



# NEW DIMENSIONS IN PRINTED ELECTRONICS

DUPONT ADVANCED MATERIALS

Product Overview 2018

**For more information on DuPont printed electronics materials or other DuPont Advanced Materials products, please contact your local representative:**

### Europe

DuPont (UK) Electronic Materials Ltd  
Bristol & Bath Science Park  
Dirac Crescent, Emersons Green  
Bristol, BS16 7FR  
United Kingdom  
Tel: +44 (0)117 970 9439

### Americas

DuPont Electronics & Imaging  
DuPont Chestnut Run Plaza  
974 Centre Road  
Wilmington, DE 19805  
Tel: 1-800-441-7515

### Asia

DuPont Kabushiki Kaisha  
DuPont Electronics Center  
KSP R&D B213  
2-1, Sakado 3-Chome,  
Takatsu-ku, Kawasaki-shi  
Kanagawa, 213-0012  
Japan  
Tel: +81-3-5521-8650

DuPont Taiwan Ltd.  
45 Hsing-Pont Road  
Taoyuan, Taiwan 330  
Tel: +886 3 377 3616

DuPont China Holding Co. Ltd.  
Bldg 11, 399 Keyuan Rd.  
Zhangji Hi-Tech Park  
Pudong New District  
Shanghai 201203, China  
Tel: +86-21-6386-6366 ext. 2202

### DuPont Korea Inc.

3-5th Floor, Asia tower #726  
Yeoksam-dong, Gangnam-gu  
Seoul 135-719, Korea  
Tel: +82-10-6385-5399

E.I. DuPont India Private Limited  
7th Floor, Tower C, DLF Cyber Greens  
Sector-25A, DLF City, Phase-III  
Gurgaon 122 002 Haryana, India  
Tel: +91-124-4091818

DuPont Company (Singapore) Pte Ltd.  
1 Harbour Front Place, #11-01  
Harbour Frong Tower One,  
Singapore 098633  
Tel: +65-6586-3022

[advancedmaterials.dupont.com](http://advancedmaterials.dupont.com)

This information corresponds to our current knowledge on the subject. It is offered solely to provide possible suggestions for your own experimentation. It is not intended, however, to substitute for any testing you may need to conduct to determine for yourself the suitability of our products for your particular purposes. This information may be subject to revision as new knowledge and experience become available. Since we cannot anticipate all variations in actual end-use conditions, DuPont makes no warranties and assumes no liability in connection with any use of this information. Nothing in this publication is to be considered as a license to operate under or a recommendation to infringe any patent right.

CAUTION: do not use in medical applications involving permanent implantation in the human body. For other medical applications, see "DuPont Medical Caution Statement" H-50103-3.

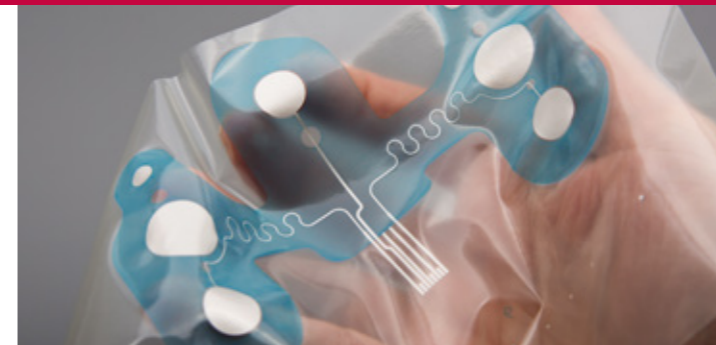
© Copyright 2018 DuPont. All rights reserved. The DuPont oval logo, DuPont™, and all DuPont products denoted with a ® or ™ are registered trademarks or trademarks of E.I. du Pont de Nemours and Company or its affiliates.

Inside images courtesy of Holst Centre.

L-14709 02.2018



Application	Composition	Product Code	Features
Printed Electronics	● Silver	5065/5028	High conductivity/fine line
Printed Electronics	● Silver	5025	Multi purpose conductor
Printed Electronics	● Carbon	7105/7102	Low cost carbon
Printed Electronics	● Dielectric	5018/5018A/G	UV cure. Cross-over or encapsulant, blue, clear and green
Printed Electronics	● Ag composite	PE825/PE826	Low silver circuitry 37% / 18% Ag
Digital Electronics ink-jet	● Silver	PE410	High conductivity nano-Ag for ink-jet printing
RFID/HF (NFC)	● Ag alloy	PE815	Low silver 27% Ag, photonic cure and calendar
RFID/HF (NFC)	● Silver	5029/PE819	High conductivity for printed HF antennae
RFID/UHF	● Copper	PE510	Low cost copper for photonic curing, UHF antennae
RFID/UHF	● Ag composite	PE825/PE826	Low Ag option for UHF antennae
Biomedical	● Silver	5025/5028	Signal lines and sensor pads
Biomedical	● Ag/AgCl	5880/5874	Stable reference electrodes
Biomedical	● Carbon	BQ226/BQ242	High sensitivity electrodes
Biomedical	● Gold	BQ331	Inert surface electrodes
Biomedical	● Platinum	BQ321/7112	High activity electrodes
Biomedical	● Dielectric	BQ10	Fast UV cure, high resolution flexible insulator
In-Mold Electronics	● Silver	ME101	Formable low stretch conductor for antennae and interconnects
In-Mold Electronics	● Carbon	ME201	Formable carbon
In-Mold Electronics	● Silver	ME602/ME603	Formable conductors, good adhesion to polycarbonate
In-Mold Electronics	● Dielectric	ME775/ME776	Formable dielectric, white solvent based crossover
In-Mold Electronics	● Dielectric	ME777	Formable dielectric and overprint, improved UV stability
In-Mold Electronics	● Transparent	ME801	Formable organic transparent conductor
In-Mold Electronics	● Silver	ME901	One component conductive adhesive for LED attach
OLED Lighting	● Silver	9169	Bus lines, good adhesion to ITO
OLED Lighting	● Silver	PE410	Ink-jet nano-Ag for bus and grid lines
LED Lighting	● Silver	5028/5065	High conductivity signal lines
LED Lighting	● Dielectric	5056	Flexible solder mask and white reflector
LED Lighting	● Ag/● Cu	CB230	Solderable contact pad
Heaters	● Carbon	7292	PTC composition for self-limiting heaters
Heaters	● Silver	Kapton™ KA801	High temperature operation up to 200°C
Heaters	● Dielectric	Kapton™ KA701	High temperature operation up to 300°C
Touch Panels	● Silver	9169	Good adhesion to ITO
Wearables	● Silver	Intexar™ PE873	Stretchable, washable conductor
Wearables	● Silver	Intexar™ PE874	Stretchable, washable conductor. Best stretch recovery
Wearables	● Silver	Intexar™ PE875	Stretchable, washable conductor. Best washability
Wearables	● Dielectric	Intexar™ PE773	Stretchable, washable encapsulant
Wearables	● Carbon	Intexar™ PE671	Stretchable, washable overprint
Wearables	● Film	Intexar™ TE-11C	Stretchable polyurethane base film
Wearables	● Film	Intexar™ TE-21C	Cover film for part packaging
Electroluminescent	● Phosphor	8150L/8152B	White and blue-green phosphors
Electroluminescent	● Dielectric	8153	High dielectric constant
Electroluminescent	● Silver/● Carbon	9145/8144	Rear electrode / Front bus bar
Electroluminescent	● Translucent	7162	Front translucent electrode
Smartpackaging	● Silver	PE827/PE828	Low temperature curing (60°C – 100°C)
Thin Film Photovoltaic	● Silver	PV412/PV416	High conductivity and adhesion on TCOs



### Introduction

For over 50 years, DuPont has been a leading innovator and global supplier to the Printed Electronics industry. Our extensive offering of low temperature curing inks for flexible substrates enables a variety of advanced printed electronics applications. With an expanding range of new, innovative products targeted to critical customer applications, we are driving the future of Printed Electronics.

### In-Mold Electronics

A new system of conductive and dielectric inks that are designed to survive the intense stretching and heat of the thermoforming and injection molding processes. These can be used to construct ergonomically-friendly control surfaces with 3D circuits that feature capacitive switches and LED lighting for applications such as touch-panel control interfaces in automobiles and domestic appliances. By removing bulky physical switches and part assembly process steps, significant cost and weight savings can be achieved.

### Wearables

Intexar™ is the new suite of stretchable, washable electronic ink and substrate materials enabling a manufacturing-ready approach to deliver superior comfort and functionality for smart clothing and other wearable electronics such as healthpatches. Intexar™ inks and substrates are designed for exceptional stretch performance and endurance through multiple wash cycles.

### Smart Packaging

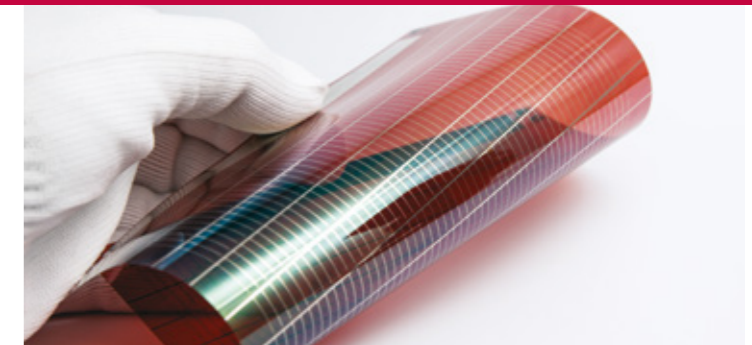
Low temperature curing (60°C–100°C) silver and carbon inks for printing conductive tracks and features on functional packages. The low temperature performance enables designers to print electronic circuits on substrates with lower temperature tolerances such as PVC and polyolefins.

### Flexible Heaters

New DuPont™ Kapton™ inks for high temperature heater applications and Positive Temperature Coefficient (PTC) carbon resistors for self-limiting heater applications.

### Touch Panels

Fine line, high resolution screen and ink-jet silver compositions for grid lines and bus bars with good adhesion to ITO.



### Electroluminescent Lamps

Silver, dielectric, carbon, phosphor and overprint screen printable EL system of inks (DuPont™ Luxprint®).

### Digital Printing

New nano-Ag ink-jet composition suitable for digital printing of conductive paths and components. This new ink combines very high conductivity with excellent adhesion, fine line resolution and low surface roughness.

### Biomedical Sensors

Silver/silver chloride and carbon screen formulations for highly stable electrode systems for point-of-care applications such as blood glucose and blood coagulation test strips. Low temperature curing gold ink for highly inert electrode surfaces for immunodiagnostic and blood gas sensors. Highly active platinum and platinized carbon compositions are also available.

### Photovoltaics

Silver grid and bus bar materials for current collection in flexible thin film, organic and perovskite photovoltaic cells. Key properties are high conductivity, fine line resolution and low contact resistance on transparent conductive oxides.

### Membrane Switches and Interconnects

For general purpose conducting lines and contacts in all printed electronics applications. A wide range of inks are available from very high conductivity pure silver to low cost carbon, copper and alloy conductors.

### RFID/NFC

High-conductivity silver compositions for printing HF and UHF antennae. New copper and alloy compositions have been introduced that display excellent conductivity after lamination and/or photonic curing, ensuring a cost effective solution.

### LED Lighting

A range of inks are available for fabricating LED circuits on both flexible and rigid substrates including a high conductivity silver for LED interconnect, a solderable low temperature curing conductor and a flexible reflective dielectric capable of withstanding solder reflow.