

LOCTITE ECI 8120 E&C

June 2016

PRODUCT DESCRIPTION

LOCTITE ECI 8120 E&C provides the following product characteristics:

Technology	Thermoplastic
Appearance	Black paste
Product Benefits	<ul style="list-style-type: none"> • Screen printable • Flexible • Printable on most common substrates • Rapid heating with fast, defined cut-off temperatures, no external control devices needed
Filler Type	Carbon
Operating Temperature-Maximum	105°C
Cure	Hot air drying or infrared
Application	Conductive Ink
Typical Assembly Applications	Self regulating heating elements
Key Substrates	PET substrates

LOCTITE ECI 8120 E&C is a Positive Temperature Coefficient (PTC) screen printable ink designed for applications where self regulating heaters are required. This material is formulated to rapidly heat to a specific threshold temperature and then maintain constant temperature for the device.

TYPICAL PROPERTIES OF UNCURED MATERIAL

Solids Content (TGA), %	46
Density, g/ml	1.0
Viscosity, Plate and Plate, mPa·s (cP):	
Plate 20 mm, 200 µm gap @ Shear rate 50 s ⁻¹	4,500
Shear Thinning Index (5/50 s ⁻¹)	6
Theoretical coverage @ 10 µm coating thickness, m ² /kg	43
Shelf Life, days	365
Flash Point - See SDS	

TYPICAL CURING PERFORMANCE

Recommended Drying Cycle

10 minutes @ 140°C

LOCTITE ECI 8120 E&C can be dried using forced air or infrared systems. Care should be taken with infrared. Too much energy can destroy the coating.

Design drying rates for the maximum the substrate and production speeds can tolerate.

The above drying profile is a guideline recommendation. Conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer drying equipment, oven loading and actual oven temperatures.

TYPICAL PROPERTIES OF CURED MATERIAL

Physical Properties

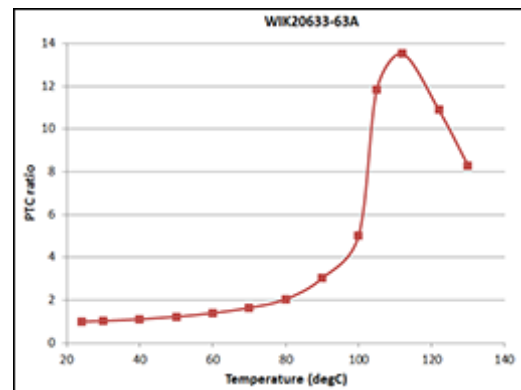
Adhesion to PET, Cross cut test	5B
PTC ratio	>10

Electrical Properties

Sheet Resistance (25 µm), dried 10 mins @ 140°C, 1.7 Kohm/sq

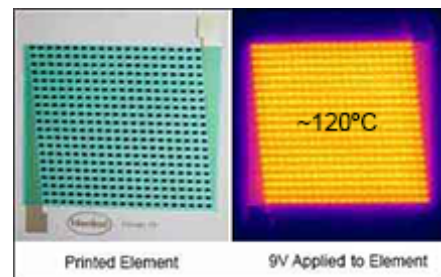
PTC Ratio vs Temperature Curve of dried PTC ink (Passive Way)

Printed tracks of PTC ink are gradually being heated up on a hotplate. The resistance over the track is measured at defined temperatures. The PTC ratio at a specific temperature is then calculated as the resistance at that temperature divided by the resistance at room temperature.



PTC Properties of Heater Element (Active Way)

A 10x10 cm heating element is screen printed on PET. This consists of a standard silver ink for printed heaters f.e. ECI 1010, ECI 8120 PTC ink and protected with a dielectric layer of EDAG PF 455B. This element is placed on an insulation board. Next, 9V is applied to this element and the thermal image is recorded with an IR camera.



GENERAL INFORMATION

For safe handling information on this product, consult the Safety Data Sheet, (SDS).

DIRECTIONS FOR USE**1. Surface Preparation**

- Surfaces to be coated must be clean, dry and free of dust.

2. Mixing/Dilution

- Mix thoroughly with plastic spatula or mechanical stirrer from bottom of container, careful not to whip air in to the product. Using a plastic spatula will decrease the possibility of introducing plastic grindings from the container sidewalls into the product, which could damage the screen.
- If needed, the ink can be diluted with Butyl glycol acetate.

3. Application

- LOCTITE ECI 8120 E&C can be used on a wide variety of plastic substrates
- Recommended screen printing parameters are:

Emulsion Thickness, Solvent resistant, μm	10 to 40
Squeegee Hardness	70 to 90
Screen, stainless steel, mesh	250

Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

Clean-up

The equipment can be cleaned with esters (butylacetate, ethylacetate) or ketones (MIBK, MEK).

Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

Optimal Storage: 0 to 40°C. Storage below 0°C or above 40°C can adversely affect product properties.

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$
 $\text{kV/mm} \times 25.4 = \text{V/mil}$
 $\text{mm} / 25.4 = \text{inches}$
 $\text{N} \times 0.225 = \text{lb}$
 $\text{N/mm} \times 5.71 = \text{lb/in}$
 $\text{psi} \times 145 = \text{N/mm}^2$
 $\text{MPa} = \text{N/mm}^2$
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$
 $\text{mPa}\cdot\text{s} = \text{cP}$

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Reference 1