



Dow Packaging & Specialty Plastics

Product Data Sheet

SURLYN™ 1705

Ionomer

General Information

Product Description SURLYN™ 1705 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.

Status

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 Index (190°C/2.16kg)	5.5 g/10 min	ASTM D1238	ISO 1133
Thermal	Nominal Values	Test Method(s)	
*Melting Point (DSC)	91 °C (195.8 °F)	Dow Method	
Freezing Point (DSC)	64 °C (147.2 °F)	Dow Method	

Processing Information

***Maximum Processing Temperature** 285 °C (545 °F)

General Processing Information SURLYN™ 1705 is normally processed at melt temperatures ranging from 160°-285°C (320°-545°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 at temperatures as high as 295°C (563°F) 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 Dow Performance Materials.

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 Dow 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 Information

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)

Nominal Values

A suggested initial extruder temperature set profile for blown film extrusion.

Cast Film / Sheet Processing Information

Feed Zone	135 °C (275 °F)
Second Zone	185 °C (365 °F)
Third Zone	210 °C (410 °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)

Nominal Values

A suggested initial extruder temperature set profile for film or sheet casting.

Extrusion Coating/Lamination Processing Information

Feed Zone	160 °C (320 °F)
Second Zone	210 °C (410 °F)
Third Zone	235 °C (455 °F)
Fourth Zone	260 °C (500 °F)
Fifth Zone	260 °C (500 °F)
Adapter Zone	260 °C (500 °F)
Die Zone	260 °C (500 °F)

Nominal Values

A suggested initial extruder temperature set profile for extrusion coating is below. If needed you can raise zones 5 onward to 285C, but always run as cool as the process will allow to meet end-use performance specifications.

FDA Status Information

SURLYN™ 1705 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



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Regulatory Information

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



Product Stewardship

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http://www.dow.com/products_services





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P&SP Disclaimer

Additional Information

To contact Dow via Toll-Free or Local Toll phone numbers in specific countries, please see the following webpage:
<https://www.dow.com/en-us/support/contact-representative.html>

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