Surlyn® Ionomer Sheet

Surlyn® is a tough, easily formed thermoplastic sheet/film product. It is a milky clear sheet whose transparency improves as thickness decreases. Surlyn® is commonly used in orthotics/prosthetics applications where the need is high for toughness, durability and high resistance to chemical attack. In thinner gauges the product is commonly used for packing. Surlyn’s specific gravity (.94 -.97g/cm3) combined with its toughness and low temperature impact allows it to be used to manufacture floating buoys for the marine market.

- Sheet Size: 48" x 96" (standard size)
- Sheet Thickness: 1/8" - 1/4" thickness
- Rod: Custom

Used alone or in combination with other resins, Surlyn® resins deliver outstanding impact toughness, abrasion resistance, and chemical resistance in a variety of consumer and industrial products. Because Surlyn® is a remarkably clear plastic, it can be used to replace glass or crystal. Unlike other clear plastics, Surlyn® is highly resistant to chemicals and oils, enabling unique packaging options for perfumes and cosmetics. When color is added, the resin assumes a deep translucence. Colors can be mixed to create a polished stone or marble appearance if desired.

Features of Surlyn®
- Tough
- Easily decorated
- Lightweight
- Excellent low temperature impact
- Formable
- Impact toughness
- Abrasion resistance
- High clarity

Manufacturing
Surlyn is moderately versatile in its manufacturing capabilities and may be saw cut, milled, routered, die cut and punched. Carbide tools are recommended for trimming and machining. The sheet must be clamped securely and minimal cuts should be used to avoid chipping and cracking.

Surlyn has a high affinity to water and therefore when a sheet has been exposed to high humidity for a long period of time, drying is needed. Best results for drying are obtained at 145 F for sixteen (16) hours. The normal forming temperature is 250-300 F. Due to its quick heat cycle characteristics, working time is short (1-2 minutes). Mold temperature is critical and should be maintained at 120-140 F to allow mold accuracy replication and prevent premature or uneven cooling. Frame heat until sagging occurs. Preheating metal frames and clamping areas is recommended.

Surlyn may be solvent welded using Acetone. A series of adhesives and welding techniques are available to make mechanical bonds to metals and other resins.

Sterilization
Surlyn can not be heat sterilized, because of its low softening point. It may be sterilized using either radiation with a maximum of 5.0 megarads or ethylene oxide (used in a 12%/88% ethylene oxide/freon gas mix).

Precautions
Surlyn is a combustible thermoplastic and therefore should be stored in a cool dry area. Because the material is non ultraviolet stabilized it is not recommended for outdoor applications. It is possible for the mold to be too smooth. This will cause mark-off and therefore inaccurate model replication. If air holes are used to draw vacuum they should be 1/32" to 1/16" in diameter.
Surlyn must be thermoformed under the right conditions. The most frequent problem is the development of bubbles of gas in the plastic. This is caused by either too high a molding temperature, excessive moisture in the material, or excessive moisture in the model. Dry sheets or reduce working temperature to solve this problem.

**Applications**
Applications of this material are similar to those of optical sheet plastics. The advantage to low working temperature, high stiffness values, fast cycle times, and high impact resistance make Surlyn an excellent choice for Prosthetic Check Sockets, facial burns masks, and all shells and cuffs where visualizing underlying tissues is critical.

**Sheet Chart**
Surlyn is an optical resin that allows excellent detection of soft tissue pressure and topical burn areas. It features excellent clarity, elasticity, and impact strength. Surlyn produces fair mold detail reproduction, but requires specific molding techniques.