SAFETY DATA SHEET

SECTION 1. IDENTIFICATION

Product Name: Nickel Cobalt Oxide Nanoparticles / Nanopowder

Product Number: All applicable American Elements product codes, e.g. NI-COO-02-NP, NI-COO-03-NP, NI-COO-04-NP, NI-COO-05-NP

CAS #: 58591-45-0

Relevant identified uses of the substance: Scientific research and development

Supplier details:
American Elements
10884 Weyburn Ave.
Los Angeles, CA 90024
Tel: +1 310-208-0551
Fax: +1 310-208-0351

Emergency telephone number:
+1 800-424-9300

SECTION 2. HAZARDS IDENTIFICATION

Classification of the substance or mixture
GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)
Acute toxicity, Oral (Category 3), H301
Acute toxicity, Inhalation (Category 2), H330
Respiratory sensitisation (Category 1), H334
Skin sensitisation (Category 1), H317
Carcinogenicity (Category 1A), H350
Specific target organ toxicity - repeated exposure, Inhalation (Category 1), Lungs, H372
Acute aquatic toxicity (Category 1), H400
Chronic aquatic toxicity (Category 1), H410

GHS Label elements, including precautionary statements
Pictogram

Signal word
Danger
Hazard statement(s)
H301 Toxic if swallowed.
H317 May cause an allergic skin reaction.
H330 Fatal if inhaled.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H350 May cause cancer.
H372 Causes damage to organs (Lungs) through prolonged or repeated exposure if inhaled.
H410 Very toxic to aquatic life with long lasting effects.
Precautionary statement(s)
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.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P271 Use only outdoors or in a well-ventilated area.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.
P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
Rinse mouth.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER or doctor/ physician.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.
P363 Wash contaminated clothing before reuse.
P391 Collect spillage.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.
P501 Dispose of contents/ container to an approved waste disposal plant.
Hazards not otherwise classified (HNOC) or not covered by GHS - none

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Mixtures
Formula: NiCo2O4

Hazardous components
Component
Nickel monoxide
CAS-No. 1313-99-1
EC-No. 215-215-7
Index-No. 028-003-00-2
Classification
Skin Sens. 1; Carc. 1A; STOT
RE 1; Aquatic Chronic 4;
H317, H350, H372, H413
Concentration
>= 70 - < 90 %
Component
CAS-No. 1307-96-6
EC-No. 215-154-6
Index-No. 027-002-00-4
Classification
SECTION 4. FIRST AID MEASURES

Description of first aid measures
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most important symptoms and effects, both acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of any immediate medical attention and special treatment needed
No data available

SECTION 5. FIREFIGHTING MEASURES

Extinguishing media
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special hazards arising from the substance or mixture
Nickel/nickel oxides, Cobalt/cobalt oxides

Advice for firefighters
Wear self-contained breathing apparatus for firefighting if necessary.

Further information
No data available

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Wear respiratory protection. Avoid dust formation. Avoid breathing Vapors, mist or gas. Ensure adequate ventilation.
Evacuate personnel to safe areas. Avoid breathing dust.
For personal protection see section 8.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the
environment must be avoided.
Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed
containers for disposal.
Reference to other sections
For disposal see section 13.

SECTION 7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.
For precautions see section 2.
Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Keep in a dry place.
Specific end use(s)
Apart from the uses mentioned in section 1 no other specific uses are stipulated

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Appropriate engineering controls
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling
the product.
Personal protective equipment
Eye/face protection
Face shield and safety glasses Use equipment for eye protection tested and approved under
appropriate government standards such as NIOSH (US) or EN 166(EU).
Skin protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique
(without touching glove's outer surface) to avoid skin contact with this product. Dispose of
contaminated gloves after use in accordance with applicable laws and good laboratory practices.
Wash and dry hands.
Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
Splash contact
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: 480 min
If used in solution, or mixed with other substances, and under conditions which differ from EN 374,
contact the supplier of the CE approved gloves. This recommendation is advisory only and must be
evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated
use by our customers. It should not be construed as offering an approval for any specific use scenario.
Body Protection
Complete suit protecting against chemicals, The type of protective equipment must be selected
according to the concentration and amount of the dangerous substance at the specific workplace.
Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle
respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering
controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Control of environmental exposure
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES
Information on basic physical and chemical properties
Appearance
Form: powder
Odor
No data available
Odor Threshold
No data available
pH
No data available
Melting point/freezing point
No data available
Initial boiling point and boiling range
No data available
Flash point
N/A
Evaporation rate
No data available
Flammability (solid, gas)
No data available
Upper/lower flammability or explosive limits
No data available
Vapor pressure
No data available
Vapor density
No data available
Relative density
6.600 g/cm³ at 25 °C (77 °F)
Water solubility
No data available
Partition coefficient: n-octanol/water
No data available
Auto-ignition temperature
No data available
Decomposition temperature
No data available
Viscosity
No data available
Explosive properties
No data available
Oxidizing properties
No data available
Other safety information
No data available
SECTION 10. STABILITY AND REACTIVITY

Reactivity
No data available
Chemical stability
Stable under recommended storage conditions.
Possibility of hazardous reactions
No data available
Conditions to avoid
No data available
Incompatible materials
Strong oxidizing agents, Strong acids
Hazardous decomposition products
Other decomposition products-No data available
In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

Information on toxicological effects
Acute toxicity
Dermal:
No data available
Skin corrosion/irritation
No data available
Serious eye damage/eye irritation
No data available
Respiratory or skin sensitisation
No data available
Germ cell mutagenicity
No data available
Carcinogenicity
IARC:
1 - Group 1: Carcinogenic to humans (Nickel monoxide)
NTP:
Known to be human carcinogen (Nickel monoxide)
OSHA:
No component of this product present at levels greater than or equal to 0.1% is identified as a
carcinogen or potential carcinogen by OSHA.
Reproductive toxicity
No data available
Specific target organ toxicity - single exposure
No data available
Specific target organ toxicity - repeated exposure
No data available
Aspiration hazard
No data available
Additional Information
RTECS: Not available
To the best of our knowledge, the chemical, physical, and toxicological properties have not been
thoroughly investigated.
Stomach - Irregularities - Based on Human Evidence
Stomach - Irregularities - Based on Human Evidence (Nickel monoxide)

SECTION 12. ECOLOGICAL INFORMATION

Toxicity
No data available
Persistence and degradability
No data available
Bioaccumulative potential
No data available
Mobility in soil
No data available
Results of PBT and vPvB assessment
PBT/vPvB assessment not available as chemical safety assessment not required/not conducted
Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Very toxic to aquatic life with long lasting effects.

SECTION 13. DISPOSAL CONSIDERATIONS

Waste treatment methods
Product
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Contaminated packaging
Dispose of as unused product.

SECTION 14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods
IMDG
UN number: 3077
Class: 9
Packing group: III
EMS-No: F-A, S-F
Proper shipping name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Cobalt(II) oxide, Nickel monoxide)
Marine pollutant: yes
IATA
UN number: 3077
Class: 9
Packing group: III
Proper shipping name: Environmentally hazardous substance, solid, n.o.s. (Cobalt(II) oxide, Nickel monoxide)
Further information
EHS-Mark required (ADR 2.2.9.1.10, IMDG code 2.10.3) for single packagings and combination packagings containing inner packagings with Dangerous Goods > 5L for liquids or > 5kg for solids.
SECTION 15. REGULATORY INFORMATION

SARA 302 Components
No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313
The following components are subject to reporting levels established by SARA Title III, Section 313:
Nickel monoxide
CAS-No. 1313-99-1
Revision Date 1993-04-24
Cobalt(II) oxide
CAS-No. 1307-96-6
Revision Date 2009-07-17

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
Nickel monoxide
CAS-No. 1313-99-1
Revision Date 1993-04-24

Pennsylvania Right To Know Components
Nickel monoxide
CAS-No. 1313-99-1
Revision Date 1993-04-24
Cobalt(II) oxide
CAS-No. 1307-96-6
Revision Date 2009-07-17

New Jersey Right To Know Components
Nickel monoxide
CAS-No. 1313-99-1
Revision Date 1993-04-24
Cobalt(II) oxide
CAS-No. 1307-96-6
Revision Date 2009-07-17

California Prop. 65 Components
WARNING! This product contains a chemical known to the State of California to cause cancer.
Nickel monoxide
CAS-No.
SECTION 16. OTHER INFORMATION

Safety Data Sheet according to Regulation (EC) No. 1907/2006 (REACH). The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. American Elements shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. COPYRIGHT 1997-2019 AMERICAN ELEMENTS. LICENSED GRANTED TO MAKE UNLIMITED PAPER COPIES FOR INTERNAL USE ONLY.