 – What is the minimum order for custom profiles?

A3 – The minimum order run is \$5,000.00, or more depending on the complexity of the part, FOB Destination.

Q4 – Does ITP ship beyond the United States and Canada?

A4 – Yes! We will quote on the basis of CIF most major sea ports including Le Havre, Hong Kong, Seoul, Damarron, Oslo, Sao Paolo, etc.

Q5 – Will ITP sign a Confidentiality Agreement?

A5 – Yes, ask your sales person to provide you with a copy of our approved agreement

Q6 – Will ITP certify its products?

A6 – Yes! Please list any certification requirements with the information sheet. Note that there may be a service charge depending on the complexity of the requirement (such as PPAP for the automotive sector). ITP was registered as an ISO 9001 company in November 1999.