



SAFETY DATA SHEET NICKEL COBALT

1. Identification

Product identifier

Product name NICKEL COBALT

Product number 4002

Recommended use of the chemical and restrictions on use

Application Industrial Use

Details of the supplier of the safety data sheet

Supplier SIFCO Applied Surface Concepts
5708 E. Schaaf Road
Independence, Ohio 44131
U.S.A.
Tel.: +1 216-524-0099
Fax: +1 216-524-6331
E-Mail: info@sifcoasc.com

Emergency telephone number

Emergency telephone CHEMTREC (United States) (800) 424-9300; CHEMTREC (International) +1 703-527-3887

2. Hazard(s) identification

Classification of the substance or mixture

Physical hazards Not Classified

Health hazards Skin Irrit. 2 - H315 Eye Irrit. 2A - H319 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Muta. 2 - H341 Carc. 1A - H350 Repr. 1B - H360FD STOT RE 1 - H372

Environmental hazards Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410

Label elements

Pictogram



Signal word

Danger

Hazard statements

H315 Causes skin irritation.
H317 May cause an allergic skin reaction.
H319 Causes serious eye irritation.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H341 Suspected of causing genetic defects.
H350 May cause cancer.
H360FD May damage fertility. May damage the unborn child.
H372 Causes damage to organs through prolonged or repeated exposure.
H410 Very toxic to aquatic life with long lasting effects.

NICKEL COBALT

Precautionary statements

P260 Do not breathe vapor/ spray.
 P264 Wash contaminated skin thoroughly after handling.
 P270 Do not eat, drink or smoke when using this product.
 P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
 P284 [In case of inadequate ventilation] wear respiratory protection.
 P304+P340 If inhaled: Remove person to fresh air and keep comfortable for breathing.
 P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
 P501 Dispose of contents/ container in accordance with national regulations.
 P403+P233 Store in a well-ventilated place. Keep container tightly closed.
 P302+P352 If on skin: Wash with plenty of water.
 P301+P310 If swallowed: Immediately call a poison center/ doctor.

Contains

NICKEL SULPHATE, NICKEL FORMATE, COBALT SULPHATE

Other hazards

This product does not contain any substances classified as PBT or vPvB.

3. Composition/information on ingredients

Mixtures

NICKEL SULPHATE 10-15% CAS number: 7786-81-4 M factor (Acute) = 1 M factor (Chronic) = 1
Classification Acute Tox. 4 - H302 Acute Tox. 4 - H332 Skin Irrit. 2 - H315 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Muta. 2 - H341 Carc. 1A - H350i Repr. 1B - H360D STOT RE 1 - H372 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410
NICKEL FORMATE 5-10% CAS number: 3349-06-2 M factor (Acute) = 1 M factor (Chronic) = 1
Classification Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Muta. 2 - H341 Carc. 1A - H350i Repr. 1B - H360D STOT RE 1 - H372 Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410

NICKEL COBALT

CITRIC ACID	1-5%
CAS number: 77-92-9	
Classification Eye Irrit. 2 - H319	
COBALT SULPHATE	1-5%
CAS number: 10124-43-3	
M factor (Acute) = 10	M factor (Chronic) = 10
Classification Acute Tox. 4 - H302 Eye Irrit. 2A - H319 Resp. Sens. 1 - H334 Skin Sens. 1 - H317 Muta. 2 - H341 Carc. 1B - H350i Repr. 1B - H360F Aquatic Acute 1 - H400 Aquatic Chronic 1 - H410	
ACETIC ACID	1-5%
CAS number: 64-19-7	
Classification Flam. Liq. 3 - H226 Skin Corr. 1A - H314 Eye Dam. 1 - H318	
ALUMINIUM SULPHATE	<1%
CAS number: 7784-31-8	
Classification Eye Dam. 1 - H318	

The full text for all hazard statements is displayed in Section 16.

4. First-aid measures**Description of first aid measures**

Inhalation	Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Get medical attention if any discomfort continues.
Ingestion	Do not induce vomiting. Never give anything by mouth to an unconscious person. NEVER MAKE AN UNCONSCIOUS PERSON VOMIT OR DRINK FLUIDS! Get medical attention immediately.
Skin Contact	Remove contaminated clothing immediately and wash skin with soap and water. Continue to rinse for at least 15 minutes. Get medical attention if irritation persists after washing.
Eye contact	Remove any contact lenses and open eyelids wide apart. Rinse immediately with plenty of water. Continue to rinse for at least 15 minutes and get medical attention.

NICKEL COBALT

Most important symptoms and effects, both acute and delayed

Inhalation	Toxic: danger of serious damage to health by prolonged exposure through inhalation. Coughing, chest tightness, feeling of chest pressure.
Ingestion	Toxic: danger of serious damage to health by prolonged exposure if swallowed. Ingestion may cause severe irritation of the mouth, the esophagus and the gastrointestinal tract. May cause stomach pain or vomiting.
Skin contact	May cause skin irritation. May cause sensitization or allergic reactions in sensitive individuals. Prolonged contact may cause redness, irritation and dry skin.
Eye contact	May cause blurred vision and serious eye damage. Causes serious eye irritation. Immediate first aid is imperative.

Indication of immediate medical attention and special treatment needed

Notes for the doctor	No specific recommendations.
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5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media The product is not flammable. Use fire-extinguishing media suitable for the surrounding fire.

Special hazards arising from the substance or mixture

Specific hazards Toxic gases or vapors.

Advice for firefighters

Protective actions during firefighting Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate protective clothing.

Special protective equipment for firefighters Use protective equipment appropriate for surrounding materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Personal precautions Follow precautions for safe handling described in this safety data sheet. Avoid inhalation of vapors. Provide adequate general and local exhaust ventilation.

Environmental precautions

Environmental precautions Do not discharge into drains or watercourses or onto the ground. Inform the relevant authorities if environmental pollution occurs (sewers, waterways, soil or air).

Methods and material for containment and cleaning up

Methods for cleaning up Wear suitable protective equipment, including gloves, goggles/face shield, respirator, boots, clothing or apron, as appropriate. Flush contaminated area with plenty of water. Avoid the spillage or runoff entering drains, sewers or watercourses. Collect and dispose of spillage as indicated in Section 13. Wash thoroughly after dealing with a spillage.

Reference to other sections Wear protective clothing as described in Section 8 of this safety data sheet. See Section 11 for additional information on health hazards. See Section 12 for additional information on ecological hazards. For waste disposal, see Section 13.

7. Handling and storage

Precautions for safe handling

Usage precautions Avoid spilling. Avoid contact with skin and eyes. Avoid inhalation of vapors and spray/mists. Provide adequate general and local exhaust ventilation.

NICKEL COBALT

Conditions for safe storage, including any incompatibilities

Storage precautions Store in tightly-closed, original container in a dry, cool and well-ventilated place. Protect from freezing and direct sunlight.

Storage class Toxic storage.

Specific end uses(s)

Specific end use(s) The identified uses for this product are detailed in Section 1.

8. Exposure Controls/personal protection

Control parameters

Occupational exposure limits

NICKEL SULPHATE

Long-term exposure limit (8-hour TWA): ACGIH 0.1 mg/m³

as Ni

A4

ACETIC ACID

Long-term exposure limit (8-hour TWA): OSHA 10 ppm 25 mg/m³

Long-term exposure limit (8-hour TWA): ACGIH 10 ppm 25 mg/m³

Short-term exposure limit (15-minute): ACGIH 15 ppm 37 mg/m³

ACGIH = American Conference of Governmental Industrial Hygienists.

OSHA = Occupational Safety and Health Administration.

A4 = Not Classifiable as a Human Carcinogen.

Exposure controls

Protective equipment



Appropriate engineering controls

As this product contains ingredients with exposure limits, process enclosures, local exhaust ventilation or other engineering controls should be used to keep worker exposure below any statutory or recommended limits, if use generates dust, fumes, gas, vapor or mist.

Eye/face protection

Tight-fitting safety glasses.

Hand protection

It is recommended that chemical-resistant, impervious gloves are worn. Considering the data specified by the glove manufacturer, check during use that the gloves are retaining their protective properties and change them as soon as any deterioration is detected. It is recommended that gloves are made of the following material: Nitrile rubber.

Other skin and body protection

Appropriate footwear and additional protective clothing complying with an approved standard should be worn if a risk assessment indicates skin contamination is possible.

Hygiene measures

Do not eat, drink or smoke when using this product. Wash at the end of each work shift and before eating, smoking and using the toilet.

Respiratory protection

If ventilation is inadequate, suitable respiratory protection must be worn. Respiratory protection must be used if the airborne contamination exceeds the recommended occupational exposure limit.

9. Physical and Chemical Properties

Information on basic physical and chemical properties

Appearance Liquid.

Color Greenish.

NICKEL COBALT

Odor	No characteristic odor.
pH	pH (concentrated solution): 2.0-2.8
Relative density	1.220-1.230 @ 20°C
Other information	Not available.
Volatile organic compound	This product contains a maximum VOC content of ACETIC ACID 2 g/l.

10. Stability and reactivity

Reactivity	There are no known reactivity hazards associated with this product.
Stability	Stable at normal ambient temperatures and when used as recommended.
Possibility of hazardous reactions	Not determined.
Conditions to avoid	Avoid excessive heat for prolonged periods of time.
Materials to avoid	Strong alkalis.
Hazardous decomposition products	None at ambient temperatures.

11. Toxicological information

Information on toxicological effects

Acute toxicity - oral

ATE oral (mg/kg) 3,937.01

Acute toxicity - inhalation

ATE inhalation (dusts/mists mg/l) 22.34

Inhalation	Vapors irritate the respiratory system.
Ingestion	Toxic if swallowed. May cause stomach pain or vomiting. May cause severe internal injury.
Skin Contact	May cause skin irritation. May cause sensitization or allergic reactions in sensitive individuals.
Eye contact	May cause serious eye damage. Immediate first aid is imperative.
Acute and chronic health hazards	May cause cancer. May cause genetic defects.
Route of entry	Ingestion Inhalation Skin and/or eye contact

Toxicological information on ingredients.

NICKEL SULPHATE

Acute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 361.9

Species Rat

ATE oral (mg/kg) 500.0

NICKEL COBALTAcute toxicity - inhalation

Acute toxicity inhalation (LC₅₀ dust/mist mg/l) 2.48

Species Rat

ATE inhalation (dusts/mists mg/l) 2.48

CITRIC ACIDAcute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 11,700.0

Species Rabbit

COBALT SULPHATEAcute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 768.0

Species Rat

ATE oral (mg/kg) 500.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 2,000.0

Species Rat

ATE dermal (mg/kg) 2,000.0

Carcinogenicity

NTP carcinogenicity Reasonably anticipated to be a human carcinogen.

ACETIC ACIDAcute toxicity - oral

Acute toxicity oral (LD₅₀ mg/kg) 3,310.0

Species Rat

ATE oral (mg/kg) 3,310.0

Acute toxicity - dermal

Acute toxicity dermal (LD₅₀ mg/kg) 1,060.0

Species Rabbit

12. Ecological Information**Ecotoxicity**

Dangerous for the environment: May cause long-term adverse effects in the aquatic environment.

NICKEL COBALT

Toxicity No data available.

Ecological information on ingredients.

NICKEL SULPHATE

Acute aquatic toxicity

LE(C)₅₀ 0.1 < L(E)C₅₀ ≤ 1

M factor (Acute) 1

Chronic aquatic toxicity

M factor (Chronic) 1

NICKEL FORMATE

Acute aquatic toxicity

LE(C)₅₀ 0.1 < L(E)C₅₀ ≤ 1

M factor (Acute) 1

Acute toxicity - fish LC₅₀, 96 hour: 18.95 mg/l, Pimephales promelas (Fat-head Minnow)

Chronic aquatic toxicity

M factor (Chronic) 1

CITRIC ACID

Acute toxicity - fish LC₅₀, 96 hour: 440-706 mg/l, Carassius auratus (Goldfish)

COBALT SULPHATE

Acute aquatic toxicity

LE(C)₅₀ 0.01 < L(E)C₅₀ ≤ 0.1

M factor (Acute) 10

Acute toxicity - fish LC₅₀, : 1.5 ug/l, Freshwater fish

Acute toxicity - aquatic invertebrates LC₅₀, : 0.61 mg/l, Freshwater invertebrates

Acute toxicity - microorganisms LC₅₀, : 144 ug/l, Freshwater fish
LC₅₀, : 24.1 ug/l, Sea water

Chronic aquatic toxicity

M factor (Chronic) 10

Chronic toxicity - fish early life stage EC₁₀, 351.4 : mg/l, Freshwater fish

Persistence and degradability

Persistence and degradability No data available.

Bioaccumulative potential

Bio-Accumulative Potential The product does not contain any substances expected to be bioaccumulating.

Ecological information on ingredients.

NICKEL COBALT

COBALT SULPHATE

Bio-Accumulative Potential BCF: < 10, Freshwater fish BCF: < 10, Marinewater fish Not bioaccumulative in the aquatic environment.

Mobility in soil

Mobility The product is soluble in water.

Other adverse effects

Other adverse effects Not determined.

13. Disposal considerations

Waste treatment methods

General information Disposal of this product, process solutions, residues and by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any local authority requirements.

14. Transport information

UN Number

UN No. (TDG) 3082

UN No. (IMDG) 3082

UN No. (ICAO) 3082

UN No. (DOT) 3082

UN proper shipping name

Proper shipping name (TDG) 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (NICKEL SULPHATE, NICKEL FORMATE)

Proper shipping name (IMDG) 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (NICKEL SULPHATE, NICKEL FORMATE)

Proper shipping name (ICAO) 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (NICKEL SULPHATE, NICKEL FORMATE)

Proper shipping name (DOT) 3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S. (NICKEL SULPHATE, NICKEL FORMATE)

Transport hazard class(es)

TDG class 9

TDG label(s) 9

IMDG Class 9

ICAO class/division 9

Transport labels



Packing group

TDG Packing Group III

NICKEL COBALT

IMDG packing group III

ICAO packing group III

DOT packing group III

Environmental hazards

Environmentally Hazardous Substance



Special precautions for user

EmS F-A, S-F

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code No information required.

15. Regulatory information

US Federal Regulations

SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities

Exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)

Acetic Acid
Final CERCLA RQ: 5,000 lbs
Nickel Sulphate
Final CERCLA RQ: 100 lbs

SARA Extremely Hazardous Substances EPCRA Reportable Quantities

Exempt.

SARA 313 Emission Reporting

Nickel Sulphate

CAA Accidental Release Prevention

Exempt.

SARA (311/312) Hazard Categories

Acute
Chronic

OSHA Highly Hazardous Chemicals

Exempt.

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins

Cobalt Sulphate
Nickel Sulphate

California Directors List of Hazardous Substances

Acetic Acid
Nickel Sulphate

Inventories

NICKEL COBALT

US - TSCA

All ingredients are present.

16. Other information

Classification abbreviations and acronyms	Acute Tox. = Acute toxicity Carc. = Carcinogenicity Eye Dam. = Serious eye damage Eye Irrit. = Eye irritation Flam. Liq. = Flammable liquid Muta. = Germ cell mutagenicity Repr. = Reproductive toxicity Resp. Sens. = Respiratory sensitisation Skin Corr. = Skin corrosion Skin Irrit. = Skin irritation Skin Sens. = Skin sensitisation STOT RE = Specific target organ toxicity-repeated exposure STOT SE = Specific target organ toxicity-single exposure
Revision date	5/19/2015
Revision	1
Hazard statements in full	H226 Flammable liquid and vapor. H302 Harmful if swallowed. H314 Causes severe skin burns and eye damage. H315 Causes skin irritation. H317 May cause an allergic skin reaction. H318 Causes serious eye damage. H319 Causes serious eye irritation. H332 Harmful if inhaled. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H341 Suspected of causing genetic defects. H350 May cause cancer. H350i May cause cancer by inhalation. H360D May damage the unborn child. H360F May damage fertility. H360FD May damage fertility. May damage 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.
NFPA - instability hazard	Normally stable. (0)
NFPA - health hazard	Temporary incapacitation, injury. (2)
NFPA - flammability hazard	Will not burn. (0)

The Information in this data sheet is believed to be correct but neither we nor our employees or agents give any warranty or make any representation to the accuracy thereof and accept no liability for any loss, injury or damage which may result in it's use. The sole purpose of this data sheet is to provide guidance on the safe handling and use of the products to which it relates. It does not form part of any product specification nor part of any contract. It is not practical for the guidance and information in this data sheet to cover every conceivable application of a product and as we may not be aware of the use to which the products covered by this data sheet are to be put it remains the responsibility of the user to conduct it's own tests and to satisfy itself as to the suitability of the product.