DuPont Packaging & Industrial Polymers

DuPont™ Surlyn® 1705-1

Surlyn® resins Product Data Sheet

Description

Product Description	DuPont™ Surlyn® 1705-1 is an ionomer of ethylene acid copolymer. 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	• Commercial: Active

Typical Characteristics

Composition	Zinc Ionomer

Typical Properties

Physical	Nominal Values	Test Method(s)	
* Density ()	0.95 g/cm³	ASTM D792	ISO 1183
* Melt Flow Rate (190°C/2.16kg)	5.5 g/10 min	ASTM D1238	IS0 1133

Thermal	Nominal Values	Test Method(s)	
* Melting Point (DSC)	95°C (203°F)	ASTM D3417	ISO 3146
Freezing Point (DSC)	61°C (142°F)	ASTM D3417	ISO 3146
Vicat Softening Point ()	65°C (149°F)	ASTM D1525	ISO 306

Processing Information

General

* Maximum Processing Temperature	290°C (554°F)
General Processing Information	Surlyn® 1705-1 is normally processed at melt temperatures ranging from 160°-282°C (320°-540°F) in blown, cast and extrusion coating equipment. Typical extruder profiles are below. Actual processing temperatures will usually be determined by either the specific equipment or substrate or one of the other polymers in a coextrusion. While it may be possible to extrude Surlyn® 1705-1 at temperatures as high as 299C (570F) in certain scenarios, this will be dependent on screw design (shear heating factors), and extruder configuration & throughput, which influence residence time in the machine. Please consult with a technical representative in DuPont Packaging & Industrial Polymers. 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 for blown film extrusion.
Feed Zone	110°C (230°F)
Second Zone	135°C (275°F)
Third Zone	160°C (320°F)
Fourth Zone	160°C (320°F)
Fifth Zone	160°C (320°F)
Adapter Zone	160°C (320°F)
Die Zone	160°C (320°F)

Cast Film / Sheet Processing	Nominal Values
Cast Film / Sheet Processing	A suggested initial extruder temperature set profile for film or sheet casting.
Feed Zone	135°C (275°F)
Second Zone	185°C (365°F)
Third Zone	210°C (410°F)
Fourth Zone	210°C (410°F)
Fifth Zone	210°C (410°F)
Adapter Zone	210°C (410°F)
Die Zone	210°C (410°F)

Extrusion Coating/Lamination Processing	Nominal Values
Extrusion Coating / Lamination Processing	A suggested initial extruder temperature set profile for extrusion coating.
Feed Zone	160°C (320°F)
Second Zone	210°C (410°F)
Third Zone	250°C (482°F)
Fourth Zone	280°C (536°F)
Fifth Zone	282°C (540°F)
Adapter Zone	282°C (540°F)

Die Zone	282°C (540°F)

FDA Status Information	SURLYN® 1705-1 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.. 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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medicalk applications and expressly acknowledges the contemplated use. For further information, please contact your DuPont representative. You may also request a copy of DuPont POLICY Regarding Medical Applications H-50103-3 and DuPont CAUTION Regarding Medical Applications H-50102-3.

This data sheet is effective as of 10/01/2014 06:54:05 PM and supersedes all previous versions.