

Technical Bulletin 7.5

Outdoor Durability of Mactac Graphics - Self-adhesive films

INTRODUCTION

At Mactac, we care about the quality of our products during application and throughout time. Most of our products are therefore warranted for several years outdoors and indoors according to applications. However, exposure of the products to UV light and temperature inevitably leads to degradation of the graphics and/or fading of the inks colour over time. The most determining factor for a graphics durability is the geographical location of application, correlated to the overall UV exposure of the graphics. Other parameters greatly influencing the durability of the products are temperatures and humidity of the region, pollution level and altitude, graphic orientation and, in the case of digitally printable graphics, the nature of the inks (solvent, latex, UV) as well as the ink load used.

Horizontal and/or south-facing exposure in high temperatures, in high UV exposed climates are the worst conditions a graphics product will have to withstand.

In the case of digitally printable Mactac Self-Adhesive Films, laminates are recommended to limit the colour fading of the inks, in addition to providing mechanical protection, and ease of cleaning. Mactac laminates provide other functionalities to the printed image - like glossiness, mattity, structured surface, anti-graffiti or anti-slip performance – are also available.

In the table below, Outdoor durability of digitally printable Mactac products (printed media + appropriate laminate), vehicle wrapping films (colours and transparent) and Signage films are reported. These values are only valid if graphics are applied according to Mactac Guidelines and converted using standard CMYK, OEM inkjet digital inks listed below (for digitally printable products).

ZONE DEFINITION

The climate of a region greatly influences the outdoor durability of Mactac self-adhesive products (printed and unprinted).

The globe has therefore been divided into 3 regions or zones:

Zone 1	Zone 2		Zone 3	
Andorra	Albania	Madagascar	Afghanistan	Sierra Leone
Austria	Armenia	Malawi	Algeria	Somalia
Belarus	Australia*	Malaysia	Angola	South Africa
Belgium	Azerbaijan	Maldives	Australia – Above	Tanzania
Bosnia & Herzegovina	Bahamas	Malta	<i>a line 100km</i>	Tunisia
Bulgaria	Bangladesh	Mauritius	<i>north of</i>	Uganda
Croatia	Barbados	Micronesia	<i>Perth/Brisbane</i>	United Arab
Czech Republic	Belize	Myanmar (Birma)	Australia – Desert	Emirates
Denmark	Benin	Nepal	<i>areas</i>	Yemen
Ecuador	Bhutan	New Zealand	Bahrain	Zambia
Estonia	Bolivia	Nicaragua	Botswana	Zimbabwe
Finland	Brazil	Panama	Central African	
France (excluding Corsica)	Burkina Faso	Papua New Guinea	Rep.	
Georgia	Burundi	Paraguay	Chad	
Germany	Cambodia	Peru	Congo	
Hungary	Cameroon	Philippines	Cyprus	
Iceland	Cape Verde	Portugal	Egypt	
Ireland	Caribbean Isles	Puerto Rico	Equatorial Guinea	
Italy (North and Central)	Chile	Rwanda	Eritrea	
	China	Samoa	Ethiopia	
	Colombia	San Marino	Gabon	
	Costa Rica	Sao Tome & Principe	Gambia	

Kosovo Latvia Liechtenstein Lithuania Luxembourg Macedonia F.Y.R. Moldova Monaco Montenegro Netherlands, the Norway Poland Romania Russia San Marino Serbia Slovakia Slovenia Sweden Switzerland Ukraine United Kingdom United States of America* Vatican City *Except desert areas of the States mentioned in Zone 2	Côte d'Ivoire Dominica Dominican Republic East Timor El Salvador Fiji France (Only Corsica) Greece Grenada Guatemala Guyana Haïti Honduras Indonesia Italy (South of Rome) Jamaica Japan Kazakhstan Korea (South) Kyrgyzstan Laos Lesotho	Singapore Spain Sri Lanka Suriname Swaziland Taiwan Tajikistan Thailand Togo Trinidad & Tobago Turkey Turkmenistan Uruguay Uzbekistan Venezuela Vietnam <i>Arizona</i> <i>California</i> <i>Florida (Southern)</i> <i>Nevada</i> <i>New Mexico</i> <i>Texas</i> <i>Utah</i> * Exceptions classified in Zone 3	Ghana Guinée Guinée-Bissau India Iraq Israel Jordan Kenya Kuwait Lebanon Liberia Libya Mali Mauritania Mozambique Namibia Niger Nigeria Mexico Morocco Oman Pakistan Qatar Saudi Arabia Senegal Exposed at all sites above altitudes of 1000 meters
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TABLE OF DIGITAL INKJET PRINTERS AND INKS COMPATIBLE FOR MACTAC DIGITAL FILMS

Mactac provides warranties for Digital products that combine printable films with OEM printers and inks in the table below, to guarantee compatibility and provide superior performance.

More details can be found on our warranty coverage in the individual Product Warranty document which is available upon request.

WARRANTIES FOR DIGITAL INKJET PRINTERS AND INKS		
Brand	Model	Inks
CANON	CS 6407 / 6410 CS 9065 / 9090 CS 9265 / 9290 CS 9050 / 9060 / 9065 / 9090 CS 9160 CS 9350/ CS 9360 Colorado 1650	IJC 640 IJC 910 IJC 920 IJC 930 IJC 930 IJC 932 UVgel 460 ink
DURST	Rho 160 / 160+ / 160R Rho 205 Rho 312R / 512R Rho 320R / 320R HS Rho 350R / 351R Rho 500R Rho 600 Rho P10 320R	Rho Roll Ink Rho Roll Ink Rho Roll Ink Rho Roll Ink Rho Roll Ink Rho Roll Ink Rho Roll Ink Rho Roll Ink Rho Roll Ink * Where relevant, white inks and spot colour inks are excluded from warranty.

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EFI Vutek	UltraVu 150 UltraVu 5300 / 5330 UltraVu II 2360	UltraVu 5 Ink UltraVu 5 Ink UltraVu 5 Ink
EPSON	GS-6000 SC-30600 SC-50600 SC-70600 SC-S40600 series SC-S60600 series SC-S80600 series	UltraChrome GS UltraChrome GS2 UltraChrome GS2 UltraChrome GSX UltraChrome GS3* UltraChrome GS3* UltraChrome GS3* * Durability is based on CMYKLcLmLkR inks. There is no expectation of durability for white, metallic and green inks.
HP	HP Scitex TJ-8300 / 8350 HP Scitex Grandjet Series HP Scitex XLJet / XL1200 HP XLJet Premium / XL1500 HP Scitex TJ-8600 HP Designjet 25500 / 65500 HP Latex 600 / 800 HP 260/280 (26500/28500) Latex HP 820 / 850 Latex HP Latex 3000 Series HP Latex 300 Series HP Latex 1500 HP Latex 560/570 HP Latex R1000/2000 HP Latex 700/ 700W HP Latex 800/ 800W	TJ 100 Supreme XL300 Supreme XL300 Supreme XL300 Supreme TJ 210 HP 789 Latex HP LX 600 HP 792 Latex HP LX 610 HP 881/891 Latex Ink HP 831/871 Latex Ink HP 881 Latex Ink HP 831/871 Latex Ink HP 882 Latex Ink HP 832/ 832Y Latex ink HP 873/ 873Y Latex Ink
MIMAKI	JV5 Series JV33/300/150 Series JV34-260 JV400 LX JV400 SUV JFX200-2513 JFX500-2131 CJV30/300/150 Series UJV160 UJV500-160 UJV500-160 / JFX200-2513 UCJV150/300 Series JV33/300/150 Series CJV30/300/150 Series SWJ-320EA	HS / ES3 SS21 / ES3 / BS3 SS21 LX101 SU100 LUS150 LUS150 SS21 / ES3 / BS3 LF-200 LUS150 LUS200 LUS170 BS4 BS4 CS100 / CS200 * Where relevant, white, orange and silver metallic inks are excluded from warranty unless stated otherwise.
MUTOH	ValueJet VJ-628 ValueJet VJ-1324X ValueJet VJ-1604X ValueJet VJ-1624X ValueJet VJ-1638X ValueJet VJ-2638X XpertJet XPJ-1641SR XpertJet XPJ-1682SR	Eco Ultra Eco Ultra / UMS ink Eco Ultra / UMS ink Eco Ultra / UMS ink Eco Ultra / UMS ink Eco Ultra / UMS ink UMS / MS41 ink UMS / MS41 ink * Where relevant, white inks are excluded from warranty.
OKI	ColorPainter V-64s ColorPainter H-74s / H-104s ColorPainter H2-74s / H2-104s ColorPainter W-54s / W-64s	EG-Outdoor LX EG-Outdoor GX EG-Outdoor GX EG-Outdoor GX

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	ColorPainter M-64s ColorPainter H3-104s ColorPainter E-64s	SX Inks SX Inks SX Inks
ROLAND	VersaCAMM SPi/VP Series VersaCAMM VS Series SolJet Pro II Series SolJet Pro III Series SolJet Pro IV XR/XF Series VersaART RS/RE Series VersaSTUDIO VersaCAMM VS-i Series VersaEXPRESS RF SolJet EJ-640 TrueVIS VG/SG Series TrueVIS VG/SG 2 Series TrueVIS VF2-640	Eco-Sol MAX I/III Eco-Sol MAX I/III Eco-Sol MAX I/III Eco-Sol MAX I/III Eco-Sol MAX II/III Eco-Sol MAX I/III Eco-Sol MAX I/III Eco-Sol MAX II/III Eco-Sol MAX II/III EJ ink TR2 ink TR2 ink TR2 ink * Unless otherwise stated, durability for white, metallic, orange or green inks are not covered.

TABLE OF OUTDOOR DURABILITY FOR MACTAC GRAPHICS - SELF-ADHESIVE FILMS

This table is not exhaustive: please contact us for more information.
More details can be found on our warranty coverage in the individual Product Warranty document which is available upon request.

OUTDOOR DURABILITY TABLE FOR MACTAC DIGITAL FILMS AND LAMINATES PER REGION									
Print media name	Laminate name	Vertical exposure				Horizontal exposure			
		Unit	Zone 1	Zone 2	Zone 3	Unit	Zone 1	Zone 2	Zone 3
JT 8500 Series	LF 8500 Series	years	2	1	0.5	months	9	6	3
Easy 209P	LF 8500 Series	years	1	0.5	-	months	6	3	-
JT 8700 Series	LF 8700 UV Series	years	3	2	1.5	months	15	12	6
JT 8700 Series	PG 7034	years indoor	2	2	2	months indoor	12	12	12
JT 8700 Series	LAG 100	years	3	2	1.5	months	15	12	6
JT 8700 Series	LUV 7036 / PG 7075	years	3	2	1	months	15	9	6
JT 8700 Series	PG 7092 AS	years	1	0.5	-	months	6	3	-
JT 5826 P	LF 8700 UV Series	years	3	2	1.5	months	15	12	6
JT 9300 Series	LF 9300 UV Series	years	3	2	1	months	15	12	6
JT 9500 Series	LF 9500 Series	years	4	2.5	1.5	months	18	12	6
JT 9500 Series	LAG 100	years	3	2	1	months	15	12	6
JT 9500 Series	PermaFun Carbon Fibers	years	3	2	1.5	months	15	12	6
JT 9500 Series	PermaFun Coarse Wood, Brushed Metal	years	5	3.5	2.5	years	2	1.5	1

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JT 9700 Series	LF 9700 UV Series	years	5	3.5	2.5	years	2	1.5	1	
JT 9700 Series	LAG 100	years	3	2	1.5	months	15	12	6	
JT 9700 Series	PermaFun Carbon Fibers	years	3	2	1.5	months	15	12	6	
JT 9700 Series	PermaFun Coarse Wood, Brushed Metal	years	5	3.5	2.5	years	2	1.5	1	
WW 100 PRO	LF 10700 UV Series	years	3	2	1.5	months	15	12	6	
WW 300 Series	LF 8700 UV Series	years	3	2	1.5	months	15	12	6	
JT 5400 Series	LUV 7036	years	2	1	0.5	months	9	6	3	
JT 7300 WG-PB/PT 30/40	LUV 7036	years	2	1	0.5	-	-	-	-	
JT 7500 WG-PB 40	LUV 7036	years	3	2	1	-	-	-	-	
JT 7500 WG-PB 40	LF 10500 CG	years	3	2	1	-	-	-	-	
Vehicle wrapping										
JT 10500 WG-BFG	LF 10700 UV Series	years	4	2	1	years	1.5	0.5	-	
JT 10500 WG-BFG	LF 10500 CG	years	4	2	1	years	1.5	0.5	-	
JT 10700 WG-BFG	LF 10700 UV Series	years	5	3	1.5	years	2.5	1.5	0.5	
JT 10700 WG-BFG-XR	LF 10700 UV Series	years	5	3	1.5	years	2.5	1.5	0.5	
JT 10500 WG-BFG	Permacolor HORIZon™	years	5	3	1.5	years	2.5	1.5	0.5	
JT 10700 WG-BFG	Permacolor HORIZon™	years	7	5	3	years	3.5	2.5	1.5	
JT 10700 WG-BFG-XR	Permacolor HORIZon™	years	7	5	3	years	3.5	2.5	1.5	
Floor Graphics		Horizontal exposure indoor			Horizontal exposure outdoor					
JT 8500 Series	LF 6302 Floorgraphics	months indoor	2	2	2	months outdoor	-	-	-	
JT 8700 Series	LUV 6300 LUV 6301	months indoor	6 3	6 3	6 3	months outdoor	- -	- -	- -	
WW 300 Series	FloorGrip	months indoor	12	12	12	months outdoor	3	1.5	-	
JT 5425 PUV	LUV 6400	months indoor	3	3	3	months outdoor	-	-	-	
StreetRap	StreetLam FloorGrip	months indoor	- 12	- 12	- 12	months outdoor	6 3	3 1.5	1.5 -	

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OUTDOOR DURABILITY TABLE FOR MACTAC VEHICLE WRAPPING FILMS

Series Name	Type	Vertical exposure			Horizontal exposure				
		Unit	Zone 1	Zone 2	Zone 3	Unit	Zone 1	Zone 2	Zone 3
Vehicle Wrapping									
Mactac ColourWrap Series	White/Black Colours Metallics	Years	8 6 4	5 4 3	3 2 1.5	Years	5 3 2	3 2.5 1.5	1.5 1 0.5
Mactac TF700 BF Sublime	White/Black Colours Metallics Pearl	Years	8 6 4 3	5 5 2 2	3 2 1 1	Years	4 3 2 1.5	3 2 1 1	0.5 0.5 0.5 0.5
Mactac TF800 BF Stellar	Colours	Years	5	4	3	Years	3	2	0.5
Mactac TF Brushed BF	Aluminium Titanium	Years	2.5 5	2 4	1.5 2.5	Years	1.5 3	1 2	- 0.5
Mactac TF Carbon BF	Black Graphite	Years	5 4	4 3	2.5 2	Years	3 2	2 1.5	0.5 0.5
Mactac TF Velvet	Black Colours	Years	4 2.5	3 1.5	2 1	Years	2.5 1.5	2 1	0.5 -
Mactac ColorSkin 9900	White/Black Colours Metallics	Years	6 4 2	3 2 1	- - -	Years	3 2 1	1.5 1 0.5	- - -
Mactac Crystal Protect 150	-	Years	8	5	2	Years	4	2.5	1

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OUTDOOR DURABILITY TABLE FOR MACTAC SIGNAGE FILMS PER REGION

Serie's name	Type	Vertical exposure			Horizontal exposure				
		Unit	Zone 1	Zone 2	Zone 3	Unit	Zone 1	Zone 2	Zone 3
Coloured Opaque									
MACal 8200	Black&White Colours	years	4.0 3.0	3.0 2.2	2.0 1.5	-	-	-	-
MACal 8300	Black&White Colours	years	4.0 3.0	3.0 2.2	2.0 1.5	-	-	-	-
MACal 8900	Black&White Colours	years	4.0 3.0	3.0 2.2	2.0 1.5	-	-	-	-
MACal 9300	Black&White Colours Metallics	years	8.0 7.0 5.0	6.0 5.2 3.7	4.0 3.5 2.5	-	-	-	-
MACal 9800 (PRO, Cast)	Black&White Colours Metallics	years	10.0 8.0 5.0	7.5 6.0 3.7	5.0 4.0 2.5	-	-	-	-
MACal Truck Tarp	LF Truck Tarp CM-UV	years	5.0	3.7	2.5				
Translucent / Transparent									
MACal 9700	Black&White Colours	years	7.0 5.0	5.2 3.7	3.5 2.5	-	-	-	-
MACal 9722 light PRO	-	years	7.0	5.2	3.5	-	-	-	-
MACCrystal 8400	-	years	3.0	2.2	1.5	-	-	-	-
Glass Decor 500	-	years	5.0	3.7	2.5	-	-	-	-
Glass Decor 700	Dusted/ Frosted/ Colours	years	5.0	3.7	2.5	-	-	-	-
Windows Etch Film	-	years	3.0	2.2	1.5	-	-	-	-
MACal 1000 Series	Gold Silver	years	2 1	1 0.5	0.5 0.25				
MACal 1179 Gold	LF 9700 Series	years	3	2.2	1.5				
MACal 1169 Silver	LF 9700 Series	months	6	4.5	3.0				
Specialty									
MACal 8000	-	months	3.0	2.2	1.5	-	-	-	-
Reflective									
MACLite 5700	Black&White Colours	years	7.0 5.0	5.2 3.7	3.5 2.5	-	-	-	-

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