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Bare Paint Technical Data Sheet

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Description:

Bare Paint is available in 10ml pens, 50ml pots and 1l bulk jars. Bare Paint is a nontoxic, water based, water soluble, electrically conductive paint. Bare Paint adheres to a wide variety of substrates and is easily removed with water. Bare Paint is black in color and can be over-painted with any material compatible with a water-based paint. Please see the Bare Paint MSDS for precautionary information.

Advantages

- Electrically conductive
- Nontoxic
- Water-soluble
- Works with low voltage DC power sources (see “Power Sources” p.2)
- Powers small devices
- Makes a unique microcontoller interface
- Can be used as a potentiometer
- Compatible with many standard printing processes

Typical Properties

Color:	Black
Viscosity:	Highly viscous and shear sensitive
Density:	1.16 g/ml
Surface Resistivity:	55 Ω/Sq @ 50 microns. More information on p.3 & 4
Vehicle:	Water-based
Shelf Life Unopened:	6 Months
Drying Temperature:	Bare Paint should be allowed to dry at room temperature. Drying time can be reduced by placing Bare Paint under a warm lamp or other low intensity heat source.

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Application Tips:

Bare Paint is a unique material that can be applied in many different ways, from a paintbrush to common printing processes like screen-printing. To achieve consistent electrical performance it is best to apply Bare Paint in an even layer. If you're interested in screen printing Bare Paint, it is best to use a textile-type screen in order to achieve a generous layer thickness. We tend to use a 43T screen. For more application tips visit www.bareconductive.com/tutorials.

Power Sources:

Bare Paint is intended for use with low voltage DC power sources and has not been tested with sources exceeding 12VDC. Higher voltages are not recommended.

Substrates:

Bare Paint is a water-based paint and it acts much like other paints you might be familiar with. Bare Paint adheres well to wood, paper products, some plastics, corks, textiles and metal. Hydrophobic materials such as glass and some plastics will exhibit poor adhesion, though this can be improved by roughing the surface with sandpaper or similar.

Drying Tips:

Bare Paint is fast drying at room temperature. This material dries rather than cures and gives off no fumes during the drying process. Drying time can be moderately reduced by placing the material near a low intensity heat source such as an incandescent lamp. Subjecting Bare Paint to a high temperature environment will negatively affect both physical and electrical performance.

Flexibility:

Bare Paint is somewhat flexible, but this flexibility depends on two factors, the layer thickness and choice of substrate. Regardless of substrate, a consistently thin layer of paint creates the most flexible circuitry. Areas of paint with wide variation in thickness tend to produce fracturing. Substrates which are flexible, but not stretchy (such as paper) work better than materials like Lycra which stretch in multiple dimensions.

Cold Soldering:

Bare Paint works well as a cold solder joint. Whether used to solder a surface mount or through-hole component onto a circuit board, or to adhere a component to a piece of paper, this material is strong and almost infinitely repairable. This unique property means that components can be harvested from projects, cleaned and reused.

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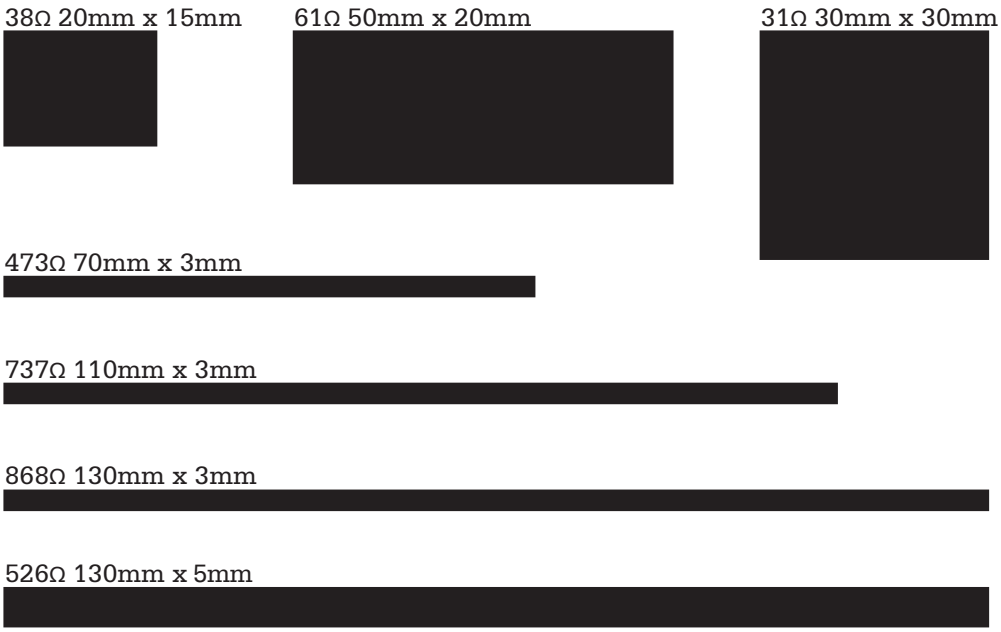
Resistance Samples:

Bare Paint is a unique material. The aim of this data sheet is to give you as much information as you need to get your work moving forward. As there are so many ways to apply Bare Paint, raw technical data is not always the most useful way to present the product.

Below you will find a series of samples which indicate the amount of electrical resistance (measured end to end) which you should expect from a given area of Bare Paint. This assumes a reasonably thin layer of material (ie. carefully painted with a brush). The areas of paint below are shown full size.



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Resistance Graph:

Bare Paint presents a wholly unique way of exploring electrical resistance. In general, the resistance of a conductive material is defined by the dimensions of the sample being tested, and resistance is inversely proportional to cross sectional area (ie. given a set length and depth, a wider sample will have less resistance than a thin one). Thus, the resistance can be defined by the ratio of length/width.

The diagram below plots the proportional ratio or a sample of Bare Paint against its approximate resistance. This diagram assumes that Bare Paint has been applied with a brush. You can calculate an estimated resistance for any proportion over 1, based on the equation: Resistance=19.77(Ratio)+12.

There are two examples illustrated below. Example one is illustrated by a blue point on the diagram. This point is associated with a shape with a ratio of 1. (dimensions of 10mmx10mm ie. 10x10=1). The resistance associated with this ratio is 32 Ohm. The nature of the ratio number means that this shape could have the dimensions of 100mm x 100mm and the resistance would still be 32 Ohm. Example two shows a shape of ratio 125. In this example the shape has the dimensions of 1250mm x 10mm (1250/10=125). The resistance associated with this shape is 2500 Ohm.