

WHITE PAPER

Selecting a Toll (Contract) Manufacturer to Produce Proprietary TPU Film & Sheet

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Filling the Need

Thermoplastic polyurethane (TPU) film and sheet is typically used in demanding, high-performance applications that cannot tolerate failure and thus require a product with rigorous physical properties and performance characteristics. These high standards usually justify the higher cost of TPU film over lesser performing products like polyvinylchloride.

With its superior performance capabilities, however, also come greater challenges in the manufacture of TPU film and sheet. Producing consistent TPU film products requires a high level of expertise coupled with a significant investment in capital equipment, process technology, personnel and training. Thus, to embark on a new product venture that utilizes polyurethane film, and to do so in a timely manner and within the financial constraints of today's economy, it is often prudent to consider contracting with an experienced toll manufacturer rather than attempt to produce this challenging material in-house.

What Is Toll Manufacturing?

The terms toll manufacturing and private labeling are often used synonymously. There is, however, a subtle distinction between the two. In the TPU film industry, **private label** products are typically *previously developed* film or sheet goods that may be sold into the general specialty films marketplace by the manufacturer, or made available for offer under another company's brand.

Toll manufacturing, also called toll processing or contract manufacturing, produces film products that are normally *unique, custom engineered, proprietary* goods made *exclusively* by the toll manufacturer (the “toller”) for the contracting firm (the “customer”) and are branded as such.

The toll arrangement may be for small, short-term prototype runs, full-scale high-volume production contracts that span many years, or any size program in between. Depending on the arrangement negotiated between the two companies, the customer may assume ownership of the finished product the instant it comes off the production line, at the time it is shipped, or at any other point in the overall process as specified in the contract.

Why Toll?

There are a variety of reasons a customer may choose to enter into a contract relationship with a toll manufacturer as opposed to producing the TPU film in-house or purchasing a standardized formulation from a TPU film manufacturer. These include:

1. To maintain exclusive control of the intellectual property. The customer may have developed a proprietary resin, an exclusive film formulation (the mix of TPU resin and additives), or a unique substrate onto which the film is cast.
2. To lower material costs by providing the resin and additives directly to the toller (although this isn't always the case, depending on the purchasing power of the customer versus that of the toll manufacturer).
3. To lower manufacturing costs by using a toll manufacturer with a very modern, efficient production operation.
4. To take advantage of a toll manufacturer's superior knowledge and experience base, TPU film being a very difficult product to extrude and handle properly.
5. To avoid the capital investment in equipment, process technology, personnel and training required to create an effective in-house TPU film production operation.
6. To maximize and maintain brand exclusivity by controlling all phases of product manufacture, rather than simply affixing a label to another company's TPU film product.
7. To streamline time-to-market, creating the flexibility to accelerate the timing of a new product introduction.

8. To compensate for lack of capacity or technical capability on the customer's existing in-house TPU film extrusion lines.
9. To guarantee confidentiality.

Any or all of the above may be valid reasons for a firm to decide to enter into a contract manufacturing relationship instead of private labeling an existing product or building an in-house production operation to produce their own finished goods.

Who Supplies the Raw Materials?

A key decision in the toll manufacturing process is to determine the source of the raw materials from which the tolled TPU film product is to be manufactured. It may come from three different places:

1. The contract customer, if a resin supplier or chemical company, provides their own specific TPU resin. They may also supply any additives to complete the film recipe. While this gives the customer complete control over the raw materials and their cost, it also places responsibility on the customer to ensure timely deliveries of raw materials so the toll manufacturer will be able to meet the production schedule specified in the contract.
2. The customer may purchase a specially developed resin and additive package from an outside resin manufacturer or chemical company of his choice. As above, the customer controls the cost of raw materials provided but also assumes full responsibility for supplying the correct resin and additives to the toll manufacturer in a timely manner in order to allow the contracted production schedule to be met.
3. The toll manufacturer may purchase the specified resin and additive package in behalf of the contract customer, usually for a negotiated fee. This can give the contract manufacturer greater control over the total film production schedule.

What Else Is the TPU Toll Film Customer Buying?

Once the manner of raw material procurement is established, the customer and toll manufacturer negotiate which services are to be contracted, and at what fee. In the case of Argotec, Inc., one or all of the following services can be provided on a contract basis:

1. Product engineering: working with the customer to design a TPU film product that will function properly in the final application or on the customer's secondary fabrication or converting operation.
2. Manufacturing (process) engineering: designing the production process so it runs properly on the toller's extrusion operation.
3. Raw materials management: when permitted by the contract, the toll manufacturer is given freedom and responsibility to order resin and additives from the customer or the customer's resin supplier to ensure materials are available in time to meet film production schedules.
4. Manufacturing expertise: knowing how to execute the production process with the toller's available production equipment.
5. Batch preparation: pelletizing, grinding and blending of the resin and any additives to prepare the exact batch recipe needed for conversion into TPU film or sheet.
6. Film extrusion: this includes not only having a modern film extrusion operation and the know-how to use it, but also the proper environment for the extruders in order to prevent corruption of the final product by airborne contaminants. Eight of Argotec's extrusion lines are housed in multi-atmospheric clean rooms to ensure the cleanest possible film products.
7. Quality control systems: the production of extremely consistent TPU film products, chemically and dimensionally, is a result of consistently balancing three critical factors: recipe control, process control, and exacting adherence to customer specifications. Managing these factors is essential to creating a total, unified QC process that provides the customer with a film product that will meet or exceed the requirements of the final application.
8. Warehousing facilities: sufficient clean, protected space to store finished goods after manufacture prior to shipment to the customer.
9. Inventory services: warehousing, cataloging and tracking of raw materials, regrind and scrap, as well as of finished goods for shipping to the contract customer or the customer's customers on a just-in-time basis.
10. Product packaging: packaging finished goods for maximum protection against physical damage and contamination, ready for shipment.
11. Product labeling: the ability to provide custom product (brand) labeling, minimizing or eliminating any link to the toll manufacturer's identity or brands.

12. Customer service: the organization necessary to provide complete fulfillment service, including customer service representatives who accept and process orders placed direct on toll manufacturer by the customer's customers.
13. Shipping: expedite shipping of finished goods to contract customer or to secondary end users (the customer's customers).
14. Documentation: provide a complete electronic or hard copy record of every stage of the raw materials handling, manufacturing, quality control, inventory, customer service and shipping processes.

Whether a contract customer requires only simple extrusion and return shipping of the finish roll goods or a much more comprehensive toll program as described above, it is invariably of benefit to select as a partner the firm with all the knowledge, capabilities and expertise described above.

Why Choose Argotec As Your Toll Manufacturer?

Argotec was founded and built its first manufacturing facility in 1988. The company's initial order was from a contract customer they still serve today. Since then, Argotec has grown to be one of the world's largest producers of high-performance, custom-engineered polyurethane film and sheet. They have also become one of the world's largest toll manufacturers of these difficult-to-extrude films. The company's film products are sold into a broad array of industrial markets, including automotive, medical, semiconductor, graphics, construction, textiles and more. With a full line of standardized film offerings, as well producing proprietary film products for some of the biggest names in the specialty film and chemical industries, Argotec has the capability and experience to satisfy virtually any potential private label or toll customer.

In addition, with three production facilities in Greenfield, Massachusetts, Argotec also has the manufacturing capacity and storage facilities to handle any size program, from modest niche products to the largest toll contracts. Moreover, its ISO 9001:2008-certified quality management system, cutting-edge extrusion operation and Class 10,000 multi-atmospheric manufacturing environment, combined with a highly trained staff of TPU film experts, efficient customer service and fulfillment organization, and a 20-plus-year record of satisfying some of the largest, most demanding and respected polymer manufacturers in the world, makes Argotec the clear choice for any serious TPU film or sheet contract manufacturing program.

Starting the Process

Begin the contract manufacturing process by describing your need using the form of that name on our web site, www.argotec.com/MFG_describe_need.html, or simply give us a call at 413-772-2564 or e-mail your requirements to info@argotec.com. You may also wish to request our two-way non-disclosure agreement or send us your own. Once past those preliminaries, we can move ahead in earnest to build a toll program that will satisfy your specific requirements.

About Argotec

Argotec Inc. is a privately held, global supplier of custom-engineered, high-performance, polyurethane film and sheet for a wide variety of critical applications. Their films are available in thicknesses ranging from 0.2 to 125 mils, and in widths up to 85 inches. All Argotec films are manufactured to the specifications of their customers. In addition to flat-die, cast-on-carrier and blown-film-extrusion technologies, the company also has expertise in extrusion coating, multi-layer constructions, and closed-cell polyurethane foam sheet extrusion. Argotec sells film & sheet products globally to contract customers and the international specialty films market, primarily to adhesive coaters, plastics film converters and fabricators, glass laminators, as well as OEM's, under the following brands:

- ArgoBond[®] glass lamination films
- ArgoGuard[®] paint protection films
- ArgoMed[®] medical device and wound dressing films
- ArgoFlex[®] waterproof breathable and textile lamination films
- ArgoGraph[®] graphic overlamine and subsurface printing films
- ArgoThane[®] films for specialty applications

Successful uses of Argotec polyurethane film and sheet include automotive applications such as weatherable films for paint protection and barrier films for headliners, foamed-in-place seating, head rests and arm rests; performance apparel and footwear applications where waterproof-breathable protection and maximum comfort is required; medical applications, such as elastic tapes, wound dressings, hospital mattresses and covers, transdermal patches, and wheel chair cushions; graphics applications such as protective overlamine films for display graphics and signs, as well as subsurface print media for outdoor advertising and automotive graphic wraps. Other common uses include inflatable bladders, hydration packs, sock liners and mid-sole materials for athletic applications, keyboard covers, industrial bellows and headset ear cushions.

Further information may be obtained by calling (413)772-2564, faxing (413)772-2565, e-mailing info@argotec.com, or visiting the Argotec website at www.argotec.com.