



LOCTITE® ECI 7004LR

January 2025

PRODUCT DESCRIPTION

LOCTITE® ECI 7004LR provides the following product characteristics:

Technology	Thermoplastic
Appearance	Black
Filler type	Carbon
Product benefits	<ul style="list-style-type: none">• Screen printable• Excellent screen residence time• Flexible low temperature drying cycles
Operating temperature	max 100°C
Cure	Heat drying
Application	Conductive ink
Typical assembly applications	Force sensitive modules, Printed resistors and Sensing devices
Key substrates	PET, PEN, PI, Paper

LOCTITE® ECI 7004LR is a carbon ink that can be blended with LOCTITE® NCI 7002 to adjust the resistance in the range of 50 to 5,000 Ohm/sq/25µm. It is often used to create printed resistors, and force sensing resistor (FSR) elements on polyester foil. The product and blends can be applied by screen printing. The coating will be compatible with the silver inks LOCTITE® EDAG PF 410 and LOCTITE® ECI 1010.

TYPICAL PROPERTIES OF UNDRIED MATERIAL

Solid content, (wt%)	27
Viscosity, Brookfield RVT, 25°C, after 1 min, mPa.s (cP) Speed 20 rpm	25,000
Density, kg/cm³	1,100
Shelf life @ 5 to 30°C (from the date of manufacture), days	365
Flash point, DIN 53213, °C	78

TYPICAL SCREEN PRINTING PROCESS

Emulsion thickness	
Emulsion thickness, µm	20 to 40
Recommended squeegee	
Polyurethane, durometer	70 to 75
Recommended screen type	
Monofilament polyester screen, threads/cm	61 to 90
Stainless steel screen, threads/cm	77 to 110

Printing equipment type

- Manual
- Semi-automatic
- High speed reel-to-reel

TYPICAL DRYING PERFORMANCE

Recommended drying cycle
10 minutes @ 120°C

Blends of LOCTITE® ECI 7004LR and LOCTITE® NCI 7002 E&C can be dried in conventional air circulated ovens.

Higher temperatures will shorten the drying time and will lead to more stable resistance values.

For high speed production, jet drying, infra-red drying and drying in high speed reel-to-reel equipment can be used.

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, grade	5B
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Electrical properties

Sheet resistance, 4-point probe, Ohm/sq/25µm	35
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Sheet resistance after blending with LOCTITE® NCI 7002 from 50 to 5,000 Ohm/sq/25µm range.

LOCTITE® ECI 7004LR (% by weight)	LOCTITE® NCI 7002 (% by weight)	@ 25µm dry coating thickness
100	0	35
90	10	50
80	20	70
70	30	105
60	40	170
50	50	290
40	60	675
30	70	2160
25	75	45000
20	80	35,000
10	90	> 1 x 10 ⁹



GENERAL INFORMATION

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

Directions for use

1. LOCTITE® ECI 7004LR is supplied ready for use. Should dilution be necessary, use butyl glycol acetate (CAS: 112-07-2). Henkel recommends a maximum of 10 wt%. This should be accomplished by adding solvent at 0.5 wt% intervals until desired viscosity is achieved.
2. If a gel structure forms after extended storage, the product may be warmed slightly in a water bath (not exceeding 50°C) and stirred with a mechanical stirrer. Very often, stirring is enough to obtain a proper viscosity again.
3. Blending with LOCTITE® NCI 7002 should be performed with a mechanical propeller mixer for the entire jar volume. Avoid rapid stirring as this causes air entrapment.

Clean up

The screen and equipment can be cleaned with dilution solvent, or esters (butylacetate, 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: 5 to 30°C

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

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

Disclaimer

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