

## HENKEL ACHESON Electrical Materials range

### Flexible circuits inks

References	Pigment		Sheet resistance (Ohm/square at 25µm)	Thickness (µm)	Curing temp. (°C)	In-use temp. (°C)
	Silver	Graphite				
<b>Electrodag® 725A (6S-54)</b>	x		< 0.015	6 to 8	120	100
<b>Electrodag® PF-410</b>	x		< 0.025	8 to 12	80 to 120	100
<b>Electrodag® 418 SS</b>	x		< 0.030	8 to 12	90 to 120	105
<b>Electrodag® PF-407A</b>		x	< 20	6 to 10	90 to 120	105
<b>Electrodag® 423 SS</b>		x	< 35	6 to 10	90 to 120	105
<b>Electrodag® 965 SS</b>		x	< 60	8 to 10	90 to 120	100
<b>Lumidag® EL- 016</b>	-	-	10 000	5 to 8	90 to 120	100
<b>Electrodag® 452 SS</b>	-	-	Insulating	10 to 30	UV	105
<b>Electrodag® PF-455B</b>	-	-	Insulating	25 to 30	UV	105
<b>Electrodag® PF-465</b>	-	-	Insulating	10 to 30	UV	105

Electrodag® 725 A (6S-54) has excellent flexibility, particularly for thermo-formed keys.

Electrodag® 418 SS is recommended for solvent sensitive substrates.

Electrodag® PF 455B is a UV-curing dielectric ink for crossovers. It offers excellent humidity resistance.

### Printed circuit boards inks

References	Pigment		Sheet resistance (Ohm/square at 25µm)	Thickness (µm)	Curing temp. (°C)	In-use temp (°C)
	Silver	Graphite				
<b>Electrodag® 976 SS HV</b>	x		< 0.025	8 to 12	150	150
<b>Electrodag® PR 406</b>		x	< 10	12 to 15	150	150
<b>Electrodag® PR 400</b>		x	< 30	12 to 15	135 to 150	150
<b>Minico® M 2001 RS MOD2</b>		x	1	15 to 25	120 to 200	125
<b>Minico® M 2010 RS MOD2</b>		x	10	15 to 25	165 to 200	125
<b>Minico® M 2012 RS MOD2</b>		x	100	15 to 25	165 to 200	125
<b>Minico® M 2013 RS MOD2</b>		x	1 000	15 to 25	165 to 200	125
<b>Minico® M 2014 RS MOD2</b>		x	10 000	15 to 25	165 to 200	125
<b>Minico® M 2015 RS MOD2</b>		x	100 000	15 to 25	165 to 200	125
<b>Minico® M 7000 Blue A</b>	-	-	> 10 <sup>12</sup>	10 to 30	165 to 200	125

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## Special applications

### Contactless smart cards and RFID labels

References For screen printing	Pigment		Sheet resistance (Ohm/square at 25µm)	Thickness (µm)	Substrate	Antenna frequency
	Silver	Graphite				
<b>Electrodag® PM-406</b>	x		< 0.015	8 to 12	Plastic, paper	13.56 MHz
<b>Electrodag® PM-470</b>	x		< 0.015	4 to 8	Plastic, paper	UHF/2.45 GHz
<b>Electrodag® PF-407C</b>		x	< 20	6 to 10	Plastic, paper	-
<b>Electrodag® 452 SS</b>	-	-	> 10 <sup>9</sup>	10 to 30	Plastic, paper	-

### Printed resistors, heating elements

References	Pigment		Sheet resistance (Ohm/square at 25µm)	Thickness (µm)	Curing temp. (°C)	In-use temp. (°C)
	Silver	Graphite				
<b>Electrodag® PF-410</b>	x		< 0.025	8 to 12	80 to 120	100
<b>Electrodag® 6017 SS</b>		x	See fact sheet		120	100
<b>Electrodag® PM-404</b>	-	-	See fact sheet		120	100

Electrodag® 6017 SS and Electrodag® PM-404 can be mixed together to adjust resistance to the required level (see fact sheet for mixing ratios).

### Biosensors

Biosensors are devices used to measure designated targets with biological binding agents like enzymes, antibodies, bacteria etc...

References	Pigment		Sheet resistance (Ohm/square at 25µm)	Thickness (µm)	Curing temp. (°C)	In-use temp. (°C)
	Silver	Graphite				
<b>Electrodag® PF-410</b>	x		< 0.025	8 to 12	80 to 120	100
<b>Electrodag® 418 SS</b>	x		< 0.030	8 to 12	90 to 120	105
<b>Electrodag® PF-407A</b>		x	< 20	6 to 10	90 to 120	105
<b>Electrodag® 6037 SS</b>	Ag/AgCl		< 0.300	7 to 12	70 to 120	100
<b>Electrodag® 6038 SS</b>	Ag/AgCl		< 0.040	7 to 12	70 to 120	100
<b>Electrodag® 452 SS</b>	-	-	Insulating	10 to 30	UV	105

Electrodag® 6037 SS : ratio Ag/AgCl 3:2

Electrodag® 6038 SS : ratio Ag/AgCl 9:1

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### Touch screens

Via a touch screen, commands can be given to a computer by pushing on a certain area of the CRT or LCD monitor.

References	Pigment	Sheet resistance (°C)	Thickness (°C)	Curing temp. (°C)	In-use temp. (°C)
<b>Electrodag® PF-410</b>	Silver	< 0.025	8 to 12	80 to 120	100
<b>EL-411</b>	Silver	< 0.030	8 to 12	90 to 140	100
<b>PD-038 (for ITO)</b>	-	Insulating	50 to 75	UV	175

EL-411 has a superior adhesion on ITO films.

### Electroluminescent lamps

They offer excellent light transmission and have excellent inter-layer compatibility.

References	Application	Pigment	Sheet resistance (Ohm/sq. at 25µm)	Thickness (µm)	Th. coverage (m²/kg at 10µm)
<b>Lumidag™ EL-014</b>	Bus bar & rear electrode	Silver	< 0.020	8 to 10	+/- 15
<b>Lumidag™ EL-015</b>	Rear electrode	Graphite	< 15	6 to 10	+/- 23
<b>Lumidag™ EL-016</b>	Alternative to ITO	Translucent conductive	< 10 000	5 to 8	+/- 20
<b>Lumidag™ EL-043A</b>	Dielectric (air+UV)	BaTiO <sub>3</sub>	> 2 x 10 <sup>9</sup>	10 to 20	+/- 34
<b>Lumidag™ EL-063BG</b>	Green Phosphor	Phosphor	> 2 x 10 <sup>9</sup>	35	+/- 29
<b>Lumidag™ EL-072B</b>	Green dielectric (UV)	-	> 2 x 10 <sup>9</sup>	20 to 30	+/- 98

### Through hole printing inks

Resistance values are given for through-hole connections on CEM1 board dried for 30 minutes at 70°C and cured for 30 minutes at 150°C.

References	Pigment	Sheet resistance (mOhm / hole)	Pre-drying temperature	Curing temp. (°C)
<b>Electrodag® PR-011B</b>	Silver / Silver plated copper	< 35	70°C maxi	150-160
<b>Electrodag® PR-011D</b>	Silver / Silver plated copper	< 60	70°C maxi	150-160

These products should be stored at temperatures between +4 and +8°C.

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