

## DuPont™ Surlyn® 1652SR

### Surlyn® resins Product Data Sheet

#### Description

|                     |                                                                                                                                                                                                                                                                             |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Product Description | DuPont™ Surlyn® 1652SR is an ionomer of ethylene acid copolymer.<br><br>The resin can be processed in conventional extrusion coating, blown film, cast film, sheet extrusion and coextrusion equipment designed to process polyethylene and ethylene copolymer type resins. |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### Restrictions

|                 |                                                                      |
|-----------------|----------------------------------------------------------------------|
| Material Status | <ul style="list-style-type: none"> <li>Commercial: Active</li> </ul> |
|-----------------|----------------------------------------------------------------------|

#### Typical Characteristics

|                            |                                                |
|----------------------------|------------------------------------------------|
| Composition                | Zinc Ionomer                                   |
| Characteristics / Benefits | Contains slip and chill roll release additives |

#### Typical Properties

| Physical                        | Nominal Values         | Test Method(s) |          |
|---------------------------------|------------------------|----------------|----------|
| * Density ( )                   | 0.94 g/cm <sup>3</sup> | ASTM D792      | ISO 1183 |
| * Melt Flow Rate (190°C/2.16kg) | 5.4 g/10 min           | ASTM D1238     | ISO 1133 |
| Thermal                         | Nominal Values         | Test Method(s) |          |
| * Melting Point (DSC)           | 100°C (212°F)          | ASTM D3417     | ISO 3146 |
| Freezing Point (DSC)            | 81°C (178°F)           | ASTM D3417     | ISO 3146 |
| Vicat Softening Point ( )       | 79°C (174°F)           | ASTM D1525     | ISO 306  |

#### Processing Information

##### General

|                                  |                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| * Maximum Processing Temperature | 305°C (581°F)                                                                                                                                                                                                                                                                                                                            |
| General Processing Information   | Surlyn® 1652SR is normally processed at melt temperatures ranging from 185°-285°C (365°-545°F) in flat die equipment. For cast film / sheet, a typical extruder profile is below. Actual processing temperatures will usually be determined by either the specific equipment or substrate or one of the other polymers in a coextrusion. |

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.

| <b>Blown Film Processing</b>                   | <b>Nominal Values</b>                                 |
|------------------------------------------------|-------------------------------------------------------|
| 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)                                         |
| <b>Cast Film / Sheet Processing</b>            | <b>Nominal Values</b>                                 |
| 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)                                         |
| <b>Extrusion Coating/Lamination Processing</b> | <b>Nominal Values</b>                                 |
| Extrusion Coating / Lamination Processing      | A suggested initial extruder temperature set profile. |
| Feed Zone                                      | 185°C (365°F)                                         |
| Second Zone                                    | 235°C (455°F)                                         |
| Third Zone                                     | 260°C (500°F)                                         |
| Fourth Zone                                    | 285°C (545°F)                                         |
| Fifth Zone                                     | 285°C (545°F)                                         |
| Adapter Zone                                   | 285°C (545°F)                                         |
| Die Zone                                       | 285°C (545°F)                                         |

#### FDA Status Information

SURLYN® 1652SR 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.

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#### 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..

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:

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