

## Autotex Steel

### Product Data Sheet

Autotex Steel (S) is the new finish in the Autotex film range. Autotex S is a textured hardcoat that when printed with a specialist mirror ink creates a stainless steel look. The introduction of Autotex S allows screen printers to produce a range of products that re-creates the effect of stainless steel but with all the benefits you have come to expect with Autotex films. These include high abrasion, solvent and chemical resistance, a film flexible enough to be embossed and withstand >5 million actuations. Autotex S is also receptive to a wide range of graphic and windowing inks allowing creative designers the opportunity to produce unique graphics and designs.

#### PRODUCT DESCRIPTION

Autotex S is a high quality textured film, consisting of a polyester base coated with a flexible chemically bonded, UV-cured textured coating.

#### Product range

Autotex Steel	S150	150 micron	Solvent inks
	S200	200 micron	Solvent inks
	S157	150 micron	Solvent and UV inks
	S207	200 micron	Solvent and UV inks

#### Primer

Autotex S has an ink adhesion primer on the second surface. This primer confers excellent adhesion to a wide range of graphic inks.

#### Windows

Autotex S can be screen printed with Windotex to obtain a clear window (see Windotex product data sheet). For window printing recommendations please contact your local representative.

#### Formats

Autotex S is available in sheet and roll format. The maximum roll size is 122cm x 400m with the grain running in the Machine Direction. Standard size sheets are 61cm x 91.5cm with the grain running along the 91.5cm length

#### PRODUCT APPLICATIONS

Autotex S is used as a substrate in the following markets:

- Membrane switch overlays
- White good appliances (to create a stainless steel finish)
- Mobile phone fascias
- Nameplates
- Labels/Product marking
- Fascia panels



### Major Benefits

- Consistent low gloss, textured surface that when printed with silver mirror inks gives an excellent replication of stainless steel
- Impact resistant unlike stainless steel
- No fingerprinting unlike stainless steel
- Can incorporate secret till lit features unlike stainless steel
- Second surface printing of text that is clearly viewable through the hardcoat surface
- Embossable with a long flex life
- Chemical and household cleaner resistance even at the edges
- Clear window facility
- Excellent scratch resistance

### Chemical Properties

Property	Autotex S	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) TD $7 \times 10^{-6}$ (per 1% RH)	DuPont Teijin Films Method <sup>1</sup> Between 40-80% RH
Moisture vapour transmission rate (MVTR) <sup>1</sup>	3.57g/m <sup>2</sup> / 24hr	ASTM F372
Oxygen transmission rate <sup>1</sup>	8.2ml/m <sup>2</sup> / 24hours	ASTM D1434 @ 25 °C, 77% RH

<sup>1</sup> Typical data derived from DuPont Teijin Films. <sup>2</sup> The Autotex coating slightly enhances most properties  
\* For more detailed information refer to Autotex resistance sheet.

### Electrical Properties

Property	Autotex S	Test Method
Dielectric strength <sup>1</sup>	13.5 kV	ASTM D149 6.35mm electrodes in dry air @ 25 °C
Dissipation factor	0.005	ASTM D150
Surface resistivity <sup>1</sup>	$>10^{13} \Omega / sq$ 500Vd.c	ASTM D257 @ 20 °C / 54% RH

<sup>1</sup> Data derived from DuPont Teijin Films. <sup>2</sup> The Autotex coating slightly enhance most properties



**Mechanical Properties**

Property	Autotex S	Test Method
Young's modulus <sup>1</sup>	3700N/mm <sup>2</sup>	ASTM D882
Elongation at break <sup>1</sup>	70%	ASTM D1505
Switch life	>5 million flexes	Autotype Method <sup>2</sup>
Tensile strength at break <sup>1</sup>	150N/mm <sup>2</sup>	ASTM D882
Tensile strength at yield point <sup>1</sup>	100N/mm <sup>2</sup>	ASTM D882
Tear strength <sup>1</sup>	350N/mm <sup>2</sup>	ASTM D882

<sup>1</sup>Data derived from DuPont Teijin Films.<sup>2</sup>See Test method manual**Optical Properties**

Property	Autotex S	Test Method
Gardner Haze	50% ±5%	ASTN D1003 <sup>1</sup>
Gloss Level (60°) With the grain (MD) Against the grain (TD)	25-30% 8-10%	ASTM D2457 <sup>1</sup>
Texture profile Ra with the grain (MD) Ra against the grain (TD)  Rz with the grain (MD) Rz against the grain (TD)	0.4-0.6µm 2.5-5µm  0.9-1.4µm 7-10µm	Autotype Method <sup>2</sup>
Total Luminous Transmission	90% ± 2%	ASTM D1003 <sup>1</sup>
Yellowness index <sup>2</sup>	<3	ASTM E313

<sup>1</sup>Adapted to Autotype method, see Test method manual<sup>2</sup>See Test method manual**Physical Properties**

Property	Autotex S	Test Method
Relative density <sup>1</sup>	1.39g / cm <sup>3</sup>	ASTM D1505
Thickness S150/S157 S200/S207	150µ ± 10% 200µ ±10%	Autotype Method <sup>2</sup>

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

**Thermal Properties**

Property	Autotex S	Test Method
Coefficient of thermal expansion <sup>1</sup>	0.002% / degree	DuPont Teijin Films Method <sup>1</sup>
Coefficient of humidity expansion <sup>1</sup>	0.0009% / %RH	DuPont Teijin Films Method <sup>1</sup>
Dimensional stability	0.2% max. shrinkage MD @ 120 °C	Autotype Method <sup>2</sup>
Maximum processing temperature	120 °C	
Maximum use temperature	Low humidity (<10%RH) 85 °C High humidity (10-95%RH) ≤60 °C	
Minimum use temperature	-40 °C (-40 °F)	Autotype Method <sup>2</sup>

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

Manufacturer	Ink Range
COATES	Touchkey HG
DUBUIT	24800
JUJO	9000 series 9100 series
NAZDAR	8800 series GV
MARABU	Marastar SR Maraswitch MSW
PRINTCOLOR	Series 388 Easy Switch 346
PROELL	Thermojet + 5020 adhesion improver M1 (Mirror ink*) M2 (Mirror ink)
SERICOL	Seritec TH Polyplast PY Techmark
SEIKO	PAL GAP Advance GAT series
TEIKOKU	EG IPX series
TOYO	SS66-000
VISPROX	Multiplast 300

\*We are currently testing other mirror inks available on the market



## Environmental & Disposal

**EC Regulation 594/91** classifies ozone depleting substances into a number of different groups, I-VI. Autotype products do 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

### **EU Directives 2003/11/EC; 2002/95/EC; 2002/525/EC; 2006/122/EC (ROHS)**

Restriction on use of Pentabromodiphenyl ether CAS 32534-81-9  
Octabromodiphenyl ether CAS 32536-52-0  
Polybrominated biphenyls  
Polybrominated diphenylether  
Lead, Mercury, Cadmium, Chromium VI  
Perfluorooctanesulphonate, Perfluorooctanic acid & related compounds

In relation to the above directive, Autotype products do not contain polybrominated biphenyl & diphenyl ethers, brominated compounds, perfluorooctane derivatives or any flame retardant agents. Autotype products are also free of the heavy metals specified in the above Directives (lead, mercury, cadmium, chromium VI).

**EU Directive 2002/96/EC (WEEE)** relates to the Disposal and Recycling of Waste Electronic and Electrical Equipment. Autotype films are compliant with this directive and do not contain any materials identified in Directives 2003/11/EC & 2002/53/EC (also 2037/2000). MacDermid Autotype Limited have no responsibility for the compliance of finished equipment, which will contain materials from other suppliers.

This range of products comprises films with a chemically treated surface which renders them difficult to recycle in appropriate material recovery schemes. The product contains no substances listed on the EC Black or Grey lists and may be safely disposed of in a landfill or by authorized incineration.

### Revision 2.1

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