# DuPont Packaging & Industrial Polymers

## DuPont™ Surlyn® 1601

### Surlyn® resins Product Data Sheet

## Description

| | |
|---|---|
| Product Description | DuPont™ Surlyn® 1601 is an ionomer of ethylene acid copolymer.<br><br>The resin can be processed in conventional blown film, cast film, sheet extrusion and coextrusion equipment designed to process polyethylene and ethylene copolymer type resins. |

## Restrictions

| | |
|---|---|
| Material Status | • Commercial: Active |

## Typical Characteristics

| | |
|---|---|
| Composition | Sodium Ionomer |

## Typical Properties

| Physical | Nominal Values | Test Method(s) | |
|---|---|---|---|
| * Density () | 0.94 g/cm³ | ASTM D792 | ISO 1183 |
| * Melt Flow Rate (190°C/2.16kg) | 1.3 g/10 min | ASTM D1238 | IS0 1133 |

| Thermal | Nominal Values | Test Method(s) | |
|---|---|---|---|
| * Melting Point (DSC) | 98°C (208°F) | ASTM D3417 | ISO 3146 |
| Freezing Point (DSC) | 68°C (154°F) | ASTM D3417 | ISO 3146 |
| Vicat Softening Point () | 74°C (165°F) | ASTM D1525 | ISO 306 |

## Processing Information

**General**

| | |
|---|---|
| * Maximum Processing Temperature | 300°C (572°F) |
| General Processing Information | Surlyn® 1601 is normally processed at melt temperatures ranging from 160°-260°C (320°-500°F) in blown and flat die equipment. Typical extruder profiles are shown below. Actual processing temperatures will usually be determined by either the specific equipment or substrate or one of the other polymers in a coextrusion.<br><br>Materials of construction used in the processing of this resin should be corrosion resistant. Stainless steels of the types 316, 15-5PH, and 17-4PH are excellent, as is quality chrome or nickel plating, and in particular duplex chrome plating. Type 410 stainless steel is satisfactory, but needs to be tempered at a minimum temperature of 600°C (1112°F) to avoid hydrogen-assisted stress corrosion cracking. Alloy steels such as 4140 are borderline in performance. Carbon steels are not satisfactory. While stainless steels can provide adequate corrosion protection, in some cases severe purging difficulties have been encountered. Nickel |

  

plating has been satisfactory, but experiments have shown that chrome surfaces have the least adhesion to acid based polymers. In recent years, the quality of chrome plating has been deteriorating due to environmental pressures, and the corrosion protection has not always been adequate. Chrome over top of stainless steel seems to provide the best combination for corrosion protection and ease of purging.

If surface properties of the extruded resin require modification (such as, lower C.o.F. for packaging machine processing), refer to the Conpol™ Processing Additive Resins product information guide.

After processing Surlyn®, purge the material out using a polyethylene resin, preferably with a lower melt flow rate than the Surlyn resin in use.
The "Disco Purge Method" is suggested as the preferred purging method, as this method usually results in a more effective purging process. Information on the Disco Purge Method can be obtained via your DuPont Sales Representative.

Never shut down the extrusion system with Surlyn® in the extruder and die. Properly purge out the Surlyn® with a polyethylene, and shut down the line with polyethylene or polypropylene in the system.

| Blown Film Processing | Nominal Values |
|---|---|
| Blown Film Processing Information | A suggested initial extruder temperature set profile. |
| Feed Zone | 135°C (275°F) |
| Second Zone | 160°C (320°F) |
| Third Zone | 185°C (365°F) |
| Fourth Zone | 185°C (365°F) |
| Fifth Zone | 185°C (365°F) |
| Adapter Zone | 185°C (365°F) |
| Die Zone | 185°C (365°F) |

| Cast Film / Sheet Processing | Nominal Values |
|---|---|
| Cast Film / Sheet Processing | A suggested initial extruder temperature set profile. |
| Feed Zone | 160°C (320°F) |
| Second Zone | 210°C (410°F) |
| Third Zone | 235°C (455°F) |
| Fourth Zone | 235°C (455°F) |
| Fifth Zone | 235°C (455°F) |
| Adapter Zone | 235°C (455°F) |
| Die Zone | 235°C (455°F) |

**FDA Status Information**

SURLYN® 1601 complies with Food and Drug Administration Regulation 21 CFR 177.1330(a) - - Ionomeric resins, subject to the limitations and requirements therein. This Regulation describes polymers that may be used in contact with food, subject to the finished food-contact article meeting the extractive limitations under the intended conditions of use, as shown in paragraph (c) of the Regulation.

The information and certifications provided herein are based on data we believe to be reliable, to the best of our knowledge. The information and certifications apply only to the specific material designated herein as sold by DuPont and do not apply to use in any process or in combination with any other material. They are provided at the request of and without charge to our customers. Accordingly, DuPont cannot guarantee or warrant such certifications or information and assumes no liability for their use.

**Regulatory Information**

For information on regulatory compliance outside of the U.S., consult your local DuPont representative.

  

| | |
|---|---|
| **Safety & Handling** | For information on appropriate Handling & Storage of this polymeric resin, please refer to the Material Safety Data Sheet..<br><br>A Product Safety Bulletin, Material Safety Data Sheet, and/or more detailed information on extrusion processing and/or compounding of this polymeric resin for specific applications are available from your DuPont Packaging and Industrial Polymers representative. |

**Read and Understand the Material Safety Data Sheet (MSDS) before using this product**

## Regional Centres

DuPont operates in more than 70 countries. For help finding a local representative, please contact one of the following regional customer contact centers:

### Americas

DuPont Company
Chestnut Run Plaza – Bldg. 730
974 Centre Road
Wilmington, Delaware
19805 U.S.A.
Toll-Free (USA): 1-800-628-6208
Telephone: 1-302-774-1000
Fax: 1-302-355-4013

DuPont do Brasil, S.A.
Alameda Itapecuru, 506
06454-080 Barueri, SP Brasil
Telephone: +55 11 4166 8000
Fax: +55 11 4166 8736

### Asia Pacific

DuPont China Holding Co., Ltd.
Shanghai Branch
399 Keyuan Road, Bldg. 11
Zhangjiang Hi-Tech Park
Pudong New District, Shanghai
P.R. China (Postcode: 201203)
Telephone +86 21 3862 2888
Fax +86-21-3862-2889

### Europe / Middle East / Africa

DuPont de Nemours Int'1. S.A.
2,Chemin du Pavillon Box 50
CH-1218 Le Grand Saconnex
Geneva, Switzerland
Telephone +41 22 717 51 11
Fax +41 22 717 55 00

**http://surlyn.dupont.com**



*This data sheet is effective as of 08/07/2010 08:38:19 PM and supersedes all previous versions.*