DuPont Packaging & Industrial Polymers

DuPont™ Appeel® 53070

Appeel® resins Product Data Sheet

Description

Product Description	DuPont™ Appeel® 53070 is a modified ethylene vinyl acetate copolymer resin designed to function as a sealing layer for lidding applications. It is most often suggested to provide strong peelable seals to polypropylene, and moderate seals to polystyrene, polyester, PVC and is available in pellet form for use in conventional extrusion or coextrusion equipment designed to process polyethylene resins.

Restrictions

Material Status	• Developmental: Active
Availability	• Asia, Australia, Pacific Rim

Typical Characteristics

Uses	• Lidding Sealant
Features	*** Contains amides for slip / chill roll release, but more than in Appeel® 53071.
Applications	- Low temperature heat seal. Appeel® 53070 offers low temperature heat seals with adequate seal strength at 90C. - Heat sealability to various materials including PE, PP, PS, and Rigid PVC. Appeel® 53070 can also be sealed to paper, paperboard, woven fabrics, non-woven fabrics, wood and photographic papers. - Appeel® 53070 allows a peelable seal from most plastic materials excluding PE. - High transparency. - Boiling resistance. Appeel® 53070 endures boiling process, whose conditions are 90C / 30min. - Appeel® 53070 conforms to Code #20 of the Ministry of Health and Welfare Japan. - Appeel® 53070 is used as a heat seal layer in lidding material for injection molded and vacuum molded plastic containers, especially HIPS and PS used in the packaging of yogurts, jams, butter and other food items. Typical structures for this lidding would be: OPP/PE/ Appeel® 53070 PET/PE/ Appeel® 53070 Over lacquer/Print/Foil/PE/ Appeel® 53070 Paper/PE/Foil/PE/ Appeel® 53070 Appeel® 53070 can also be used as a sealant in general flexible packaging. It provides low temperature seals for snacks and confectionery.

Typical Properties

Physical	Nominal Values	Test Method(s)	
* Density ()	0.92 g/cm³	ASTM D792	ISO 1183
* Melt Flow Rate (190°C/2.16kg)	8 g/10 min	ASTM D1238	IS0 1133

Thermal	Nominal Values	Test Method(s)	
* Melting Point (DSC)	96°C (205°F)	ASTM D3418	ISO 3146
Vicat Softening Point ()	58°C (136°F)	ASTM D1525	ISO 306

Heat Seal Evaluation

The performance of any sealant resin should be evaluated within the context of the application. The sealant is designed to bond to particular substrate(s). Many variables can affect seal strength, including the physical properties of the substrate being sealed to, thickness, flange or surface design, heat seal temperature, dwell time and pressure. The condition and type of the sealing equipment used, such as roller sealers versus platen seal mechanisms can make a significant difference.

In most cases sealant peel strength is used as a measure of performance. Although this is a convenient test, peel strength is affected not only by substrate adhesion but also by peel angle, separation rate, ambient temperature, tensile and modulus properties of the materials, and often by the time elapsed since the formation of the bond.

If sealant peel strength is used as a measure of sealant performance, it is imperative that peel strength be evaluated not only at the time of initial heat sealing the lid to the substrate, but throughout the life of the product and under all the conditions to which the sealant will be exposed. Only then does peel strength provide a reliable indication of adhesive performance in the specific application.

Processing Information

General

* Maximum Processing Temperature	235°C (455°F)
General Processing Information	f the process is stopped for short periods of time, the screw for the Appeel® extruder should be kept turning at a low rpm to keep material flowing. After processing Appeel®, purge the material out using a polyethylene resin, preferably with a lower melt flow rate than the Appeel® 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 Appeel® in the extruder and die. Properly purge out the Appeel® with a polyethylene, and shut down the line with polyethylene or polypropylene in the system.

Extrusion Coating/Lamination Processing	Nominal Values
Extrusion Coating / Lamination Processing	Extrusion Coating: The melt temperature of Appeel® 53070 should be maintained in the 185 - 235ºC range in extrusion coating processes. Selection of a specific melt temperature will depend on screw configuration, potential power limitations, and the need to match melt viscosities. However, melt temperatures above 238C (460F) should be avoided because of possible thermal degradation of the resin. If the process is stopped for short periods of time, the Appeel® 53070 resin extruder should be kept turning at low rpm. For a permanent shutdown, the Appeel® 53070 resin should be purged out using an available polyethylene resin run at the same extrusion temperature used for the Appeel® 53070 resin. Never raise temperature over 235ºC until Appeel® 53070 resin is completely purged out. Appeel® 53070 requires relatively low processing temperatures and cooling the bottom of hopper due to its low Vicat point and higher comonomer level. Following is an example for suggested temperature profile on the high side of the processing range. Lower temperatures in the final metering zone, adapter and die are suggested if compatible with the process and application.
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)

FDA Status Information	Appeel® 53070 does not have US-FDA food contact compliance at present. 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	Appeel® 53070 complies with Japan Hygienic Olefin and Styrene Plastics Association and MITI no. 20 Food regulation in Japan. For information on regulatory compliance outside of the U.S. and Japan, 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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This data sheet is effective as of 09/24/2009 06:01:11 PM and supersedes all previous versions.