Conductive Pens — Silver, Carbon, and Nickel

Easily draw and repair conductive traces

Features and Benefits:

- Acrylic lacquer pigmented with either carbon powder, nickel flake, or silver flake.
- Create durable, corrosion resistant, conductive connections
- Typical trace width: 1.0 mm
- Tack free in minutes
- Adheres to copper, aluminum, ceramics, wood, and most electronic substrates
- Adheres to ABS, PLA, and other 3D printed plastics
- Toluene and xylene free

Applications:

- Create and repair conductive traces in prototype or malfunctioning circuits.
- Designed for use on smooth, flat, hard surfaces

We offer a selection of three Conductive Pens:

842AR-P - Silver Conductive Pen (high conductivity)

- Repairing or replacing severely damaged traces on PCB's and mixing boards
- Creating conductive traces in prototype circuits
- Connecting electronic components and through-holes

841AR-P Nickel Conductive Pen (good conductivity)

- Repairing damaged traces on PCB's.
- Creating short conductive traces in prototype circuits
- Creating bridges
- Increasing the surface area of contacts by painting

838AR-P Carbon Conductive Pen (modest conductivity)

- Repairing damaged traces on keyboards, game controllers, or remote controls
- Connecting jumpers
- Drawing resistors in prototype circuits

Conductive Pens Comparison Chart

Uncured Working Properties	838AR-P	841AR-P	842AR-P
Conductive Filler	C (carbon)	Ni (nickel)	Ag (silver)
Color	Black	Dark grey	Metallic silver
Solids Percentage	15%	57%	61%
Density @25 °C [77 °F]	0.84 g/mL	1.51 g/mL	1.7 g/mL
Viscosity @25 °C [77 °F]	319 cP [368 mm^2/s]	161 cP [106 mm^2/s]	873 cP [503 mm^2/s]
VOC Content	43% [370 g/L]	14% [236 g/L]	12% [200 g/L]
Shelf Life	2 y	2 y	2 y
Coverage & Application Properties			
Handling Time	10 min	10 min	10 min
Drying Time @22 °C [72 °F]	24 h	24 h	24 h
Drying Time @65 °C [149 °F]	30 min	30 min	30 min
Theoretical Pen Coverage [a)]	≤71 cm^2	≤225 cm^2	≤450 cm
Cured Properties	**838AR-P**	**841AR-P**	**842AR-P**
Electrical Properties			
Volume Resistivity	0.46 Ω·cm	0.0068 Ω·cm	0.0001 Ω·cm
Surface Resistance @ 1 coat	170 Ω/sq	0.52 Ω/sq	<0.01 Ω/sq [b)]
Surface Resistance @ 2 coats	60 Ω/sq	0.38 Ω/sq	<0.01 Ω/sq [b)]
Thermal Properties			
Constant Service Temperature	-40 to 120 °C [-40 to 248 °F]	-40 to 120 °C [-40 to 248 °F]	-40 to 120 °C [-40 to 248 °F]
Intermittent Temperature Limits	-50 to 125 °C [-58 to 257 °F]	-50 to 125 °C [-58 to 257 °F]	-50 to 125 °C [-58 to 257 °F]
Mechanical Properties			
Adhesion, ABS	5B	5B	5B
Pencil Hardness, ABS	H, hard	3H, hard	3H, hard
Magnetic Properties			
Magnetic Class	Diamagnetic (non-magnetic)	Ferromagnetic (magnetic)	Diamagnetic (non-magnetic)
Relative Permeability	<1.0	≥100	<1.0

a) Idealized estimate based on a coat thickness of 25-50 µm [1-2 mil] and a 100% transfer efficiency.
b) Readings less than 0.01 Ω/sq are below the detection limit of the handheld multimeter and square probe method.

Available Packaging

838AR-P **5 mL Pen**

841AR-P **5 mL Pen**

842AR-P **5 mL Pen**

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