



## APPEEL™ 2044

## Peelable Resin

## General Information

**Product Description** APPEEL™ 2044 is a blown or cast film resin designed to be a sealing layer for lidding applications. It provides a peelable seal over a broad temperature range to a number of container materials including ABS, CPET, HDPE, PETG, PP, PS, and APET. It will provide stronger seals to HIPS, PVC, and HDPE. APPEEL™ 2044 is a modified ethylene vinyl acetate polymer available in pellet form for use in conventional extrusion and coextrusion equipment designed to process polyethylene resins.

## Status

**Material Status** Commercial: Active

## Typical Characteristics

**Uses** Lidding Sealant

**Characteristics / Benefits** Contains amide slip agent  
Contains antiblock agent

## Typical Properties

Physical	Nominal Values	Test Method(s)	
*Density ( )	0.95 g/cm <sup>3</sup>	ASTM D792	ISO 1183
*Melt Flow Index ( 190°C/2.16kg)	2.6 g/10 min	ASTM D1238	ISO 1133
Thermal	Nominal Values	Test Method(s)	
*Melting Point ( DSC)	79 °C ( 174.2 °F)	ASTM D3418	ISO 3146
Vicat Softening Point ( )	54 °C ( 129.2 °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

\*Maximum Processing Temperature 235 °C ( 455 °F )

**General Processing Information** If 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 Dow 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.

**Blown Film  
Processing Information**

**Nominal Values**

**Blown Film:** In blown film coextrusion processes the temperature of the APPEEL™ 2044 should be maintained in the 160 - 185° C range. It is also important that the APPEEL™ 2044 be supported with materials having sufficient melt strength.

**Additive package:** For blown film processing, it is suggested to add 3% to 5% of ELVAX™ CE9619-1, a special slip and antiblock masterbatch. This masterbatch addition facilitates better web handling and roll formation.

Following is an example of a suggested temperature profile for blown film processing. Adjustments would then be made to suit the individual process and applications needs.

Feed Zone	135 °C ( 275 °F )
Second Zone	165 °C ( 329 °F )
Third Zone	170 °C ( 338 °F )
Fourth Zone	180 °C ( 356 °F )
Fifth Zone	180 °C ( 356 °F )
Adapter Zone	180 °C ( 356 °F )
Die Zone	170 °C ( 338 °F )

**Cast Film / Sheet  
Processing Information**

**Nominal Values**

**Cast Film:** In cast film coextrusion processes the temperature of the APPEEL™ 2044 should be maintained in the 185 - 235° C range. It is also important that the APPEEL™ 2044 be supported with materials having sufficient melt strength.

**Additive package:** For cast film processing, it is suggested to add 2% to 4% of ELVAX™ CE9619-1, a special slip and antiblock masterbatch. This masterbatch addition facilitates better web handling and roll formation.

Following is an example of a suggested temperature profile for blown film processing. Adjustments would then be made to suit the individual process and applications needs.

Feed Zone	135 °C ( 275 °F )
Second Zone	160 °C ( 320 °F )
Third Zone	185 °C ( 365 °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 )

**FDA Status Information**

APPEEL™ 2044 resin complies with Food and Drug Administration Regulation 21 CFR 175.105 - - Adhesives. This Regulation describes adhesives that may be used as components of articles intended for use in packaging, transporting, or holding food, subject to the limitations and requirements therein.

APPEEL™ 2044 resin also complies with Food and Drug Administration Regulation 21 CFR 177.1350 - - Ethylene-vinyl acetate copolymers, 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 (b)(1) 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

In Europe a diversity of regulations apply in various countries. In addition, constant changes linked to the effort of their harmonization under the umbrella of European Union Directive can be observed. This makes it impossible to accurately describe the food contact status in this brochure. Updated statements describing the situation in the various European countries can be obtained through your local sales representative.

