

## 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 (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)	<i>areas</i>	Emirates
Denmark	Benin	Nepal	Australia – Desert	Yemen
Ecuador	Bhutan	New Zealand		Zambia
Estonia	Bolivia	Nicaragua	Bahrain	Zimbabwe
Finland	Brazil	Panama	Botswana	
France (excluding Corsica)	Burkina Faso	Papua New Guinea	Central African	
Georgia	Burundi	Paraguay	Rep.	
Germany	Cambodia	Peru	Chad	
Hungary	Cameroon	Philippines	Congo	
Iceland	Cape Verde	Portugal	Cyprus	
Ireland	Caribbean Isles	Puerto Rico	Egypt	
Italy (North and Central)	Chile	Rwanda	Equatorial Guinea	
	China	Samoa	Eritrea	
	Colombia	San Marino	Ethiopia	
	Costa Rica	Sao Tome & Principe	Gabon	
			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 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
JT 8700 Series	LF 8700 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	years	3	2	1	months	15	9	6
JT 8700 Series	PG 7092 AS	years	1	0.5	-	months	6	3	-
JT 9300 Series	LF 9300 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 Clear	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
JT 9700 Series	LF 9700 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 Clear	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 Series	years	3	2	1.5	months	15	12	6
WW 300	LF 8700 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 5817 PUV	LUV 7036	years	2	1	0.5	years	-	-	-
JT 5837 P	LUV 7036	years	2	1	0.5	years	-	-	-
JT 5917 PUV	LUV 7036	years	3	2	1	years	-	-	-
Floor Graphics									
JT 8700 Series	FloorGrip LUV 6300 LUV 6301	Years indoor	5 3 2.5	5 3 2.5	5 3 2.5	months indoor	12 6 3	12 6 3	12 6 3
StreetRap	StreetLam FloorGrip	years indoor	- 5	- 5	- 5	months outdoor	6 3	6 3	6 3
Vehicle wrapping									
JT 10500 WG-BFG	LF 10700 Series	years	4	2	1	years	1.5	-	-
JT 10700 WG-BFG	LF 10700 Series	years	4	2	1	years	2	1	0.5
JT 10700 WG-BFG-XR	LF 10700 Series	years	5	3.5	2.5	years	2.5	1.5	1
JT 10500 WG-BFG	Permacolor HORIZon™	years	7	4.5	3	years	3.5	2	1.5
JT 10700 WG-BFG	Permacolor HORIZon™	years	7	4.5	3	years	3.5	2	1.5
JT 10700 WG-BFG-XR	Permacolor HORIZon™	years	7	4.5	3	years	3.5	2	1.5

**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

**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
Opaque									
MACal 8000	-	months	3.0	2.2	1.5	-	-	-	-
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	Black&White Colours Metallics	years	10.0 8.0 5.0	7.5 6.0 3.7	5.0 4.0 2.5	-	-	-	-
Translucent									
MACal 9722 light PRO	-	years	7.0	5.2	3.5	-	-	-	-
MACal 9700	Black&White Colours	years	7.0 5.0	5.2 3.7	3.5 2.5	-	-	-	-
Windows Films									
MACcrystal 8400	-	years	3.0	2.2	1.5	-	-	-	-
Glass Decor 500	-	years	5.0	3.7	2.5	-	-	-	-
Glass Decor 700	-	years	5.0	3.7	2.5	-	-	-	-
Windows Etch Film	-	years	3.0	2.2	1.5	-	-	-	-
GlassMovie	-	years	5.0	3.7	2.5	-	-	-	-
Reflective									
MAClite 4700	White Colours	years	5.0 4.0	3.7 3.0	2.5 2.0	-	-	-	-
MAClite 5700	Black&White Colours	years	7.0 5.0	5.2 3.7	3.5 2.5	-	-	-	-
Metallized Films									
MACal 1002	-	months	3.0	2.2	1.5	-	-	-	-
MACal 1069-01	-	months	6.0	4.5	3.0	-	-	-	-
MACal 1100 Print&Cut	Gold Silver	months	3.0 6.0	2.2 4.5	1.5 3.0	-	-	-	-
Specialities									
WallCHALKER	-	years	5.0	3.7	2.5	-	-	-	-

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