

# Nickel Cobalt Plating Solution

## Safety Data Sheet

### SECTION 1: Identification

#### 1.1. Identification

Product Name: Nickel Cobalt Plating Solution  
Product Code: EP-EC8-100C-01

#### 1.2. Relevant identified uses of the substance or mixture and uses advised against

Recommended use and restrictions on use: For laboratory and R&D use only

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

Nano3D Systems LLC  
1110 NE Circle Blvd., ATAMI/Bldg. 11  
Corvallis, OR 97330

#### 1.4. Emergency telephone number

Emergency number CHEMTREC: 1-800-424-9300

### SECTION 2: Hazard(s) identification

#### 2.1. Classification of the substance or mixture

##### Classification (GHS-US)

Acute Tox. 4 (Oral)	H302
Eye Dam. 1	H318
Resp. Sens. 1	H334
Skin Sens. 1	H317
Muta. 2	H341
Carc. 1B	H350
Repr. 1B	H360
STOT RE 1	H372

Full text of classification categories and H statements: see section 16

#### 2.2. Label elements

##### GHS-US labeling

Hazard pictograms (GHS-US)



Signal word (GHS-US)

: Danger

Hazard statements (GHS-US)

: H302 - Harmful if swallowed  
H332 - Harmful if inhaled  
H317 - May cause an allergic skin reaction  
H318 - Causes serious eye damage  
H334 - May cause allergy or asthma symptoms or breathing difficulties if inhaled  
H341 - Suspected of causing genetic defects  
H350 - May cause cancer  
H360 - May damage fertility or the unborn child  
H372 - Causes damage to organs through prolonged or repeated exposure

Precautionary statements (GHS-US)

: P201 - Obtain special instructions before use  
P202 - Do not handle until all safety precautions have been read and understood  
P260 - Do not breathe dust/fume/gas/mist/vapors/spray  
P261 - Avoid breathing dust/fume/gas/mist/vapours/spray  
P264 - Wash thoroughly after handling  
P270 - Do not eat, drink or smoke when using this product  
P272 - Contaminated work clothing must not be allowed out of the workplace  
P280 - Wear protective gloves/protective clothing/eye protection/face protection  
P281 - Use personal protective equipment as required  
P284 - [In case of inadequate ventilation] wear respiratory protection  
P301+P312 - If swallowed: Call a poison center/doctor if you feel unwell  
P302+P352 - If on skin: Wash with plenty of water  
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing  
P308+P313 - If exposed or concerned: Get medical advice/attention

# Nickel Cobalt Plating Solution

## Safety Data Sheet

P310 - Immediately call a poison center/doctor  
P314 - Get medical advice/attention if you feel unwell  
P330 - Rinse mouth  
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention  
P342+P311 - If experiencing respiratory symptoms: Call a poison center/doctor/...  
P363 - Wash contaminated clothing before reuse  
P405 - Store locked up  
P501 - Dispose of contents/container in accordance with local/regional/national/international regulations.  
D2A – Very toxic material causing other toxic effects

WHMIS classification:

### 2.3. Other hazards

No additional information available

### 2.4. Unknown acute toxicity (GHS US)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Not applicable

### 3.2. Mixture

Name	Product identifier	%	Classification (GHS-US)
Nickel(II) bis(sulfamate) tetrahydrate	(CAS No) 124594-15-6	Trade Secret	Acute Tox. 4 (Oral), H302 Eye Dam. 1, H318 Resp. Sens. 1, H334 Skin Sens. 1, H317 Muta. 2, H341 Carc. 1B, H350 Repr. 1B, H360 STOT RE 1, H372 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Boric acid (H3BO3)	(CAS No) 10043-35-3	Trade Secret	Repr. 1B, H360
Nickel(II) bromide hydrate	(CAS No) 207569-11-7	Trade Secret	Acute Tox. 4 (Oral), H302 Skin Sens. 1, H317 Carc. 1B, H350 Aquatic Acute 1, H400 Aquatic Chronic 1, H410
Saccharin, sodium salt hydrate	(CAS No) 82385-42-0	Trade Secret	Not classified
Cobalt (II) sulfamate hydrate	(CAS No) 14017-41-5	Trade Secret	Muta.2 H341 Skin Sens. 1 H317

Full text of H-phrases: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures after inhalation : Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

First-aid measures after skin contact : Wash with soap and water. Seek medical advice if skin irritation develops or persists.

First-aid measures after eye contact : Immediately flush the eyes with plenty of water for at least 15 minutes while holding eyelids apart to ensure flushing of the entire surface of the eye. Continue flushing for an additional 15 minutes if a physician is not immediately available. Seek medical attention, preferably an ophthalmologist, immediately.

First-aid measures after ingestion : If the material is swallowed, get immediate medical attention or advice. DO NOT induce vomiting unless directed to do so by medical personnel.

After swallowing : Seek medical treatment

### 4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation : May cause allergy or asthma symptoms or breathing difficulties if inhaled.

Symptoms/injuries after skin contact : May cause an allergic skin reaction.

Symptoms/injuries after eye contact : Causes serious eye damage.

Symptoms/injuries after ingestion : Harmful if swallowed.

### 4.3. Indication of any immediate medical attention and special treatment needed

No additional information available

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : None.

# Nickel Cobalt Plating Solution

## Safety Data Sheet

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : None known.  
Explosion hazard : None known.

### 5.3. Advice for firefighters

Protection during fire fighting : Firefighters should wear full protective gear. Wear self-contained respirator.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

No additional information available

#### 6.1.2. For emergency responders

No additional information available

### 6.2. Environmental precautions

Avoid release to the environment.

### 6.3. Methods and material for containment and cleaning up

For containment : Stop the flow of material, if this is without risk.  
Methods for cleaning up : Confine spill and soak up with absorbent. Place in an approved container and dispose in accordance with local, state and federal regulations.

### 6.4. Reference to other sections

No additional information available

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Precautions for safe handling : Avoid contact with eyes, skin and clothing. Wash thoroughly after handling.

### 7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Keep container closed when not in use.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

Component	CAS-No.	Value	Control parameters	Basis
Nickel bis(sulphamate) tetrahydrate	124594-15-6	TWA	1.000000 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		TWA	0.015000 mg/m <sup>3</sup>	USA. NIOSH Recommended Exposure Limits
		TWA	1 mg/m <sup>3</sup>	USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants
		TWA	0.015 mg/m <sup>3</sup>	USA. NIOSH Recommended Exposure Limits
		PEL	0.05 mg/m <sup>3</sup>	California permissible exposure limits for chemical contaminants (Title 8, Article 107)

### Boric acid (H<sub>3</sub>BO<sub>3</sub>) (10043-35-3)

ACGIH	ACGIH TWA (mg/m <sup>3</sup> )	2 mg/m <sup>3</sup> (inhalable fraction)
ACGIH	ACGIH STEL (mg/m <sup>3</sup> )	6 mg/m <sup>3</sup> (inhalable fraction)

### Cobalt (7440-48-4)

PEL (USA)	Long-term value	0.1 mg/m <sup>3</sup>
REL (USA)	Long-term value	0.05 mg/m <sup>3</sup>
TLV (USA)	Long-term value	0.02 mg/m <sup>3</sup>
EL (Canada)	Long-term value	0.02 mg/m <sup>3</sup>
EV (Canada)	Long-term value	0.1 mg/m <sup>3</sup>

### 8.2. Exposure controls

Appropriate engineering controls : Local exhaust and general ventilation must be adequate to meet exposure standards.  
Hand protection : Use impervious gloves such as neoprene, nitrile, or rubber for hand protection.  
Eye protection : Safety glasses.  
Skin and body protection : Wear suitable working clothes.  
Respiratory protection : If airborne concentrations are above the applicable exposure limits, use NIOSH approved respiratory protection.

# Nickel Cobalt Plating Solution

## Safety Data Sheet

### SECTION 9: Physical and chemical properties

#### 9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Color	: Clear
Odor	: Odorless
Odor threshold	: No data available
pH	: 3.15
Melting point	: No data available
Freezing point	: No data available
Boiling point	: 100 °C
Flash point	: No data available
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: No data available
Explosion limits	: No data available
Explosive properties	: No data available
Oxidizing properties	: No data available
Vapor pressure	: No data available
Relative density	: No data available
Relative vapor density at 20 °C	: No data available
Solubility	: No data available
Log Pow	: No data available
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available

#### 9.2. Other information

No additional information available

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

No additional information available

#### 10.2. Chemical stability

The product is stable at normal handling and storage conditions

#### 10.3. Possibility of hazardous reactions

Will not occur if used and stored according to specifications

#### 10.4. Conditions to avoid

None.

#### 10.5. Incompatible materials

Not determined.

#### 10.6. Hazardous decomposition products

Not determined.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

Acute toxicity : Oral: Harmful if swallowed.

<b>Nickel Plating Solution</b>	
ATE US (oral)	639.713 mg/kg body weight
<b>Nickel(II) bis(sulfamate) tetrahydrate (124594-15-6)</b>	
ATE US (oral)	500.000 mg/kg body weight

# Nickel Cobalt Plating Solution

## Safety Data Sheet

<b>Nickel(II) bromide hydrate (207569-11-7)</b>	
ATE US (oral)	500.000 mg/kg body weight
<b>Boric acid (H3BO3) (10043-35-3)</b>	
LD50 oral rat	2660 mg/kg
LD50 dermal rabbit	> 2000 mg/kg
LC50 inhalation rat (mg/l)	> 0.16 mg/l/4h
ATE US (oral)	2660.000 mg/kg body weight

Skin corrosion/irritation	: May cause irritation
Serious eye damage/irritation	: Causes serious eye damage.
Respiratory or skin sensitization	: May cause allergy or asthma symptoms or breathing difficulties if inhaled. May cause an allergic skin reaction.
Germ cell mutagenicity	: Suspected of causing genetic defects.
Carcinogenicity	: May cause cancer. IARC-2B: Possibly carcinogenic to humans: limited evidence in humans in the absence of sufficient evidence in experimental animals. ACGIH A3: Animal carcinogen: Agent is carcinogenic in experimental animals at a relatively high dose, by route(s) of administration, at site(s), of histologic type(s), or by mechanism(s) not considered relevant to worker exposure. Available epidemiologic studies do not confirm an increased risk of cancer in exposed humans. Available evidence suggests that the agent is not likely to cause cancer in humans except under uncommon or unlikely routes or levels of exposure
Reproductive toxicity	: May damage fertility or the unborn child.
Specific target organ toxicity (single exposure)	: Not classified
Specific target organ toxicity (repeated exposure)	: Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard	: Not classified

## SECTION 12: Ecological information

### 12.1. Toxicity

<b>Boric acid (H3BO3) (10043-35-3)</b>	
EC50 Daphnia 1	115 - 153 mg/l (Exposure time: 48 h - Species: Daphnia magna)
<b>Saccharin, sodium salt hydrate (82385-42-0)</b>	
LC50 fish 1	18300 mg/l (Exposure time: 96 h - Species: Pimephales promelas [flow-through])

### 12.2. Persistence and degradability

No additional information available

### 12.3. Bioaccumulative potential

<b>Boric acid (H3BO3) (10043-35-3)</b>	
BCF fish 1	0
Log Pow	-0.757 (at 25 °C)

### 12.4. Mobility in soil

No additional information available

### 12.5. Other adverse effects

Effect on the global warming : No known ecological damage caused by this product.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste disposal recommendations : Dispose of contents/container in accordance with local/regional/national/international regulations.

# Nickel Cobalt Plating Solution

## Safety Data Sheet

### SECTION 14: Transport information

#### Department of Transportation (DOT)

In accordance with DOT

Not regulated for transport

### SECTION 15: Regulatory information

SARA Section 313 (specific toxic chemical listings)

#### Boric acid (H3BO3) (10043-35-3)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

#### 124594-15-6 Nickel bis(sulphamate) tetrahydrate

California Proposition 65

WARNING! This product contains a chemical know to the State of California to cause cancer

#### 14017-41-5 Cobalt(II) sulfamate hydrate

California Proposition 65

Chemicals known to cause cancer Substance is not listed.

Information about limitation of use: For use only by technically qualified individuals.

Other regulations, limitations and prohibitive regulations

Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.

This substance is included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH).

The conditions of restrictions according to Article 67 and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

### SECTION 16: Other information

Full text of H-phrases:

Acute Tox. 4 (Oral)	Acute toxicity (oral) Category 4
Acute Tox. 4 (Inhalation)	Acute toxicity (inhalation) Category 4
Aquatic Acute 1	Hazardous to the aquatic environment - Acute Hazard Category 1
Aquatic Chronic 1	Hazardous to the aquatic environment - Chronic Hazard Category 1
Carc. 1B	Carcinogenicity Category 1B
Eye Dam. 1	Serious eye damage/eye irritation Category 1
Muta. 2	Germ cell mutagenicity Category 2
Repr. 1B	Reproductive toxicity Category 1B
Resp. Sens. 1	Respiratory sensitisation Category 1
Skin Sens. 1	Skin sensitization Category 1
STOT RE 1	Specific target organ toxicity (repeated exposure) Category 1
H302	Harmful if swallowed
H332	Harmful if inhaled
H317	May cause an allergic skin reaction
H318	Causes serious eye damage
H334	May cause allergy or asthma symptoms or breathing difficulties if inhaled
H341	Suspected of causing genetic defects
H350	May cause cancer
H360	May damage fertility or the unborn child
H372	Causes damage to organs through prolonged or repeated exposure
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product*

**SDS Preparation date:** March 6, 2017 **Supersedes previous version:** New SDS

**This SDS contains revisions in the following sections(s):** Not applicable. New SDS

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