



**DNC**

diversified nano  
corporation

x-nano™ functional inks & dispersions  
for inkjets and more

Black | Magnetic | Invisible | Color | Custom

Diversified Nano Corporation (DNC), based in San Diego California, specializes in developing and manufacturing nano materials and fluids used in high-performance functional inks for digital printing, unique customer applications, research and surface treatments. DNC has developed an extensive product line of inks known as x-nano™, providing a range of solutions that utilize magnetic and non-magnetic nano particles, including invisible fluorescent inks (UV/IR), special pigmented/hybrid inks and MICR (Magnetic Ink Character Recognition) inks. These inks address dot on demand inkjet applications based on thermal and piezo print heads using aqueous, oil, energy curable (UV/LED) and eco-solvent based inks.



Diversified Nano Corporation (DNC) | **x-nano™**

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■ K-Series ■ I-Series ■ Value-Series ■ Elite-Series ■ S-Series ■ M-Series

# k-series

General purpose & security  
MICR ink—ideal for professional,  
high-speed, high-density, industrial  
inkjet printing.

## Aqueous Inkjet Ink - Dot on Demand<sup>1</sup>

Part No. <sup>2</sup>	Product Name	Ink Type	Viscosity (cPs)	Surface Tension (dyn/cm)	Density (g/mL)	Particle Size (nm)	Magnet Signal (@600x600-16pL)
● KKM-X	x-nano™ Elite Black KM	Pigment w/ MICR Primer	6.7-9.8	32-42	1.28-1.38	50±20	23-35%
● KMAX-X	x-nano™ Elite Black MICR MAX	MICR w/ Pigment Primer	7.0-9.5	30-41	1.39-1.45	50±20	75-85%
● KHD2A-X	x-nano™ Elite Black MICR HD2A	MICR	8.0-10.0	30-41	1.39-1.45	50±20	100-110%
● HD3X-1G-X	x-nano™ Elite Black MICR HD3X-1G	MICR	8.5-10.0	30-42	1.42-1.45	50±20	110-130%
● HD2B-156-X	x-nano™ Elite Black MICR HD2B-156	MICR	12.0-17.1	32-42	1.50-1.58	50±20	120-150%

Stability

High (no agitation required)

Shelf Life

>24 months

Media Compatibility

Porous, non-porous paper & corrugated

Print Head Compatibility

Piezo & Thermal for Industrial, Commercial, Office and Consumer printing platforms\*

<sup>1</sup> Optional: Solvent, Oil and UV curable vehicle - contact DNC for more information.

<sup>2</sup> Part numbers include a variable component "X" which changes based on print heads and target print systems.

\* Details on Page 17



i-series



Invisible, fluorescent, dye and pigment ink—ideal for general purpose, high-quality, security desktop printing.

Aqueous Inkjet Ink - Dot on Demand<sup>1</sup>

Part No. <sup>2</sup>	Product Name	Ink Type	Viscosity (cPs)	Surface Tension (dyn/cm)	Density (g/mL)	Particle Size (nm)	Detection (Type, nm)
● IUV-B460S-X	x-nano™ UV Blue 460	Dye	3.0-8.0	32-42	1.1-1.2	NA	UV, 365
● IUV-G545S-X	x-nano™ UV Green 545	Pigment	3.0-8.0	35-45	1.1-1.2	170±50	UV, 365
● IUV-GY550S-X	x-nano™ UV Green-Yellow 550	Pigment	3.0-8.0	35-45	1.1-1.2	170±50	UV, 365
● IUV-YG560S-X	x-nano™ UV Yellow-Green 560	Pigment	3.0-8.0	35-45	1.1-1.2	190±50	UV, 365
● IUV-R615S-X	x-nano™ UV Red 615	Pigment	3.0-8.0	35-45	1.1-1.2	190±50	UV, 365
● IIR-783S-X	x-nano™ IR-783	Dye	3.0-8.0	32-42	1.0-1.1	NA	IR, 783
● IIR-820S-X	x-nano™ IR-820	Dye	3.0-8.0	32-42	1.0-1.1	NA	IR, 820
● IIR-1040S-X	x-nano™ IR-1040	Dye	3.0-8.0	30-40	1.0-1.1	NA	IR, 1040

Stability High (no agitation required)  
 Shelf Life >24 months  
 Media Compatibility Porous, non-porous paper & corrugated  
 Print Head Compatibility Piezo & Thermal for Industrial, Commercial, Office and Consumer printing platforms\*

<sup>1</sup> Optional: Solvent, Oil and UV curable vehicle - contact DNC for more information.  
<sup>2</sup> Part numbers include a variable component "X" which changes based on print heads and target print systems.  
 \* Details on Page 17



# value-series

General purpose dye and dye/pigment hybrid ink—ideal for economical, high-quality, desktop inkjet printing.

### Aqueous Inkjet Ink - Dot on Demand<sup>1</sup>

Part No. <sup>2</sup>	Product Name
● VK-X	x-nano™ Premium Black
● VC-X	x-nano™ Premium Cyan
● VM-X	x-nano™ Premium Magenta
● VY-X	x-nano™ Premium Yellow
● VR-X	x-nano™ Premium Red (Spot)
● VB-X	x-nano™ Premium Blue (Spot)

<b>Ink Type</b>	Dye & Dye Pigment Hybrid
<b>Viscosity</b>	2.0 - 6.5 cPs*
<b>Surface Tension</b>	32 - 42 dyn/cm*
<b>pH</b>	7.0 - 8.5*
<b>Density</b>	1.0 - 1.2 g/mL*
<b>Particle Size</b>	110 - 200 nm (when applicable)
<b>Waterfastness</b>	Very good
<b>Detection</b>	Visible light range
<b>Stability</b>	High (no agitation required)
<b>Shelf Life</b>	>24 months
<b>Media Compatibility</b>	Porous, non-porous paper & corrugated
<b>Print Head Compatibility</b>	Piezo & Thermal for Industrial, Commercial, Office and Consumer printing platforms*

<sup>1</sup> Optional: Solvent, Oil and UV curable vehicle - contact DNC for more information.

<sup>2</sup> Part numbers include a variable component "X" which changes based on print heads and target print systems.

\* Details on Page 17

# elite-series



General purpose pigment ink—  
ideal for professional, high-speed,  
high-density, industrial inkjet printing.

## Aqueous Inkjet Ink - Dot on Demand<sup>1</sup>

Part No. <sup>2</sup>	Product Name
● EK-X	x-nano™ Elite Black
● EC-X	x-nano™ Elite Cyan
● EM-X	x-nano™ Elite Magenta
● EY-X	x-nano™ Elite Yellow
● ER-X	x-nano™ Elite Red (Spot)
● EB-X	x-nano™ Elite Blue (Spot)

<b>Ink Type</b>	Pigment
<b>Viscosity</b>	2.0 - 6.5 cPs*
<b>Surface Tension</b>	32 - 42 dyn/cm*
<b>pH</b>	7.0 - 8.5*
<b>Density</b>	1.0 - 1.2 g/mL*
<b>Particle Size</b>	110 - 200 nm
<b>Waterfastness</b>	Excellent
<b>Detection</b>	Visible light range
<b>Stability</b>	High (no agitation required)
<b>Shelf Life</b>	>24 months
<b>Media Compatibility</b>	Porous, non-porous, coated, glossy and offset
<b>Print Head Compatibility</b>	Piezo & Thermal for Industrial, Commercial, Office and Consumer printing platforms*

<sup>1</sup> Optional: Solvent, Oil and UV curable vehicle - contact DNC for more information.

<sup>2</sup> Part numbers include a variable component "X" which changes based on print heads and target print systems.

\* Details on Page 17



# S-series

Specialty Fast-Dry pigment ink—  
ideal for professional, high-speed,  
industrial inkjet printing.

### Aqueous Inkjet Ink - Dot on Demand<sup>1</sup>

Part No.<sup>2</sup>

● SFD-X

Product Name

x-nano™ Elite Black Fast-Dry

<b>Ink Type</b>	Pigment
<b>Viscosity</b>	3.0 - 7.0 cPs*
<b>Surface Tension</b>	27 - 35 dyn/cm*
<b>pH</b>	7.0 - 9.0*
<b>Density</b>	1.1 - 1.2 g/mL*
<b>Particle Size</b>	130±20 nm
<b>Waterfastness</b>	Excellent
<b>Detection</b>	Visible light range
<b>Stability</b>	High (no agitation required)
<b>Shelf Life</b>	>24 months
<b>Media Compatibility</b>	Porous, non-porous paper & corrugated
<b>Print Head Compatibility</b>	Piezo & Thermal for Industrial, Commercial, Office and Consumer printing platforms*

<sup>1</sup> Optional: Solvent, Oil and UV curable vehicle - contact DNC for more information.

<sup>2</sup> Part numbers include a variable component “X” which changes based on print heads and target print systems.

\* Details on Page 17

# m-series Magnetic Fluid.



## Magnetic Fluid - Convertible Aqueous Dispersion<sup>1</sup>

Part No. <sup>2</sup>	Product Name	Type	Viscosity (cPs)	Surface Tension (dyn/cm)	Density (g/mL)	Particle Size (nm)
● MFI-X	x-nano™ Magnetic Fluid Iron Oxide	Nano Particle Dispersion	7.0-18.0	55-65	1.4-1.7	50±20
● MFM-X	x-nano™ Magnetic Fluid Multi-Metal	Nano Particle Dispersion	7.0-18.0	55-65	1.4-2.0	50±20

Stability	High (no agitation required)
Shelf Life	>24 months
Media Compatibility	Porous, non-porous paper & corrugated
Print Head Compatibility	Piezo & Thermal for Industrial, Commercial, Office and Consumer printing platforms*

<sup>1</sup> Optional: can be customized and converted for various applications.  
<sup>2</sup> Part numbers include a variable component “X” which changes based on print heads and target print systems.  
 \* Details on Page 17



UV Barcode Scanner



MICR Check Scanner



UV Light Source & IR Laser Pointer

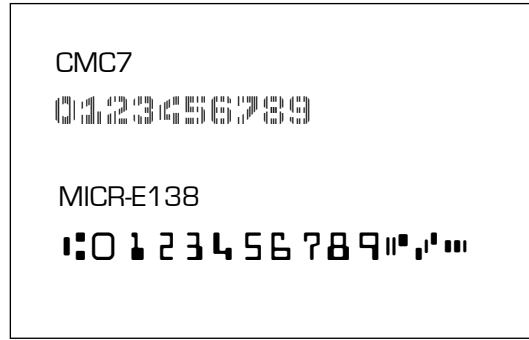


Complete Desktop Inkjet Test System: DNC 1000

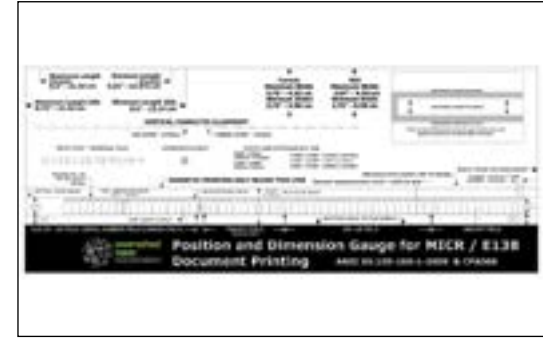
- HP-1000MX MICR printer
- VersaCheck® check writing software
- MICR & Tri-Color ink



MICR Fonts



MICR Line Gauge



HP TIJ2.5/4.0 Compatible Solution

TIJ2.5 Printing Solutions for:  
• Industrial • Security • Financial

MICR	Black	Spot	Invisible	Fast-Dry

Optional: Private Branding

Professional Loupe



JetFix 2A



## Printing Applications

Industry	Printer	Function	Examples	Ink Series
Desktop	Dot on Demand Inkjet Printer	<ul style="list-style-type: none"> <li>• General purpose</li> <li>• Business</li> <li>• Commercial</li> </ul>	<ul style="list-style-type: none"> <li>• Books</li> <li>• Transactional</li> <li>• Images</li> <li>• PDFs</li> </ul>	• Value-Series
		<ul style="list-style-type: none"> <li>• MICR compliant</li> </ul>	<ul style="list-style-type: none"> <li>• Check printing</li> </ul>	• K-Series
		<ul style="list-style-type: none"> <li>• UV printing</li> </ul>	<ul style="list-style-type: none"> <li>• IDs</li> <li>• Checks</li> <li>• Images</li> <li>• Documents</li> </ul>	• I-Series
Commercial	Dot on Demand Digital Inkjet Press (Mono & Color)	<ul style="list-style-type: none"> <li>• High speed</li> <li>• High resolution</li> <li>• High quality</li> <li>• General purpose</li> </ul>	<ul style="list-style-type: none"> <li>• Marketing materials (brochures, catalogs, DM, etc.)</li> <li>• Photos</li> <li>• TransPromo</li> <li>• Transactional</li> </ul>	<ul style="list-style-type: none"> <li>• K-Series</li> <li>• I-Series</li> <li>• Value-Series</li> <li>• Elite-Series</li> </ul>
Industrial	Dot on Demand Industrial Inkjet Systems	<ul style="list-style-type: none"> <li>• High speed tracking</li> <li>• Non-overt detection &amp; sorting</li> <li>• Multi-layer</li> </ul>	<ul style="list-style-type: none"> <li>• Packaging</li> <li>• Documents</li> <li>• Envelopes &amp; mailing</li> </ul>	• K-Series
		<ul style="list-style-type: none"> <li>• UV security</li> </ul>	<ul style="list-style-type: none"> <li>• IDs &amp; passports</li> <li>• Checks</li> <li>• Images &amp; documents</li> <li>• Lottery &amp; currency</li> </ul>	• I-Series
		<ul style="list-style-type: none"> <li>• High speed</li> <li>• Large format/quantity</li> </ul>	<ul style="list-style-type: none"> <li>• 400 pages @ maximum resolution</li> </ul>	• S-Series
		<ul style="list-style-type: none"> <li>• Research &amp; development of magnetic fluids</li> </ul>	<ul style="list-style-type: none"> <li>• Chemistry, biochemistry, material science, molecular biology</li> </ul>	• M-Series
		<ul style="list-style-type: none"> <li>• Direct to Garment (DTG)</li> <li>• Large format rolls</li> </ul>	<ul style="list-style-type: none"> <li>• Wallpaper</li> <li>• Fabric</li> <li>• Pillows</li> <li>• Furniture</li> </ul>	• T-Series (not listed)
Foodservice	Dot on Demand Industrial Inkjet Systems / Single Head Mount	<ul style="list-style-type: none"> <li>• Edible food decoration</li> <li>• Track 'n Trace</li> </ul>	<ul style="list-style-type: none"> <li>• Cakes</li> <li>• Eggs</li> <li>• Desserts</li> <li>• Produce</li> </ul>	• F-Series (not listed)

All x-nano™ inks and ink parameters are specifically adjusted to meet the requirements of print-head types and manufacturers listed.

### Print Head Manufacturers

Piezo

Brother  
Epson  
Fujifilm Dimatix  
Konica Minolta  
Kyocera  
Panasonic  
Ricoh  
Xerox

### Machine Type

Thermal

Brother  
Canon  
Epson  
Graph-Tech  
Hewlett Packard  
Hewlett Packard  
Hewlett Packard  
Impika  
Infoprint/Ricoh  
Kodak  
Lexmark  
Oce/Canon  
Pitney Bowes  
RR Donnelley

All desktop inkjet models  
All thermal desktop/workgroup inkjet models  
All piezo inkjet models  
MonoCube  
Web Press T-series  
OfficeJet/Deskjet  
TIJ 2.5 and 4.0  
iPrint/iEngine  
Infoprint 5000 series  
VersaMark VL series  
All thermal desktop and industrial inkjet models  
Jetstream/ColorStream series  
IntelliJet Series  
Custom inkjet presses

\*FlexAdapt™ is a proprietary DNC process which allows efficient adaption of physical and chemical properties of individual inks to meet the specific requirements of print system implementations and print head operating parameters.

### Invisible Ink for Thermal and Piezo Dot on Demand Print Heads

UV Blue 460



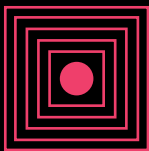
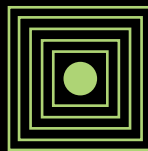
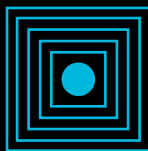
UV Green 545



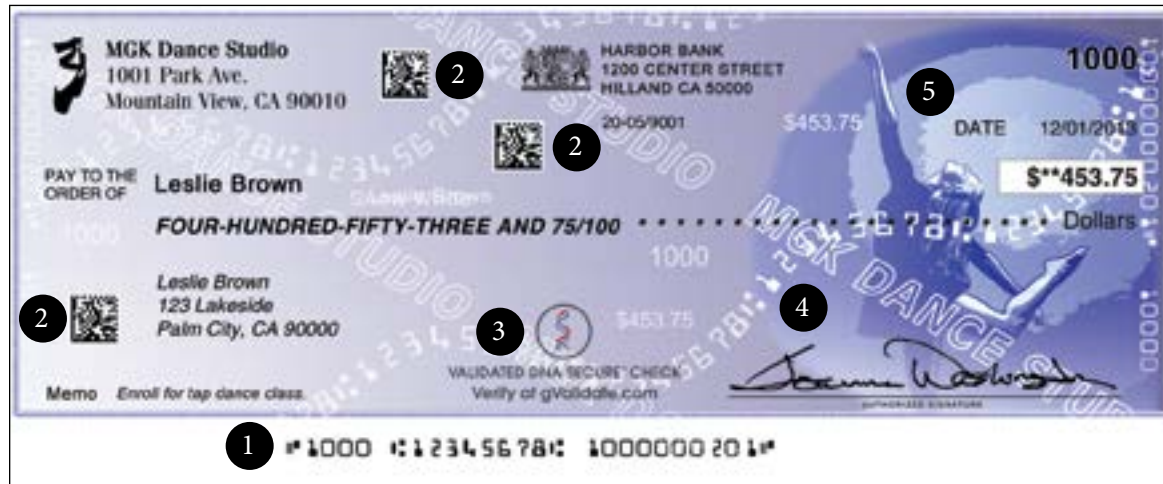
UV Yellow-Green 560



UV Red 615



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- |   |                                                          |                                               |
|---|----------------------------------------------------------|-----------------------------------------------|
| 1 | MICR Bank Code line                                      | K-Series (MICR)                               |
| 2 | 2-D barcode - invisible uv fluorescent                   | Value-Series, Elite-Series, I-Series (UV, IR) |
| 3 | Security seal                                            | Value-Series, Elite-Series, I-Series (UV, IR) |
| 4 | Data Noise Authentication™ (DNA) security marks/text     | Value-Series, Elite-Series, I-Series (UV, IR) |
| 5 | Variable data, field tags, color background and graphics | Value-Series, Elite-Series                    |

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**About MICR Ink**

DNC K-Series MICR inks are in wide use today by industrial and commercial users of high-speed inkjet presses; and home and office users of desktop inkjet printers. Almost every currently available inkjet printer, All-in-One and fax machines can be equipped with MICR ink cartridges to print bank compliant, long lasting documents for archival, security applications, payments and premium quality prints.

**About CMYK-Channel Color and Black Ink**

DNC Value-Series, Elite-Series and S-Series inks are based on a new family of dye and nano particles, formulated with special ingredients, to achieve an unprecedented coverage and ultra-smooth appearance on various substrates. Both Premium and Elite inks are available for desktop, industrial and commercial print applications utilizing thermal and piezo print heads available from a variety of manufacturers.

**About Invisible IR/UV Fluorescent Ink**

DNC invisible inks support many security related applications. These inks can be printed on media without interfering with other content printed on the same documents using regular visible ink. This helps reduce the need for additional print material, labels, tags, run-time, etc. and enables authentication of objects and items using UV (ultraviolet) or IR (infrared) light. Invisible fluorescent and infrared inks provide a platform for endless industrial and security applications in the workplace, and can even inspire creativity at home or for entertainment purposes—tickets, events, dining and more. DNC invisible IR/UV fluorescent inks are suitable for all major inkjet printers and presses utilizing dot-on-demand inkjet technology.

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