

MATERIAL SAFETY DATA SHEET

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Carbon Coated Silver Nanopowder

GENERAL USE: Chemical processing

PRODUCT DESCRIPTION: Very fine dark gray to black powder, odorless



MANUFACTURER'S NAME

NCC Nano LLC dba Novacentrix

DATE PREPARED: November 1, 2013

SUPERSEDES: April 16, 2009

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ADDRESS (NUMBER, STREET, P.O. BOX)

400 Parker Drive, Suite 1110

TELEPHONE NUMBER FOR INFORMATION

(512) 491-9500

(CITY, STATE AND ZIP CODE)

Austin, TX 78728

COUNTRY

USA

EMERGENCY TELEPHONE NUMBER

ChemTel Inc. 1- (800) 255-3924 Intl. + 01 (813) 248-0585

SECTION 2 - HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Nanopowders are easily suspended in air and can form a persistent cloud. Breathing nanopowders may cause irritation to the respiratory tract. Chronic inhalation of nanopowders may cause pneumoconiosis, a buildup of scar tissue in the lungs caused by inhalation of dust.

Hazard Symbols for this product - Xi Risk Phrases - R36

POTENTIAL HEALTH EFFECTS

INHALATION: Nanopowders are easily suspended in air and can form a persistent cloud. Breathing nanopowders may cause irritation to the respiratory tract. Chronic inhalation of nanopowders may cause pneumoconiosis, a buildup of scar tissue in the lungs caused by inhalation of dust.

SKIN: None expected, however, prolonged contact may cause irritation.

EYES: Contact with eyes may cause irritation.

INGESTION: May cause gastric distress, stomach pains, vomiting and diarrhea.

CARCINOGENICITY

NTP?

No

IARC MONOGRAPHS?

No

OSHA REGULATED?

No

SECTION 3 - COMPOSITION / INFORMATION ON INGREDIENTS

HAZARDOUS COMPONENTS	CAS #	EINECS #	%(by weight)	OSHA PEL		ACGIH TWA		RQ LBS
				PPM	MG/M3	PPM	MG/M3	
Silver (a,b,c)	7440-22-4	231-131-3	90 - 100		0.01		0.1	1000
Carbon black (d)	1333-86-4	215-609-9	0 - 10		3.5			

(a,c) See Section 15

(b) Indicates that the Resource Conservation and Recovery Act (RCRA) has determined the waste for this chemical is listed as hazardous and must be handled according to regulations in 40 CFR 260-281.

(s) California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986, chemicals known to the state to cause cancer or reproductive toxicity. A person in the course of doing business must warn others who may consume, come into contact with, or otherwise be exposed to this chemical.

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SECTION 4 - FIRST AID MEASURES

INHALATION: Remove affected person to fresh air; if symptoms persist seek medical attention.

SKIN: Remove contaminated clothing; wash affected area with soap and water; launder contaminated clothing before reuse; if irritation persists, seek medical attention.

EYES: Remove contact lenses. Flush eyes with clear running water for 15 minutes while holding eyelids open; if irritation persists, seek medical attention.

INGESTION: Give two glasses of water for dilution; DO NOT induce vomiting; seek medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

FLASH POINT (METHOD USED) Not applicable	FLAMMABLE LIMITS LEL: Not applicable UEL: Not applicable	AUTOIGNITION TEMPERATURE: Not determined	NFPA CLASS: None
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GENERAL HAZARDS: Products of combustion include metal oxides and metal dust.

EXTINGUISHING MEDIA
Carbon dioxide, dry chemical, water, water spray, chemical foam.

FIRE FIGHTING PROCEDURES
Firefighters must wear full facepiece self - contained breathing apparatus in positive pressure mode.

UNUSUAL FIRE AND EXPLOSION HAZARDS
Product will not burn.

HAZARDOUS COMBUSTION PRODUCTS
Smoke, fumes, oxides of carbon and silver.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: Avoid breathing dust. Recover and segregate product for reuse; shovel product into approved container for disposal. Vacuum recovery must use HEPA filter.

SECTION 7 - HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE: Keep container closed when not in use; protect containers from abuse; store containers in cool, dry area. Keep this and other chemicals out of reach of children.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

ENGINEERING CONTROLS

The use of local exhaust ventilation and airborne particle collection is recommended. No other special controls are indicated.

PERSONAL PROTECTION:

RESPIRATORY PROTECTION: When working with material outside a fume hood, or in any situation where creation of a cloud of nanoparticles is possible, wear a respirator mask with a particulate filter rated by NIOSH as 99.97% efficient. These filters are termed "P100" "R100" and "N100". The P, R, and N refer to oil resistance. Oil resistance should be selected to meet or exceed the requirements of the particular work environment.

PROTECTIVE GLOVES: Latex or other close fitting gloves

EYE PROTECTION: Safety glasses. In situations where significant clouds of nanoparticles are likely, unventilated chemical splash goggles. Refer to 29 CFR 1910.133, ANSI Z87.1, or European Standard EN166.

OTHER PROTECTIVE CLOTHING OR EQUIPMENT: Safety eyebath nearby; lab coat where there is a risk of bulk material being spilled on clothes.

WORK / HYGIENIC PRACTICES: Use process procedures to minimize dust generation. Minimize body contact with this, as well as all chemi

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SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR Very fine dark gray to black powder, odorless	VAPOR DENSITY (AIR = 1) Not applicable
SPECIFIC GRAVITY (WATER = 1) 10.5	EVAPORATION RATE (Water = 1) Not applicable
SOLUBILITY IN WATER Negligible	% VOLATILE (BY WEIGHT) None
pH Not applicable	VAPOR PRESSURE Not applicable
BOILING POINT 3924° F (2162° C)	FREEZING POINT Not determined
VISCOSITY Dry powder	PARTICLE SIZE < 200 nanometers

SECTION 10 - STABILITY AND REACTIVITY

STABILITY UNSTABLE: STABLE: X	CONDITIONS TO AVOID: Avoid generating airborne dust
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INCOMPATIBILITY (MATERIALS TO AVOID): Halogens, strong oxidizers, strong acids, and acetylenic compounds.

HAZARDOUS DECOMPOSITION OR BYPRODUCTS: Decomposition will not occur if handled and stored properly. In case of a fire, oxides of carbon and metals, hydrocarbons, fumes, and smoke may be produced.

HAZARDOUS POLYMERIZATION MAY OCCUR: WILL NOT OCCUR: X	CONDITIONS TO AVOID: None
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SECTION 11 - TOXICOLOGICAL INFORMATION

Hazardous Ingredients	CAS #	EINECS #	LD50 of Ingredient Species and Route	LC50 of Ingredient Species
Silver (a,b,c)	7440-22-4	231-131-3	Not established	Not established
Carbon black (d)	1333-86-4	215-609-9	440 mg / kg Intravenous - mouse	Not established
(a,c) See Section 15				

SECTION 12 - ECOLOGICAL INFORMATION

No data are available on the adverse effects of this material on the environment. Neither COD nor BOD data are available. Based on the chemical composition of this product it is assumed that the mixture can be treated in an acclimatized biological waste treatment plant system in limited quantities. However, such treatment should be evaluated and approved for each specific biological system. None of the ingredients in this mixture are classified as a Marine Pollutant.

SECTION 13 - DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD: Dispose of in accordance with Local, State, and Federal Regulations. Products classified as non - hazardous may become hazardous waste upon contact with other products. Refer to 40 CFR Parts 260-299, "Protection of Environment" for complete waste disposal regulations. Consult your local, state, or Federal Environmental Protection Agency before disposing of any chemicals. According to the European Waste Catalogue, waste codes are application specific and should be assigned by the user based on the application for which the product is used.

SECTION 14 - TRANSPORT INFORMATION

PROPER SHIPPING NAME: Non - Hazardous for Transport

DOT HAZARD CLASS / Pack Group: Not regulated	IATA HAZARD CLASS / Pack Group: Not regulated
REFERENCE: Not Applicable	IMDG HAZARD CLASS: Not regulated
UN / NA IDENTIFICATION NUMBER: None	RID/ADR Dangerous Goods Code: Not regulated
LABEL: None Required	UN TDG Class / Pack Group: Not regulated
HAZARD SYMBOLS: None	Hazard Identification Number (HIN): None

Note: Transportation information provided is for reference only. Customer is urged to consult 49 CFR 100 - 177, IMDG, IATA, EC, United Nations TDG, and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

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SECTION 15 - REGULATORY INFORMATION

TSCA (Toxic Substance Control Act)

All components of this product are listed on the U.S. Toxic Substances Control Act Chemical Inventory (TSCA Inventory) or are exempted from listing because a Low Volume Exemption has been granted in accordance with 40 CFR 723.50.

SARA TITLE III (Superfund Amendments and Reauthorization Act)

311/312 Hazard Categories
Immediate health

313 Reportable Ingredients:

(a) Indicates a toxic chemical subject to annual reporting requirements of Section 313 of the Emergency Planning and Community Right-To-Know Act of 1986 and of 40 CFR 372.

CERCLA (Comprehensive Response Compensation and Liability Act)

(c) The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) has notification requirements for releases or spills to the environment of the Reportable Quantity (RQ for this mixture = 1,000 lbs) or greater amounts, according to 40 CFR 302.

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986

There is a reportable chemical present (Carbon black) known to the state of California to cause cancer or reproductive toxicity.

CPR (Canadian Controlled Products Regulations)

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all the information required by the Controlled Products Regulations. WHMIS Classification: Not controlled

IDL (Canadian Ingredient Disclosure List)

Components of this product identified by CAS number and listed on the Canadian Ingredient Disclosure List are shown in Section 3.

DSL / NDSL (Canadian Domestic Substances List / Non-Domestic Substances List)

Components of this product identified by CAS number are listed on the DSL or NDSL, or are otherwise in compliance with the New Substances Notification (NSN) regulations. Only ingredients classified as "hazardous" are listed in Section 3 unless otherwise indicated.

EINECS (European Inventory of Existing Commercial Chemical Substances)

Components of this product identified by CAS numbers are on the European Inventory of Existing Commercial Chemical Substances.

WGK Water Quality Index: 3

VbK Index: Not applicable

Risk Phrases

R36 Irritating to eyes.

SYMBOL(S) REQUIRED FOR LABEL

Irritant



Safety Phrases

S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S36 Wear suitable protective clothing.

SECTION 16 - OTHER INFORMATION

Specific toxicity tests have not been conducted on this product. Our hazard evaluation is based on information from similar products, the ingredients, technical literature, and/or professional experience.

HMIS HAZARD RATINGS

HEALTH	2	* = Chronic Health Hazard	2 = MODERATE
FLAMMABILITY	1	0 = INSIGNIFICANT	3 = HIGH
PHYSICAL HAZARD	0	1 = SLIGHT	4 = EXTREME

PERSONAL PROTECTIVE EQUIPMENT E Safety Glasses, Gloves, Dust Respirator

REVISION SUMMARY:

This MSDS has been revised in the following sections:
Address Change

MSDS Prepared by:

Karl Martin

The information contained herein is believed to be accurate but is not warranted to be so. Data and calculations are based on information furnished by the manufacturer of the product and manufacturers of the components of the product. Users are advised to confirm in advance of need that information is current, applicable and suited to the circumstances of use. Vendor assumes no responsibility for injury to vendee or third persons proximately caused by the material if reasonable safety procedures are not adhered to as stipulated in the data sheet. Furthermore, vendor assumes no responsibility for injury caused by abnormal use of this material even if reasonable safety procedures are followed. Any questions regarding this product should be directed to the manufacturer of the product as described in Section 1.