DuPont Packaging & Industrial Polymers

DuPont™ Surlyn® 1652SR

Surlyn® resins Product Data Sheet

Description

Product Description	Surlyn® 1652SR is available for use in conventional blown, cast film, sheet extrusion and coextrusion equipment. It is also used in extrusion coating and coextrusion coating equipment designed to process polyethylene and ethylene copolymer type resins.

Restrictions

Material Status	• Commercial: Active

Typical Characteristics

Features	Zinc Ionomer
Characteristics / Benefits	Contains slip and chill roll release additives

Typical Properties

Physical	Nominal Values	Test Method (s)	
Density ()	0.94 g/cm³	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	
Vicat Softening Point ()	79°C (174°F)	ASTM D1525	ISO 306

Processing Information

General

Maximum Processing Temperature	300°C (572°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.

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 Processing Information	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)

Extrusion Coating /Lamination Processing	Nominal Values
Extrusion Processing Information	A suggested initial extruder temperature set profile.
Feed Zone	160°C (320°F)
Second Zone	210°C (410°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 conforms to the United States Code of Federal Regulations, Title 21, Paragraph 177.1330 covering its use as a food contact surface subject to the extractives limitations on the finished food contact article as described in the regulation.

Regulatory Information

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

Safety & Handling

Surlyn® 1652SR as supplied by DuPont are not considered hazardous materials. As with any hot material, care should be taken to protect the hands and other exposed parts of the body when handling molten polymer. At recommended processing temperatures, small amounts of fumes may evolve from the resins. When resins are overheated, more extensive decomposition may occur. Adequate ventilation should be provided to remove fumes from the work area. Disposal of

scrap presents no special problems and can be by landfill or incineration in a properly operated incinerator. Disposal should comply with local, state, and federal regulations. Resin pellets can be a slipping hazard. Loose pellets should be swept up promptly to prevent falls. For more detailed information on the safe handling and disposal of DuPont resins, a Material Safety Data Sheet can be obtained from the DuPont Packaging and Industrial Polymers website or by contacting your sales representative.

This data sheet is effective as of 01/05/2010 10:18 AM and supersedes all previous versions.