Dow Packaging & Speciality Plastics
Product Data Sheet

NUCREL™ 699

Acid Copolymer

Description

Product Description	NUCREL™ 699 is a copolymer of ethylene and methacrylic acid, made with nominally 11 wt% methacrylic acid. It is inherently flexible without the need for plasticizers. The resin can be pigmented, UV-stabilized for exterior applications and painted or plated for special decorative effects.

Restrictions

Material Status	Commercial: Active

Typical Characteristics

Composition	11% By Weight Methacrylic Acid comonomer content

Typical Properties

Physical	Nominal Values		Test Method(s)	
*Density ( )	0.94 g/cm³	ASTM D792		ISO 1183
*Melt Flow Rate (190°C/2.16kg)	95 g/10 min	ASTM D1238		ISO 1133
Thermal	**Nominal Values**		**Test Method(s)**	
*Melting Point (DSC)	94 °C (201.2 °F)	ASTM D3418		ISO 3146
Freezing Point (DSC)	80 °C (176 °F)	ASTM D3418		ISO 3146
Vicat Softening Point ( )	65 °C (149 °F)	ASTM D1525		ISO 306

Processing Information

*Maximum Processing Temperature	235 °C (455 °F)
General Processing Information	NUCREL™ 699 is readily processed in conventional extrusion equipment. Melt temperature may be varied over the range of 135-235°C (275-455°F). 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 NUCREL™, purge the material out using a polyethylene resin, preferably with a lower melt flow rate than the NUCREL™ 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 NUCREL™ in the extruder and die. Properly purge out the NUCREL™ with a polyethylene, and shut down the line with polyethylene or polypropylene in the system.

FDA Status Information	**NUCREL™ 699 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 Dow 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, Dow 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 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.**

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c. use as a critical component in medical devices that support or sustain human life; or
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Additional Information

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Published August 2019

Version: 114.0
Last modified at 8/11/2019 1:23 PM