



GATGARD<sup>®</sup>Autotex AM

**Product Data Sheet** 

# Autotex AM is a high quality, textured polyester\* film offering Microban® antimicrobial protection on the textured hard coat.

\* The term polyester is the generic term for a number of different polymers, of which polyethylene terephthalate (PET) is the most common. PET is used in MacDermid Autotype Industrial Polyester film products.

## **PRODUCT DESCRIPTION**

Microban® technology is incorporated into the Autotex textured hard coat during the manufacturing process. This process ensures even distribution of the antimicrobial agent throughout the textured hard coat and the film surface. When bacteria come into contact with Autotex AM with Microban®, the antimicrobial function disrupts the bacterial cell wall killing or inhibiting bacterial growth. The result is that the film surface of Autotex AM provides dependable and constant protection against bacterial contamination.

#### Product range:

Autotex AM	F157, F207
Fine texture	150 and 200 micron

#### Primer:

Autotex AM with Microban® has an ink adhesion primer on the second surface. This primer confers excellent adhesion when screen printed with a wide range of solvent based and UV graphic screen inks.

Polyester films with high gloss surfaces are prone to blocking when stored with the film surfaces touching each other. Blocking is the term given when two surfaces adhere or merge into each other and when separated leave immovable marks on the film. For this reason we recommend that users make sure that the non-textured (ink primer) surfaces are not left in contact with each other for extended periods of time.

#### Windows:

Autotex AM can be screen printed with Windotex\* to obtain a clear window (see Windotex Product Data Sheet).

\*NB: Windotex does not offer any antimicrobial protection

#### **PRODUCT APPLICATIONS**

Autotex AM with Microban® is used as a substrate in the following applications: Membrane switch overlays Surface applications (doors, worktops etc) Nameplates Labels/Product marking Fascia panels

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Autotex AM

## **Major Benefits:**

- Antimicrobial protection •
- Long flex life
- Chemical and household cleaner resistance •
- Clear window facility (windows are not antimicrobial) •
- Embossable
- Excellent scratch resistance •
- Consistent low gloss, textured surface •
- Attractive appearance

## **ANTIMICROBIAL PROPERTIES**

Sample Description	Microbial Testing*	Test Result	Test Method
	Antimicrobial effectiveness tested with:		
	Staphylococcus aureus (MRSA)	Biocidal Pass	
	Escherichia coli 0157	Biocidal Pass	
	Pseudomonas aeruginosa	Biocidal Pass	
Autotex AM	Salmonella enteritidis	Biocidal Pass	
	Bacillus cereus	Biocidal Pass	AATCC Test
Unprocessed	Stretococcus faecalis	Biocidal Pass	Method 100 <sup>7</sup>
Samples <sup>1</sup>	Klebsiella pneumoniae	Biocidal Pass	
	Aspergillus niger	Biocidal Pass	
	Penicillium purpurogenum	Biocidal Pass	
	Phorma violacea	Biocidal Pass	
	Saccharmyces cerevisiae	Biocidal Pass	
	Listeria monocytogenes	Biocidal Pass	
Simulated printed	Staphylococcus aureus (MRSA)	Biocidal Pass	AATCC Test
sample <sup>2</sup>	Escherichia coli 0157	Biocidal Pass	Method 100 <sup>7</sup>
Simulated wear test <sup>3</sup>	Staphylococcus aureus (MRSA)	Biocidal Pass	AATCC Test
Simulated wear test	Escherichia coli 0157	Biocidal Pass	Method 100 <sup>7</sup>
Simulated embossed	Staphylococcus aureus (MRSA)	Biocidal Pass	AATCC Test
sample <sup>4</sup>	Escherichia coli 0157	Biocidal Pass	Method 100 <sup>7</sup>
_	Staphylococcus aureus (MRSA)	Biocidal Pass	AATCC Test
15 year life time test⁵	Escherichia coli 0157	Biocidal Pass	Method 100 <sup>7</sup>
	Aspergillus niger	Biocidal Pass	
Ethanol <sup>6</sup>			
IPA,			
MEK,			
Phenol Based	Staphylococcus aureus (MRSA)	Biocidal Pass	AATCC Test
Disinfectant,	Escherichia coli 0157	Biocidal Pass	Method 100 <sup>7</sup>
Quarternary			
Ammonium based			
Disinfectant,			
Bleach			

\* The bacteria chosen for each of the tests was recommended by an Independent Test House Autotex AM films have limited long term resistance to UV light and are not recommended for prolonged use outdoors.

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Process conditions for each sample

<sup>1</sup> Unprocessed Samples: Film samples were tested straight from the pack.

<sup>2</sup> Film samples were subjected to the following tests to simulate graphics printing:

- 10 Jet dryer passes (80 °C x 2 mins)
- 10 Fusion UV passes (500MJ/pass)
- 5 passes under IR lamps

1 Fusion UV pass (500MJ/pass) - (hard coat surface)

<sup>3</sup> Film samples were vigorously sandpapered until the texture peaks were removed. The film surface was then polished with wire wool until smooth. This was carried out to simulate extreme surface wear.

Film samples were stretched by 20% in both MD/TD direction. This simulates the process of embossing. (An embossed sample cannot be AM tested as a flat surface is required by I an Independent Test House).

Film samples are tested by an Independent Test House using standard test protocols that simulate real life cleaning regimes representing a period of 15 years. Test Method and certificate available on request. <sup>6</sup> Film samples were soaked for 24 hours before being subjected to antimicrobial testing.

<sup>7</sup> Test Method available on request.

#### **CHEMICAL PROPERTIES**

Property	Autotex AM	Test Method
Chemical resistance concerning physical integrity of the coating <sup>2</sup>	Resistant to: Turpentine Hydrochloric acid (36%) Diacetone alcohol Butyl acetate Nitric acid (10%) Acetone Sodium Hydroxide (40%) Benzyl alcohol Diesel Lenor/Downey (fabric conditioner) Bleach MEK White Spirit Caster Oil Acetaldehyde Acetic acid (50%) Acetonitrile Toluene IMS Cyclohexanone	DIN 42 115 Part 2
Coefficient of hygroscopic expansion <sup>1</sup>	MD 8 x 10 <sup>-6</sup> (per 1% RH) TD 7 x 10 <sup>-6</sup> (per 1% RH)	Base film manufacturer's method, 40-80% RH
Moisture vapour transmission rate (MVTR) <sup>1</sup>	3.57g/m <sup>2</sup> /24 hours	ASTM F372-73
Oxygen transmission rate <sup>1</sup>	8.2ml/m <sup>2</sup> /24 hours	ASTM D1434-82 @ 25℃, 77% RH

Data derived from base film manufacturer's literature. The Autotex coating slightly enhances most properties. <sup>2</sup> Specific AM testing has not been performed with all of these chemicals. For information on the chemicals tested please refer to the antimicrobial properties section.

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## **ELECTRICAL PROPERTIES**

Property		Autotex AM	Test Method
Dielectric strength <sup>1</sup>	125µ	15.6kV	ASTM D149-81 6.35mm electrodes
	175µ	18.4kV	in dry air @ 25℃
Dissipation factor <sup>1</sup>		0.005	ASTM D150-70
Surface resistivity		>10 <sup>13</sup> Ω/sq 500Vd.c	ASTM D257-83 @ 20℃/54% RH
Volume resistivity <sup>1</sup>		10 <sup>15</sup> Ωm 100Vd.c	ASTM D257-83 @ 25V ℃/1000s

<sup>1</sup> Data derived from base film manufacturer's literature. The Autotex coating slightly enhances most properties.

# **MECHANICAL PROPERTIES**

Property	Autotex AM	Test Method
Elastic modulus (1% secant) 125µ	3600 N/mm <sup>2</sup>	ASTM D882-88 23 ℃ @ 50% RH Strain rate - 10%/minute
Elongation at break 125µ	80%	ASTM D882-88 23 °C @ 50% RH Strain rate - 50%/minute
Switch life	>5 million flexes	MacDermid Autotype Method <sup>3</sup>
Tensile strength at break 125µ	175 N/mm²	ASTM D882-83
Tensile strength at yield point	100 N/mm <sup>2</sup>	ASTM D882-88

<sup>1</sup> Data derived from base film manufacturer's literature . <sup>2</sup> Adapted to MacDermid Autotype Method, see Test Method Manual. <sup>3</sup> See Test Method Manual.

# **OPTICAL PROPERTIES**

Property	Autotex AM	Test Method
Gardner Haze	58% ±5%	ASTM D1003-77 <sup>1</sup>
Gloss Level (60°)	7% ±1.5%	ASTM D2457-03 <sup>1</sup>
Texture profile		
Ra	1.6μ ± 0.2μm	MacDermid Autotype Method <sup>2</sup>
Rtm	8μ ± 2μm	
Total luminous transmission	92% ± 0.5%	ASTM D1003-77 <sup>1</sup>
UV absorption	1.3 - 1.4	MacDermid Autotype Method <sup>2</sup> (370nm)
Yellowness index <sup>2</sup>	<3	ASTM E313

<sup>1</sup> Adapted to MacDermid Autotype Method, see Test Method Manual. <sup>2</sup> See Test Method Manual



#### PHYSICAL PROPERTIRES

FILISICAL FILOFE			
Property		Autotex AM	Test Method
Density <sup>1</sup>		1.39g/cm <sup>3</sup>	ASTM D1505
Thicknesses			
	F157	150μ ±10%	MacDermid Autotype Method <sup>2</sup>
	F207	200µ ±10%	
Determination of furning langers	films and should be		

<sup>1</sup> Data derived from base film manufacturer's literature <sup>2</sup> See Test Method Manual

#### **THERMAL PROPERTIES**

INERMAL PROPERTIES		
Property	Autotex AM	Test Method
Coefficient of thermal expansion <sup>1</sup>	0.002%/degree	Base film manufacturer's test method
Coefficient of humidity expansion <sup>1</sup>	0.009%/%RH	Base film manufacturer's test method
Dimensional stability	0.2% maximum shrinkage MD at 120℃	MacDermid Autotype Method <sup>2</sup>
Maximum processing temperature	120℃	
Maximum use temperature	Low humidity (<10%RH) 85℃ High humidity (10-95%RH) ≤60℃	
Minimum use temperature	-40°C (-40°F)	MacDermid Autotype Method <sup>2</sup>

<sup>1</sup> Data derived from base film manufacturer's literature. <sup>2</sup> See Test Method Manual.

#### LEGISLATIVE DIRECTIVES

This product does not knowingly contain any phthalates, or substances listed in the European End-of-Life Vehicles (ELV), Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS) or Waste Electrical and Electronic Equipment (WEEE) Directives.

EC Regulation 594/91 classifies ozone depleting substances into a number of different groups, I-VI. Autotex AM 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

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