

## DuPont™ Appeel® 55010

### Appeel® resins Product Data Sheet

#### Description

Product Description

DuPont™ Appeel® 55010 is a modified polyolefin resin designed to function as a sealing layer for lidding applications, most commonly sealing to polypropylene. It 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

Applications

- Appeel® 55010 has strong sealability to PP and allows a peelable seal from it.
- Boiling resistance. Appeel® 55010 endures boiling process.
- In the case of: OPET/ adh // Appeel® 55010 , these film structures endure boiling condition at 120C / 30min
- Appeel® 55010 conforms to Code #20 of the Ministry of Health and Welfare Japan.

Typical structures for this lidding would be:

OPET / adhesive // Appeel® 55010

OPET / adhesive // coex film with Appeel® 55010

Appeel® 55010 is used as a heat seal layer in lidding material for injection molded and vacuum molded PP containers used in the packaging of puddings, jelly, and other food items.

#### Typical Properties

##### Physical

\* Density ( )

##### Nominal Values

0.92 g/cm<sup>3</sup>

##### Test Method(s)

ASTM D792

ISO 1183

\* Melt Flow Rate (190°C/2.16kg)

2 g/10 min

ASTM D1238

ISO 1133

##### Thermal

\* Melting Point (DSC)

143°C (289°F)

ASTM D3418

ISO 3146

Vicat Softening Point ( )

99°C (210°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 285°C (545°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 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.

### Blown Film Processing

#### Nominal Values

Blown Film Processing Information Blown Film: The melt temperature of Appeel® 55010 should be maintained in the 160 - 185°C range. 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 285°C should be avoided because of possible thermal degradation of the resin.

If the process is stopped for short periods of time, the Appeel® 55010 resin extruder should be kept turning at low rpm. For a permanent shutdown, the Appeel® 55010 resin should be purged out using an available polyethylene resin run at the same extrusion temperature used for the Appeel® 55010 resin. Never raise temperature over 285°C until Appeel® 55010 resin is completely purged out. Appeel® 55010 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 low side of the processing range. Higher 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	160°C (320°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 Cast Film: The melt temperature of Appeel® 55010 should be maintained in the 210 - 235°C range. 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 285°C should be avoided because of possible thermal degradation of the resin.

If the process is stopped for short periods of time, the Appeel® 55010 resin extruder

should be kept turning at low rpm. For a permanent shutdown, the Appeel® 55010 resin should be purged out using an available polyethylene resin run at the same extrusion temperature used for the Appeel® 55010 resin. Never raise temperature over 285°C until Appeel® 55010 resin is completely purged out. Appeel® 55010 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	160°C (320°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® 55010 Lidding Sealant Resin complies with Food and Drug Administration Regulation 21 CFR 177.1520(c)3.2a subject to extractive limitations of 177.1330(c)

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® 55010 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., 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:

##### Americas

DuPont Company  
Chestnut Run Plaza – Bldg. 730  
974 Centre Road  
Wilmington, Delaware  
19805 U.S.A.  
Toll-Free (USA): 1-800-628-6208

##### Asia Pacific

DuPont China Holding Co., Ltd.  
Shanghai Branch  
399 Keyuan Road, Bldg. 11  
Zhangjiang Hi-Tech Park  
Pudong New District, Shanghai  
P.R. China (Postcode: 201203)

##### Europe / Middle East / Africa

DuPont de Nemours Int'l. S.A.  
2,Chemin du Pavillon Box 50  
CH-1218 Le Grand Saconnex  
Geneva, Switzerland  
Telephone +41 22 717 51 11  
Fax +41 22 717 55 00

Telephone: 1-302-774-1000  
Fax: 1-302-355-4013

Telephone +86 21 3862 2888  
Fax +86-21-3862-2889

DuPont do Brasil, S.A.  
Alameda Itapecuru, 506  
06454-080 Barueri, SP Brasil  
Telephone: +55 11 4166 8000  
Fax: +55 11 4166 8736

<http://appeel.dupont.com>

*The data listed here fall within the normal range of properties, but they should not be used to establish specification limits nor used alone as the basis of design. The DuPont Company assumes no obligations or liability for any advice furnished or for any results obtained with respect to this information. All such advice is given and accepted at the buyer's risk. The disclosure of information herein is not a licence to operate under, or a recommendation to infringe, any patent of DuPont or others. Since DuPont cannot anticipate all variations in actual end-use conditions, DuPont makes no warranties and assumes no liability in connection with any use of this information.*

*CAUTION: Do not use DuPont materials in medical applications involving implantations in the human body or contact with internal body fluids or tissues unless the material has been provided from DuPont under a written contract that is consistent with DuPont policy regarding medical 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.*

*Copyright © 2009 DuPont. The DuPont Oval Logo, DuPont™, The miracles of science™, and trademarks designated with "®" are registered trademarks or trademarks of E.I. du Pont de Nemours and Company or its affiliates. All rights reserved.*

*This data sheet is effective as of 09/24/2009 06:01:23 PM and supersedes all previous versions.*