

## DuPont™ Surlyn® AE4500

### Surlyn® resins Product Data Sheet

#### Description

**Product Description** DuPont™ Surlyn® AE4500 is an ionomer of ethylene acid copolymer.

This polymeric material can be processed in conventional extrusion and injection equipment designed to process polyethylene and ethylene copolymer type resins, to create various shapes and sheeting.

#### Restrictions

**Material Status** Developmental: Active

#### Typical Characteristics

**Composition** Sodium Ionomer

**Characteristics / Benefits**

Abrasion Resistance ----- 301 NBS Index ----- ASTM D1630  
 Flexural Modulus (23C) ----- 490 MPa ----- ASTM D790  
 Tensile Elongation @ Break (23C) ---- 320% ----- ASTM D638 / ISO 527-2  
 Tensile Strength @ Break (23C) ----- 31 MPa ----- ASTM D638 / ISO 527-2  
 Tensile Strength @ Yield (23C) ----- 18.6 MPa ----- ASTM D638  
 Tensile Impact Strength (23C) ----- 427 ft-lb/in2 ----- ASTM D1822  
 Hardness (Shore D) ----- 65 ----- ASTM D2240 / ISO 868  
 Haze (0.25 inch) ----- 1.3% ----- ASTM D1003

**Applications** Injection Molding, Extrusion

#### Typical Properties

Physical	Nominal Values	Test Method(s)	
*Density ( )	0.97 g/cm <sup>3</sup>	ASTM D792	ISO 1183
*Melt Flow Rate ( 190°C/2.16kg )	4.5 g/10 min	ASTM D1238	ISO 1133
Thermal	Nominal Values	Test Method(s)	
*Melting Point ( DSC )	84 °C ( 183.2 °F )	ASTM D3418	ISO 3146
Freezing Point ( DSC )	40 °C ( 104 °F )	ASTM D3418	ISO 3146
Vicat Softening Point ( )	53 °C ( 127.4 °F )	ASTM D1525	ISO 306

#### Processing Information

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

**General Processing Information** Surlyn® AE4500 is normally processed at melt temperatures ranging from 185°-285°C (365°-545°F). Actual processing temperatures will usually be determined by either the specific equipment or substrate or one of the other polymers in a coextrusion or coinjection..

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 DuPont 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.

#### FDA Status Information

SURLYN® AE4500 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 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

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 Performance Materials representative.

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

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

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

#### 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

<http://www.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 applications and expressly acknowledges the contemplated use. For our 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*

