

# Safety Data Sheet

Issue Date: 15-May-2017

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Version 1

## 1. IDENTIFICATION

### Product Identifier

**Product Name** NiYSZ Ink

### Other means of identification

**SDS #**

**Synonyms** NIYSZ-I; Nickel Oxide - Yttria Stabilized Zirconia Ink.

### Recommended use of the chemical and restrictions on use

**Recommended Use** Laboratory chemicals and Manufacture of substances.

### Details of the supplier of the safety data sheet

#### **Supplier Address**

Nexceris, LLC  
404 Enterprise Dr.  
Lewis Center, OH 43035  
www.nexceris.com

### Emergency Telephone Number

**Company Phone Number** Non-emergency calls/questions: 1-614-842-6606  
Fax: 1-614-842-6607

**Emergency Telephone (24 hr)** INFOTRAC 1-352-323-3500 (International)  
1-800-535-5053 (North America)

## 2. HAZARDS IDENTIFICATION

**Appearance** Green/gray liquid

**Physical State** Liquid

### Classification

Skin sensitization	Category 1
Carcinogenicity	Category 1A
Specific target organ toxicity (repeated exposure)	Category 1
Serious eye damage/eye irritation	Category 2

**Hazards Not Otherwise Classified (HNOC)**

May be harmful if swallowed  
Causes mild skin irritation

**Signal Word**

**Danger**

**Hazard Statements**

May cause an allergic skin reaction  
May cause cancer  
Causes damage to organs through prolonged or repeated exposure  
Causes serious eye irritation

**Precautionary Statements - Prevention**

Obtain special instructions before use  
Do not handle until all safety precautions have been read and understood  
Use personal protective equipment as required  
Contaminated work clothing must not be allowed out of the workplace  
Wear protective gloves/protective clothing/eye protection/face protection  
Do not breathe dust/fume/gas/mist/vapors/spray  
Wash face, hands and any exposed skin thoroughly after handling  
Do not eat, drink or smoke when using this product

**Precautionary Statements - Response**

If exposed or concerned: Get medical advice/attention  
IF ON SKIN: Wash with plenty of soap and water  
Wash contaminated clothing before reuse  
If skin irritation or rash occurs: Get medical advice/attention  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing  
If eye irritation persists: Get medical advice/attention

**Precautionary Statements - Storage**

Store locked up

**Precautionary Statements - Disposal**

Dispose of contents/container to an approved waste disposal plant

**Other Hazards**

Harmful to aquatic life with long lasting effects

**Unknown Acute Toxicity**

27% of the mixture consists of ingredient(s) of unknown toxicity

### 3. COMPOSITION/INFORMATION ON INGREDIENTS

**Synonyms**

NIYSZ Nickel Oxide - Ytria Stabilized Zirconia Ink.

Chemical Name	CAS No	Weight-%
Nickel Oxide	1313-99-1	30-75
Zirconium Oxide	1314-23-4	20-37
Urea RPW formaldehyde, butylated	68002-19-7	2-9
Yttrium Oxide	1314-36-9	3-6
n-Butyl Alcohol	71-36-3	1-2
pin-2(3)-ene	80-56-8	0-1
Hafnium Oxide	12055-23-1	0-1
Dipentene	138-86-3	0-1

\*\*If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.\*\*

### 4. FIRST-AID MEASURES

**First Aid Measures****General Advice**

If exposed or concerned: Get medical advice/attention.

**Eye Contact**

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Remove contact lenses, if present and easy to do. Continue rinsing. Seek medical attention if irritation develops.

**Skin Contact**

IF ON SKIN: Wash with plenty of soap and water. Remove and wash contaminated clothing before reuse. If skin irritation or rash occurs: Get medical advice/attention.

**Inhalation**

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Seek medical attention for further treatment.

**Ingestion**

IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. If conscious give 2 glasses of water to dilute. Seek medical attention if symptoms develop.

**Most important symptoms and effects****Symptoms**

Causes serious eye irritation. May cause an allergic skin reaction. May be harmful if swallowed. May cause gastrointestinal disturbance.

**Indication of any immediate medical attention and special treatment needed****Notes to Physician**

Treat symptomatically.

### 5. FIRE-FIGHTING MEASURES

**Suitable Extinguishing Media**

Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

**Unsuitable Extinguishing Media** Not determined.**Specific Hazards Arising from the Chemical**

Not determined.

**Protective equipment and precautions for firefighters**

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

## 6. ACCIDENTAL RELEASE MEASURES

### Personal precautions, protective equipment and emergency procedures

<b>Personal Precautions</b>	Use personal protective equipment as required. Avoid creating dust.
<b>Environmental Precautions</b>	Prevent from entering into soil, ditches, sewers, waterways and/or groundwater. See Section 12, Ecological Information. See Section 13: DISPOSAL CONSIDERATIONS.

### Methods and material for containment and cleaning up

<b>Methods for Containment</b>	Prevent further leakage or spillage if safe to do so. Soak up and contain spill with an absorbent material.
<b>Methods for Clean-Up</b>	Avoid creating dust. Sweep up dry spills and place in a container for recovery or disposal. Sweep up and shovel into suitable containers for disposal.

## 7. HANDLING AND STORAGE

### Precautions for safe handling

<b>Advice on Safe Handling</b>	Handle in accordance with good industrial hygiene and safety practice. Use personal protective equipment as required. Wear protective gloves/protective clothing and eye/face protection. Avoid contact with skin, eyes or clothing. Avoid generation of dust. Wash face, hands and any exposed skin thoroughly after handling. Wash contaminated clothing before reuse. Do not breathe dust/fume/gas/mist/vapors/spray. Do not eat, drink or smoke when using this product. Contaminated work clothing must not be allowed out of the workplace. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.
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### Conditions for safe storage, including any incompatibilities

<b>Storage Conditions</b>	Keep container tightly closed and store in a cool, dry and well-ventilated place. Store locked up.
<b>Incompatible Materials</b>	Strong oxidizing agents.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Zirconium Oxide 1314-23-4	STEL: 10 mg/m <sup>3</sup> Zr TWA: 5 mg/m <sup>3</sup> Zr	TWA: 5 mg/m <sup>3</sup> Zr (vacated) TWA: 5 mg/m <sup>3</sup> Zr (vacated) STEL: 10 mg/m <sup>3</sup> Zr	IDLH: 25 mg/m <sup>3</sup> Zr TWA: 5 mg/m <sup>3</sup> except Zirconium tetrachloride Zr STEL: 10 mg/m <sup>3</sup> Zr
Nickel Oxide 1313-99-1	TWA: 0.2 mg/m <sup>3</sup> Ni inhalable fraction	TWA: 1 mg/m <sup>3</sup> Ni (vacated) TWA: 1 mg/m <sup>3</sup> Ni	IDLH: 10 mg/m <sup>3</sup> Ni TWA: 0.015 mg/m <sup>3</sup> except Nickel carbonyl Ni
Yttrium Oxide 1314-36-9	TWA: 1 mg/m <sup>3</sup> Y	-	IDLH: 500 mg/m <sup>3</sup> Y TWA: 1 mg/m <sup>3</sup> Y
n-Butyl Alcohol 71-36-3	TWA: 20 ppm	TWA: 100 ppm TWA: 300 mg/m <sup>3</sup> (vacated) S* (vacated) Ceiling: 50 ppm (vacated) Ceiling: 150 mg/m <sup>3</sup>	IDLH: 1400 ppm Ceiling: 50 ppm Ceiling: 150 mg/m <sup>3</sup>
pin-2(3)-ene 80-56-8	TWA: 20 ppm	-	-

Hafnium Oxide 12055-23-1	TWA: 0.5 mg/m <sup>3</sup> Hf	-	IDLH: 50 mg/m <sup>3</sup> Hf TWA: 0.5 mg/m <sup>3</sup> Hf
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**Appropriate engineering controls**

**Engineering Controls** Apply technical measures to comply with the occupational exposure limits.  
 Eyewash stations.  
 Showers.  
 Ventilation systems.

**Individual protection measures, such as personal protective equipment**

**Eye/Face Protection** Chemical splash goggles. Refer to 29 CFR 1910.133 for eye and face protection regulations.

**Skin and Body Protection** Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Wear suitable gloves. Wear suitable protective clothing. Refer to 29 CFR 1910.138 for appropriate skin and body protection.

**Respiratory Protection** Ensure adequate ventilation, especially in confined areas. In case of inadequate ventilation wear respiratory protection. If necessary, wear a MSHA/NIOSH-approved respirator. Refer to 29 CFR 1910.134 for respiratory protection requirements.

**General Hygiene Considerations** Handle in accordance with good industrial hygiene and safety practice. Take off all contaminated clothing and wash it before reuse. Contaminated work clothing should not be allowed out of the workplace.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

**Information on basic physical and chemical properties**

<b>Physical State</b>	Liquid	<b>Odor</b>	Not determined
<b>Appearance</b>	Green/gray liquid	<b>Odor Threshold</b>	Not determined
<b>Color</b>	Green/gray		

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
pH	Not determined	
Melting Point/Freezing Point	Not determined	
Boiling Point/Boiling Range	Not determined	
Flash Point	Not determined	
Evaporation Rate	Not determined	
Flammability (Solid, Gas)	Not determined	
Upper Flammability Limits	Not determined	
Lower Flammability Limit	Not determined	
Vapor Pressure	Not determined	
Vapor Density	Not determined	
Specific Gravity	Not determined	
Water Solubility	Not miscible	Difficult to mix
Solubility in other solvents	Not determined	
Partition Coefficient	Not determined	
Auto-ignition Temperature	Not self-igniting	
Decomposition Temperature	Not determined	
Kinematic Viscosity	Not determined	
Dynamic Viscosity	Not determined	
Explosive Properties	Not determined	
Oxidizing Properties	Not determined	

**10. STABILITY AND REACTIVITY**

**Reactivity**

Not reactive under normal conditions.

**Chemical Stability**

Stable under recommended storage conditions.

**Possibility of Hazardous Reactions**

None under normal processing.

**Conditions to Avoid**

Keep out of reach of children. Avoid generation of dust. See Sec. 7 Handling & Storage.

**Incompatible Materials**

Strong oxidizing agents.

**Hazardous Decomposition Products**

None known based on information supplied.

## 11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure****Product Information**

<b>Eye Contact</b>	Avoid contact with eyes. Causes serious eye irritation.
<b>Skin Contact</b>	Avoid contact with skin.
<b>Inhalation</b>	Do not inhale.
<b>Ingestion</b>	May be harmful if swallowed. Do not ingest.

**Component Information**

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Nickel Oxide 1313-99-1	> 5000 mg/kg ( Rat )	-	-
Terpineol 98-55-5	= 5170 mg/kg ( Rat )	-	-
1-Methyl-4-(1-methylethylidene)- cyclohexene 586-62-9	= 4390 mg/kg ( Rat )	-	-
n-Butyl Alcohol 71-36-3	= 790 mg/kg ( Rat ) = 700 mg/kg ( Rat )	= 3402 mg/kg ( Rabbit ) = 3400 mg/kg ( Rabbit )	> 8000 ppm ( Rat ) 4 h
pin-2(3)-ene 80-56-8	= 3700 mg/kg ( Rat )	> 5000 mg/kg ( Rat )	-
Dipentene 138-86-3	= 5300 mg/kg ( Rat )	-	-

**Information on physical, chemical and toxicological effects**

**Symptoms** Please see section 4 of this SDS for symptoms.

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Sensitization** May cause an allergic skin reaction.

**Carcinogenicity** May cause cancer.

Chemical Name	ACGIH	IARC	NTP	OSHA
Nickel Oxide 1313-99-1	A1	Group 1	Known	X

**Legend**

**ACGIH (American Conference of Governmental Industrial Hygienists)**

A1 - Known Human Carcinogen

**IARC (International Agency for Research on Cancer)**

Group 1 - Carcinogenic to Humans

**NTP (National Toxicology Program)**

Known - Known Carcinogen

**OSHA (Occupational Safety and Health Administration of the US Department of Labor)**

X - Present

**STOT - repeated exposure** Causes damage to organs through prolonged or repeated exposure.

**Numerical measures of toxicity**

Not determined

**Unknown Acute Toxicity** 35% of the mixture consists of ingredient(s) of unknown toxicity.

**12. ECOLOGICAL INFORMATION****Ecotoxicity**

Harmful to aquatic life with long lasting effects.

**Component Information**

Chemical Name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Nickel Oxide 1313-99-1	127.3: 72 h Pseudokirchneriella subcapitata mg/L EC50	100: 96 h Brachydanio rerio mg/L LC50 static		100: 48 h Daphnia magna mg/L EC50
n-Butyl Alcohol 71-36-3	500: 72 h Desmodesmus subspicatus mg/L EC50 500: 96 h Desmodesmus subspicatus mg/L EC50	100000 - 500000: 96 h Lepomis macrochirus µg/L LC50 static 1730 - 1910: 96 h Pimephales promelas mg/L LC50 static 1740: 96 h Pimephales promelas mg/L LC50 flow-through 1910000: 96 h Pimephales promelas µg/L LC50 static	1897 - 2072: 48 h Daphnia magna mg/L EC50 Static 1983: 48 h Daphnia magna mg/L EC50	
pin-2(3)-ene 80-56-8		0.28: 96 h Pimephales promelas mg/L LC50 static	41: 48 h Daphnia magna mg/L LC50	



**Persistence/Degradability**

Not determined.

**Bioaccumulation**

Not determined.

**Mobility**

Chemical Name		Partition Coefficient	
n-Butyl Alcohol 71-36-3	500: 72 h Desmodesmus subspicatus mg/L EC50 500: 96 h Desmodesmus subspicatus mg/L EC50	100000 - 500000: 96 h Lepomis macrochirus µg/L LC50 static 1730 - 1910: 96 h Pimephales promelas mg/L LC50 static 1740: 96 h Pimephales promelas mg/L LC50 flow-through 1910000: 96 h Pimephales promelas µg/L LC50 static	1897 - 2072: 48 h Daphnia magna mg/L EC50 Static 1983: 48 h Daphnia magna mg/L EC50
pin-2(3)-ene 80-56-8		0.28: 96 h Pimephales promelas mg/L LC50 static	41: 48 h Daphnia magna mg/L LC50

**Other Adverse Effects**

Not determined

**13. DISPOSAL CONSIDERATIONS**

**Waste Treatment Methods**

**Disposal of Wastes**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**Contaminated Packaging**

Disposal should be in accordance with applicable regional, national and local laws and regulations.

**US EPA Waste Number**

Chemical Name	RCRA	RCRA - Basis for Listing	RCRA - D Series Wastes	RCRA - U Series Wastes
n-Butyl Alcohol 71-36-3		Included in waste stream: F039		U031

**California Hazardous Waste Status**

Chemical Name	California Hazardous Waste Status
n-Butyl Alcohol 71-36-3	Toxic

## 14. TRANSPORT INFORMATION

**Note** Please see current shipping paper for most up to date shipping information, including exemptions and special circumstances.

**DOT** Not regulated

**IATA** Not regulated

**IMDG**  
**Marine Pollutant** This material may meet the definition of a marine pollutant

## 15. REGULATORY INFORMATION

### International Inventories

Chemical Name	TSCA	DSL	NDSL	EINECS	ELINCS	ENCS	IECSC	KECL	PICCS	AICS
Nickel Oxide	Present	X		Present		Present	X	Present	X	X
Zirconium Oxide	X	X	X	Present	X	Present	X	X	X	X
Terpineol	X	X	X	Present	X	Present	X	X	X	X
1-Methyl-4-(1-methylethylidene)-cyclohexene	X	X	X	Present	X	Present	X	X	X	X
Urea RPW formaldehyde, butylated	X	X		Present	X	Present	X	X	X	X
Yttrium Oxide	X	X	X	Present	X	Present	X	X	X	X
n-Butyl Alcohol	X	X	X	Present	X	Present	X	X	X	X
pin-2(3)-ene	X	X	X	Present	X	Present	X	X	X	X
Hafnium Oxide	X	X	X	Present	X	Present			X	X
Dipentene	X	X	X	Present	X	Present	X	X	X	X

#### **Legend:**

*TSCA - United States Toxic Substances Control Act Section 8(b) Inventory*

*DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List*

*EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances*

*ENCS - Japan Existing and New Chemical Substances*

*IECSC - China Inventory of Existing Chemical Substances*

*KECL - Korean Existing and Evaluated Chemical Substances*

*PICCS - Philippines Inventory of Chemicals and Chemical Substances*

*AICS - Australian Inventory of Chemical Substances*

### US Federal Regulations

#### CERCLA

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	Reportable Quantity (RQ)
n-Butyl Alcohol 71-36-3	5000 lb		RQ 5000 lb final RQ RQ 2270 kg final RQ

#### SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	CAS No	Weight-%	SARA 313 - Threshold Values %
Nickel Oxide - 1313-99-1	1313-99-1	50-80	0.1
n-Butyl Alcohol - 71-36-3	71-36-3	1-2	1.0

**CWA (Clean Water Act)**

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Nickel Oxide		X		

**US State Regulations****California Proposition 65**

This product contains the following Proposition 65 chemicals.

Chemical Name	California Proposition 65
Nickel Oxide - 1313-99-1	Carcinogen

**U.S. State Right-to-Know Regulations**

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Nickel Oxide 1313-99-1	X	X	X
1-Methyl-4-(1-methylethylidene)- cyclohexene 586-62-9	X		
n-Butyl Alcohol 71-36-3	X	X	X
pin-2(3)-ene 80-56-8	X	X	X
Dipentene 138-86-3	X		

**16. OTHER INFORMATION****NFPA****Health Hazards**

Not determined

**Flammability**

Not determined

**Instability**

Not determined

**Special Hazards**

Not determined

**HMIS****Health Hazards**

Not determined

**Flammability**

Not determined

**Physical Hazards**

Not determined

**Personal Protection**

Not determined

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**Revision Note:** New format

**Disclaimer**

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

**End of Safety Data Sheet**