

# AUTOFLEX EB

---

## Product data sheet

**Polyester film is tougher and more durable than polycarbonate and PVC films. It offers enhanced chemical resistance and dramatically improved flex life. The Autoflex range of hard coated polyester films extends the functionality of polyester film into areas demanding high abrasion resistance together with excellent receptivity to graphic inks and selective textures. Autoflex EB has been developed for applications requiring a combination of high abrasion resistance and flexibility, such as embossed membrane switches and optical displays, e.g. touch screens.**

### 1. PRODUCT DESCRIPTION

Autoflex EB is a high quality, embossable, hard coated polyester film, consisting of a base polyester and an embossable, texturable, chemically bonded UV-cured hard surface coating. It is available in sheets and rolls, print receptive side cling film laminated as standard.

#### **Product range:**

Autoflex EB Gloss G130, G180, G250  
gloss finish, 130, 180, 250 micron

Autoflex EB Antiglare A130, A180, A250  
antiglare finish, 130, 180, 250 micron

#### **Primer:**

Autoflex EB has an ink adhesion primer on the second surface. This primer confers excellent adhesion to a wide range of solvent based graphic inks. The primer is not recommended for use with UV-cured graphic inks or a combination of solvent and UV graphic inks because the adhesion performance will be inconsistent. A special primer is available for use with UV inks, please see Autoflex EB (7 Series) Product Data Sheet.

#### **Textures:**

Autoflex EB can be screen printed with Fototex to obtain selective textures (see Fototex product data sheet).

#### **Outdoor use:**

In common with most other plastics, Autoflex EB has limited long term resistance to UV light and therefore is not recommended for long term use outdoors. MacDermid Autotype has developed a textured, UV resistant film, which can be used outside. Please see Autotex XE Product Data Sheet.

No outdoor version of Autoflex EB is available.



## 2. PRODUCT APPLICATIONS

Autoflex EB is used as a substrate in the following markets:

### Markets

Membrane switch overlays  
 Touch screens  
 Fascia panels  
 Nameplates  
 Labels/Product marking

### Major Benefits

- ▶ Excellent scratch resistance
- ▶ Chemical and household cleaner resistance even at the edges
- ▶ Receptive to Fototex texturing varnishes
- ▶ Embossable
- ▶ Consistent gloss/antiglare surface
- ▶ Attractive appearance
- ▶ Superior flex life

## 3. Chemical Properties

Property	Autoflex EB	Test Method
Chemical Resistance	Resistant to: Alcohols Dilute acids Dilute alkalis Esters Hydrocarbons Ketones Household cleaning agents *	DIN 42 115
Coefficient of hygroscopic expansion <sup>1</sup>	MD $8 \times 10^{-6}$ (per 1% RH)	DuPont Teijin Films Method <sup>1</sup> Between 40-80% RH
Moisture vapour transmission rate (MVTR) <sup>1</sup> 125 $\mu$	2.6g/m <sup>2</sup> /24hr	RTM 607
Oxygen transmission rate <sup>1</sup> 125 $\mu$	5.3ml/m <sup>2</sup> /24 hours	RTM 608

<sup>1</sup> Data derived from DuPont Teijin Films literature. The Autoflex coating slightly enhances most properties.

\* For more detailed information refer to Autoflex solvent resistance sheet.



## 4. Electrical Properties

Property	Autoflex EB	Test Method
Dielectric strength <sup>1</sup> 125μ 175μ	125kV/mm = 15.6 kV 105kV/mm = 18.4 kV	ASTM D149-81 6.35mm electrodes in dry air @ 25°C
Dissipation factor <sup>1</sup> 125μ	0.006 (1kHz)	ASTM D150-70
Surface resistivity	>10 <sup>13</sup> Ω/sq 500Vd.c	ASTM D257-83 @ 20°C/54% RH
Volume resistivity <sup>1</sup>	10 <sup>15</sup> Ωm 100Vd.c	ASTM D257-83 @ 25°C/1000s

<sup>1</sup> Data derived from DuPont Teijin Films literature. The Autoflex coating slightly enhances most properties.

## 5. Mechanical Properties

Property	Autoflex EB	Test Method
Young's modulus <sup>1</sup> 125μ (1% secant)	3600N/mm <sup>2</sup>	ASTM D882-88
Elongation at break	80%	ASTM D882-88 23°C, @ 50% RH Strain rate - 50%/minute
Switch life	>5 million flexes	Autotype Method <sup>2</sup>
Tensile strength at break <sup>1</sup> 125μ	175N/mm <sup>2</sup>	ASTM D882-83 (strain rate 50%/min)
Yield strength <sup>1</sup> 125μ	100N/mm <sup>2</sup>	ASTM D882-88

<sup>1</sup> Data derived from DuPont Teijin Films literature <sup>2</sup> Adapted to Autotype Method, see Test method manual

## 6. Optical Properties

Property	Autoflex EB	Test Method
Gardner Haze <sup>1</sup>	Gloss <1% Antiglare 9% ± 2%	ASTM D1003-77 <sup>2</sup>
Gloss Level (60°) <sup>1</sup>	Gloss 96% ± 2% Antiglare TD 55% ± 2% MD 63% ± 2%	ASTM D2457-70 <sup>2</sup>
Total luminous transmission <sup>1</sup>	Gloss 91% ± 2% Antiglare 91% ± 2%	ASTM D1003-77 <sup>2</sup>
Yellowness index <sup>1</sup>	Gloss <3.5 Antiglare <3.5	ASTM D1925-70

<sup>1</sup> Typical value for 180μ product <sup>2</sup> Adapted to Autotype method, see Test method manual



## 7. Physical Properties

Property	Autoflex EB	Test Method
Density <sup>1</sup>	1.40g/cm <sup>3</sup>	ASTM D1505-85 modified to Melinex test method at 23°C
Taber Abrasion	Gloss <5% haze Antiglare Not applicable	ASTM D1044-82 100 cycles, 500g load CS10F wheels
Pencil hardness	3H	Autotype Method <sup>2</sup>
Thicknesses G130/A130 G180/A180 G250/A250	130μ ± 10% 180μ ± 10% 250μ ± 10%	

<sup>1</sup> Data derived from DuPont Teijin Films literature <sup>2</sup> See Test method manual

## 8. Thermal Properties

Property	Autoflex EB	Test Method
Coefficient of thermal expansion <sup>1</sup>	MD 19 x 10 <sup>-6</sup> cm cm <sup>-1</sup> °C <sup>-1</sup> TD 16 x 10 <sup>-6</sup> cm cm <sup>-1</sup> °C <sup>-1</sup>	DuPont Teijin Films Method <sup>1</sup> between 20-50°C
Coefficient of hygroscopic expansion	8x10 <sup>-6</sup> (per 1%RH)	DuPont Teijin Films Method <sup>1</sup> 40-80%RH
Dimensional stability	<0.2% at 120°C MD maximum shrinkage	Autotype Method <sup>2</sup>
Maximum long term use temperature	Low humidity (<10%RH) 85°C High humidity (10-95%RH) ≤60°C	
Minimum use temperature	-40°C	Autotype Method <sup>2</sup>

<sup>1</sup> Data derived from DuPont Teijin Films literature for 125μ Melinex OD <sup>2</sup> See Test method manual

## 9. OZONE DEPLETING SUBSTANCES

EC Regulation 594/91 classifies ozone depleting substances into a number of different groups, I-VI. Autoflex EB does NOT contain any substance classified in groups I-VI nor have any of the substances been used by MacDermid Autotype during manufacture.

For details of the content of each of the groups, please see separate ozone depleting substances document.

The information and recommendations in this publication are believed to be accurate and are offered in good faith but do not constitute specifications. Suggestions concerning uses and applications are only the opinion of MacDermid Autotype Limited and users should carry out their own testing procedures to confirm suitability for their purposes. Except in the case of death or personal injury caused by the materials, MacDermid Autotype Limited MAKES NO WARRANTY OF ANY KIND AND EXCLUDES ANY STATUTORY WARRANTY EXPRESS OR IMPLIED other than that materials conform to their current applicable standard specification. Statements herein therefore should not be construed as guarantees of satisfactory quality or fitness for purpose. The responsibility of MacDermid Autotype Limited for claims arising out of breach of guarantee, negligence, strict liability or otherwise is limited to the purchase price of the material.

Suggestions concerning working practices and procedures are based on the practices adopted by existing users of the products and are made in good faith. IT IS THE RESPONSIBILITY OF THE USER TO ENSURE THAT ALL RELEVANT HEALTH AND SAFETY LAWS AND REGULATIONS ARE COMPLIED WITH. MacDermid Autotype Limited does not provide any advice on such laws and regulations and accepts no responsibility, express or implied, for breach of such regulations.

Statements concerning the use of products described herein should not be construed as recommending the infringement of any patent and no liability for infringement arising out of such use is assumed.

January 2007

