

# LOCTITE® ECI 1014

November 2024

## PRODUCT DESCRIPTION

LOCTITE® ECI 1014 provides the following product characteristics:

<b>Technology</b>	Thermoplastic
<b>Appearance</b>	Gray paste
<b>Filler type</b>	Silver
<b>Product benefits</b>	<ul style="list-style-type: none"> <li>• High conductivity</li> <li>• Low temperature drying</li> <li>• Flexible</li> <li>• Compatible for use with polycarbonate, polyester and polyurethane</li> </ul>
<b>Operating temperature, °C</b>	105 °C
<b>Cure</b>	Hot air drying
<b>Application</b>	Inks and coatings, Conductive Ink
<b>Typical assembly applications</b>	Conductive circuits
<b>Key substrates</b>	PET, PC, TPU, PI, PEN

LOCTITE® ECI 1014 is a silver ink based on a thermoplastic polyurethane binder combining high conductivity and high elongation. The combined stretchability and high conductivity enable the development of medical wearables, smart textiles, automotive interior, and flexible heater applications. LOCTITE® ECI 1014 can be dried at low temperatures, down to 80°C. It is suitable for screen printing or high-speed printing after dilution and compatible with solvent sensitive substrates such as polycarbonate or thermoplastic polyurethane.

## TYPICAL PROPERTIES OF UNDRIED MATERIAL

Solids content, %	65
Density, g/ml	2.2
Viscosity @ 1.5 s <sup>-1</sup> @25°C, Rheometer, mPa·s (cP)	21,000
Thixotropic index (15/1.5 s <sup>-1</sup> )	2.1
Theoretical coverage, m <sup>2</sup> /kg @ 10 µm dry coating thickness	12
Shelf life @ 20°C, days	365

## TYPICAL DRYING PERFORMANCE

**Recommended drying cycle**  
15 minutes, 120°C

LOCTITE® ECI 1014 is suitable for low temperature drying (e.g., 80 to 100°C) which will result in a slightly higher resistance value. Higher temperatures for longer time exposure will improve the performance. 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 THE DRIED MATERIAL

### Physical properties

Adhesion to PET (Autostat CUS5), Cross Hatch, grade	5B
Elongation before break, %	> 50

### Electrical properties

Sheet resistance, 4-point probe, Ohm/sq/25µm	0.010
15 min @ 120°C	0.013
5 min @ 100°C	

## GENERAL INFORMATION

**Please consult the Safety Data Sheet (SDS) for safe handling information of this product.**

## DIRECTIONS FOR USE

### 1. Surface preparation

- Clean surface thoroughly prior to application.

### 2. Mixing/Dilution

- Mix thoroughly before use to ensure the entire ink volume is homogenous. A slow speed propeller may be utilized to mix until product is uniform.
- Should dilution be necessary, use dibasic ester, DBE (CAS: 95481-62-2). Henkel recommends a maximum of 10 wt%. This should be accomplished by adding solvent at 0.5 wt% intervals until desired viscosity and printability is achieved.

### 3. Application

- LOCTITE® ECI 1014 may be applied by rotary screen printing method.
- Recommended screen and printing parameters are:

Emulsion thickness, µm	
Solvent resistant	10 to 40
Squeegee hardness	70 to 90
Screen type, Polyester, mesh/cm	48 to 77

#### CLEAN UP

The screen and equipment can be cleaned with dilution solvent, or esters (PM-acetate, propylacetate, or ethylacetate), or ketones (MEK, Acetone), or similar solvents.

#### STORAGE

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

**Optimal Storage: 20°C. Storage below 15°C or greater than 30°C can adversely affect product properties.**

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel 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 Henkel representative.

#### 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 the specifications of this product.

#### Conversions

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

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