

P796 AUTOTEX STEEL

Development Product Data Sheet

Autotex Steel (S) is the new development 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.

1. 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 | 0.006" |
| | S200 | 200 micron | 0.008" |

Primer:

Autotex S 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. Please ask your Sales Representative for information on a special primer for UV inks.

Windows:

Autotex S can be screen printed with Windotex to obtain a clear window (see Windotex product data sheet).

2. 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

3. 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 ¹ | MD 8×10^{-6} (per 1% RH) TD 7×10^{-6} (per 1% RH) | DuPont Teijin Films Method ¹ Between 40-80% RH |
| Moisture vapour transmission rate (MVTR) ¹ | 3.57g/m ² / 24hr | ASTM F372 |
| Oxygen transmission rate ¹ | 8.2ml/m ² / 24hours | ASTM D1434 @ 25°C, 77% RH |

¹ Typical data derived from DuPont Teijin Films. ² The Autotex coating slightly enhances most properties

* For more detailed information refer to Autotex resistance sheet.

4. Electrical Properties

| Property | Autotex S | Test Method |
|----------------------------------|---|---|
| Dielectric strength ¹ | 13.5 kV | ASTM D149 6.35mm electrodes in dry air @ 25°V |
| Dissipation factor | 0.005 | ASTM D150-70 |
| Surface resistivity ¹ | $>10^{13} \Omega / \text{sq } 500\text{Vd.c}$ | ASTM D257 @ 20°C / 54% RH |
| Surface resistivity | $10^{15} \Omega / 100\text{Vd.c}$ | ASTM D257 @ 25°C / 100s |

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

5. Mechanical Properties

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

¹ Data derived from DuPont Teijin Films.

² See Test method manual



6. Optical Properties

| Property | Autotex S | Test Method |
|---|---|--|
| Gardner Haze | 50% \pm 5% | ASTN D1003 ¹ |
| Gloss Level (60°) With the grain Against the grain | 25-30% 8-10% | ASTM D2457 ¹ |
| Texture profile Ra with the grain Ra against the grain Rtm with the grain Rtm against the grain | 1.1-1.3 μ m 7.10 μ m 0.2-0.3 μ m 2.5-5 μ m | Autotype Method ² |
| Total luminous transmission | 90% \pm 2% | ASTM D10003 ¹ |
| UV absorption | 1.3-1.4 | Autotype Method ² 365nm narrow pass filter |
| Yellowness index ² | <3 | ASTM E313 |

¹Adapted to Autotype method, see Test method manual² See Test method manual

7. Physical Properties

| Property | Autotex S | Test Method |
|-------------------------------|-------------------------|------------------------------|
| Relative density ¹ | 1.39g / cm ³ | ASTM D1505 |
| Thickness S200 | 200 μ \pm 10% | Autotype Method ² |

¹Data derived from DuPont Teijin Films² See Test method manual

8. Thermal Properties

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

¹Data derived from DuPont Teijin Films² See Test method manual

9. 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 001

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July 2008

