

x-nano

**MICR Black &
Other Nano-Pigmented Inks
For Inkjet Printing**

New Materials and Fluids
Application Development
Integrated Technology Solutions





x-nano Corporate Profile

Nano Material for Industrial, Consumer and Bio-Med Applications

Diversified Nano Corporation (DNC), based in San Diego California, specializes in developing and manufacturing nano material and products in demand for scientific use, surface coating, medical treatment and high performance functional inks. DNC's primary focus lies in bio-med applications for magnetic and non-magnetic nano particles, invisible fluorescent inks (UV/IR), special pigmented/hybrid inks and MICR (Magnetic Ink Character Recognition) inks for dot-on-demand inkjet applications based on thermal and piezo print heads using aqueous, oil, energy curable (UV/LED) or solvent based ink.

About MICR

MICR inks are in wide use today by industrial and commercial users of high-speed inkjet presses, at home and at the office using 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 photos.

"DNC MICR inks: An Industry Choice!"

DNC's MICR inks are the preferred choice for manufacturers of high-speed inkjet presses utilizing piezo and/or thermal print heads by HP, Lexmark, Canon, Epson, Kyocera, Panasonic, Ricoh, Konica Minolta, Fujifilm Dimatix and others. DNC's x-nano™ MICR Black inks are also available for the majority of mainstream desktop color inkjet printers. Service Bureaus, Print Shops and Corporate Users utilize DNC MICR ink for industrial ticket/tag/label and high-speed commercial inkjet printers to print transactional documents in combination with checks for highly effective mailing, blank check production and general accounts payable purposes. The inks are suitable for thermal and piezo based dot-on-

demand print head technology and support print speeds of over 600 feet per minute. DNC commercializes its MICR ink solutions through select value-add system integrators and manufacturers of print systems and print heads utilizing inkjet technology.

About CMYK-Channel Color and Black Ink

DNC Elite Hybrid Pigmented Ink is based on a new family of xNano-particles, formulated with special ingredients, to achieve an unprecedented black coverage and ultra-smooth appearance on various substrates. Like the MICR ink Black series, "Elite" is 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. This ink 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 (ultra violet) or IR (infra red) light. Invisible (fluorescent) inks provide a platform for endless industrial and security applications and inspire to creativity at home, work and associated with entertainment in sports (tickets), restaurants (menu) and other public places. DNC invisible UV/IR fluorescent inks are suitable for all major inkjet printers and presses utilizing dot-on-demand inkjet technology.

Mission

DNC is driven by a desire to innovate and deliver leading edge nano material solutions for industrial, consumer and bio-med applications.



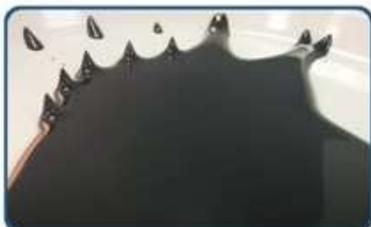
Diversified NANO Corporation

x-nano MICR Black Ink

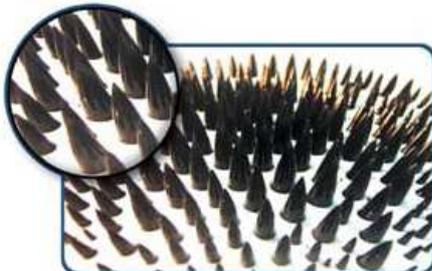
High Quality Ink for documents, checks and specialty print applications

DNC the manufacturer of x-nano™ inks and special materials is a dynamic, leading-edge company that develops and manufacturers innovative inks for the global marketplace. x-nano™ advanced ink formulations are designed for desktop, enterprise, industrial, and specialty printing and surface coating applications.

- **Save Money** ▶ Printing checks on-demand with x-nano™ Ink is much more cost-effective than purchasing expensive pre-printed checks.
- **Save Ink** ▶ x-nano's droplet size reduces ink use up to 20%, while producing smooth and saturated output appearance.
- **Save Time** ▶ Printing with x-nano™ Inks allow for on-demand instant printing of MICR compliant checks.
- **Edge-Precise™** ▶ Printing with x-nano™ inks ensures Ultra-Sharp print quality for documents and images
- **JetsFree™** ▶ x-nano's™ anti-clogging ink formula means fast, easy, and convenient printing every time. Eliminates time spent hassling with dried up, and caked nozzle surface or clogged cartridges.
- **Ultra-Durable** ▶ Resistant to fading, smearing, and chemical alterations. Unaffected by extended light exposure and chemical alteration. Documents, images and checks printed with x-nano™ are virtually everlasting and durable against organic and inorganic solvents.
- **Environmentally Friendly** ▶ x-nano™ inks are made from natural ingredients that are non-harmful to the environment or one's health.



X-nano™ MICR Black BEFORE magnet applied



X-nano™ MICR Black AFTER magnet applied

Unique Nano-Pigmented Magnetic Properties

When exposed to a magnetic field, x-nano™ transforms into distinctive geometric shapes such as cones and spikes. The unique magnetic properties of x-nano™ ink allow user to print MICR (Magnetic Ink Character Recognition) compliant checks in E-13B, CMC7. These special fonts encoded with MICR ink are required for high-speed sorting, processing, security print patterns and content for authentication.



The Better Choice For Inkjet Printing



Diversified NANO Corporation

x-nano Elite Black Ink

Rich Black Nano-Pigmented Ink Formula for Desktop Inkjet Printers

x-nano™ Elite Black is a Nano Pigmented Ink specifically formulated for high-quality inkjet printing of documents, and photos resulting in deep, rich black print-outs. Use x-nano Elite Black for better optical reading of OCR-A and OCR-B prints.

- **Ideal for High-Speed Printing** ▶ This unique solution with its nanometer size pigments maintains the ideal drop-size, viscosity, surface tension, and density for high-quality industrial and desktop inkjet printing.
- **Enriched Black** ▶ Elite Black's high-density formula yields deep, rich black print outputs that do not smudge and still save on ink consumption.
- **Enhanced** ▶ Get long-lasting cartridges. MICR black's unique formula provides for up to 20% lower ink consumption per page than standard ink while retaining consistent, rich and saturated black print quality.
- **EdgePrecise™** ▶ Ultra-sharp print quality for documents and images.
- **JetsFree™** ▶ x-nano's™ anti-clogging ink formula means fast, easy, and convenient printing every time. Eliminates time spent hassling with dried up, and caked nozzle surface or clogged cartridges.
- **Ultra-Durable** ▶ Resistant to fading, smearing, and chemical alterations. Unaffected by extended light exposure and chemical alteration. Documents, images and checks printed with MICR Black are virtually everlasting and durable against organic and inorganic solvents.
- **Environmentally Friendly** ▶ x-nano™ inks are made from natural ingredients that are non-harmful to the environment or one's health.

Side View



Regular inks bleed through the page.

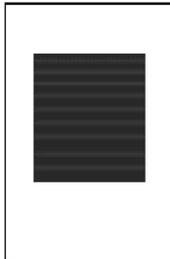


Other pigment inks have pigments that are too large and cannot bond with the page.

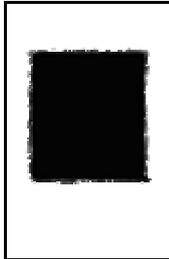


X-nano™ Elite Black has size pigments that form tight bonds with the page.

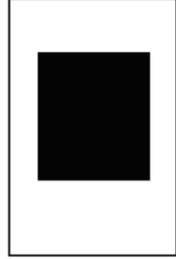
Front View



Result is a dull, faded black print-out.



Result is smeared printouts with rough edges.

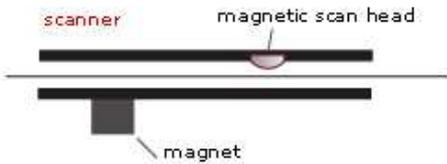


Result is deep, rich black printouts with exact edge definition that do not smear, fade or bleed.

x-nano Magnetic Ink Applications

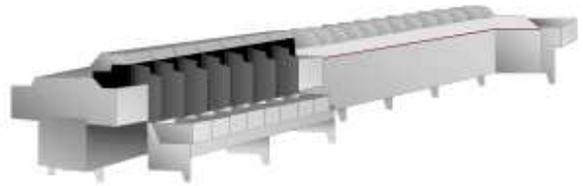
How It Works

Image portions printed with x-nano™ MICR inks can be temporarily polarized with an applied magnetic field. During the brief remanence phase, magnetic particles interact with other magnetic fields to create measurable electric signals. Signal strengths are proportional to the rate of change at which the portions printed with x-nano™ MICR ink move through the scanner window.



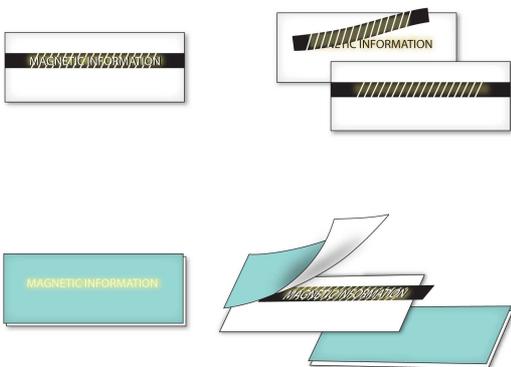
High Speed Sorter and Processing

The higher the item speed and the more distinct the transitions, from magnetized to non-magnetized image sections, the higher the measurable signal. x-nano™ inks are specially formulated for industrial ultra-high speed and accurate sorting and data processing (e.g. Checks, mail items, etc).



Enhanced Security and Authenticity

x-nano™ Inks can be used for security applications and material authentication. The ink can be applied, hidden, either below the visible surface or embedded homogeneously within regions printed in standard ink (e.g. certificates, coupons, currency, passports, tickets, etc). Most notably x-nano™ ink can help reduce counterfeiting by embedding encrypted, invisible and indestructible serial codes in brand name products. Prints can be applied on tickets or the inside/outside of packaging.



Standard Magnetic Codes In Use

Most common MICR verification devices, such as the VersaScan™ 21, are based on MICR (Magnetic Ink Character Recognition) special fonts known as the E-13B and CMC-7. Both font types are used for high-speed check processing worldwide.

Beyond the fonts used for check printing, other symbology encoding potential exists and can be developed for magnetic scanning. One such example is special barcodes to create distinct magnetic signal patterns to be utilized in high-speed processing. Companies looking for creative and innovative technology can use this ink to generate new patterns customized for application specific needs (e.g. "magnetic finger print" patterns for passports, etc).



x-nano UV Fluorescent Ink

Ultra-Violet (UV) Formulation for Inkjet Printers

x-nano™ UV Fluorescent is an Ultra-Violet Ink that has color iridescence when exposed to UV light. It is specifically formulated for high-quality inkjet printing of documents, photos and checks.



Authenticate Your Documents ▶ The unique properties of the UV Fluorescent ink are ideal for the printing of authentication marks. Images printed with this ink become visible in the presence of UV light, thereby providing any document with authentication marks that prove origination and ownership.



Protect Your Documents ▶ Marks or images printed with UV Fluorescent ink provide documents with theft protection, anti-counterfeiting security, and thereby preventing fraud.



Ideal for Any Document ▶ Use UV Fluorescent ink to print authentication marks on any document including checks, tags, labels, ID cards, tickets, and more. UV Blue is specifically formulated to be compatible with desktop inkjet printer cartridges.



Ultra-Durable ▶ Resists fading, smearing, and chemical alterations. Extremely stable against light exposure and chemical alteration. Images printed with UV Fluorescent ink remain invisible unless exposed to UV light.



Environmentally Friendly ▶ x-nano™ inks are made from natural ingredients that are non-harmful to the environment or one's health.



JetsFree™ ▶ x-nano's™ anti-clogging ink formula means fast, easy, and convenient printing every time. Eliminates time spent hassling with dried up, and caked nozzle surface or clogged cartridges.



Diversified NANO Corporation

x-nano Check-Printing Worldwide

MICR Font Standards and Use

There are four major font standards used globally:
E-13B, CMC-7, OCR-A & OCR-B

E-13B and CMC-7 data are MICR (Magnetic Ink Character Recognition) encoded for high-speed processing and automation. MICR data are required to be printed with magnetic ink.

E-13B Characters

0 1 2 3 4 5 6 7 8 9
: ; ' " ' " "

CMC-7 Characters

0123456789 A B C D E F G H I J K L M
N O P Q R S T U V W X Y Z

Requires x-nano™ MICR Black Ink

Requires x-nano™ MICR Black Ink

Check Printing World Wide

Country	E-13B	CMC-7	OCR-A	OCR-B
U.S.A.	✓			
Canada	✓			
Antigua	✓			
Argentina		✓		
Australia	✓			
Austria				✓
Bahamas	✓			
Bahrain	✓			
Barbados	✓			
Belgium		✓		✓
Bermuda	✓			
Bolivia	✓	✓		
Brazil		✓		
Chile		✓		
Columbia	✓			
Costa Rica	✓			
Denmark		✓		✓
Dominica	✓			
El Salvador	✓	✓		
Ecuador	✓			
Fiji	✓			
Finland		✓		✓
France		✓		
Germany				✓
Grand Cayman	✓			
Greece				✓
Grenada	✓			
Guam	✓			
Guadeloupe		✓		
Guatemala	✓			
Guyana	✓		✓	
Honduras	✓			
Hong Kong	✓			

Country	E-13B	CMC-7	OCR-A	OCR-B
India	✓			
Italy		✓		✓
Israel		✓		
Iraq	✓			
Ivory Coast		✓		
Japan	✓			
Jamaica	✓			
Korea	✓			
Kuwait	✓			
Kuala Lumpur	✓			
Martinique		✓		
Mauritius	✓	✓		
Malaysia	✓			
Mexico	✓			
Montserrat	✓			
Netherlands		✓		✓
Norway		✓		✓
Nigeria	✓			
New Zealand	✓			
Panama	✓			
Puerto Rico	✓			
Paraguay		✓		
Peru		✓		
Portugal		✓		✓
Philippines	✓			
Singapore	✓			
Scotland	✓		✓	
Spain		✓		
Sweden		✓		
Switzerland				✓
Taiwan	✓			
Thailand	✓			
United Kingdom	✓			✓

✓ - MICR
✓ - Non-MICR



Diversified NANO Corporation

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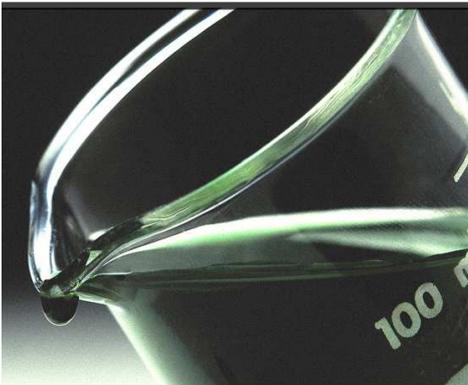
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INNOVATIVE



VERSATILE



SECURITY