



MARTRON INC. SAFETY DATA SHEET MARTRON NICKEL SULFATE

Section 1: IDENTIFICATION

Product Name	MARTRON NICKEL SULFATE
Product Number	MFC-004530
Other Names	Electroless Nickel Sulfate Solution, Nickel (II) Sulfate, Nickel Sulphate, Nickelic Sulfate, Liquid Nickel Sulfate 134 g/L,
Recommended Use and Restrictions	Component in electroplating solutions
Supplier Name	Martron Inc. 1394-A Walkup Ave. Monroe, NC 28110 704-289-1934
Website	www.martroninc.com
Emergency Number	CHEMTREC 1-800-424-9300

Section 2: HAZARD IDENTIFICATION

GHS Classification	
Acute Toxicity (Oral)	Category 4
Respiratory Sensitization	Category 1
Skin Sensitization	Category 1
Carcinogenicity	Category 1A
Reproductive Toxicity	Category 2
STOT Repeat Exposure	Category 2

Labeling/Pictograms



Supplemental

Acute Aquatic Toxicity	Category 1
Chronic Aquatic Toxicity	Category 1

Hazards Not Otherwise Classified (HNOC)

Not classified

Signal Word

Danger

Hazard Statements

Harmful if swallowed.
Harmful if inhaled.
May cause cancer.
May cause an allergic skin reaction.
Suspected of damaging fertility or the unborn child.
May cause damage to organs through prolonged or repeated exposure.
May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Very toxic to aquatic life with long lasting effects.

Precautionary Statements

Obtain special instructions before use.
 Do not handle until all safety precautions have been read and understood.
 Wash thoroughly after handling.
 Do not eat, drink or smoke when using this product.
 Avoid breathing dust, fumes, gas, mist, vapors and spray.
 In case of inadequate ventilation wear respiratory protection.
 Contaminated work clothing should not be allowed out of the workplace.
 Avoid release to the environment.
 Wear protective gloves, protective clothing, eye protection, face protection.
 If exposed or concerned; get medical attention or advice.
 IF SWALLOWED: Call a poison center or physician if you feel unwell. Rinse mouth.
 IF ON SKIN: Wash with plenty of water. If skin irritation or rash occurs: Get medical attention.
 IF INHALED: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: call a poison center or physician.
 Wash contaminated clothing before reuse.
 Collect spillage.
 Store locked up.
 Dispose of contents and container in accordance to local, state and federal regulations.

Section 3: COMPOSITION / INFORMATION on INGREDIENTS

Component	CAS Number	% Content
Nickel Sulfate Hexahydrate	10101-97-0	34 – 45
Water	7732-18-5	55 – 66

Section 4: FIRST AID MEASURES

Eye

Eye irritation. Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing.

Skin

Wash affected area with soap and water for at least 15 minutes, especially under fingernails and around cuticles. Remove clothing and shoes that came in contact. Wash contaminated clothing before reuse. Thoroughly clean shoes before reuse.

Inhalation

If affected, remove individual to fresh air. If breathing is difficult, administer oxygen. Avoid mouth-to-mouth resuscitation.

Ingestion

Induce vomiting only if direction to do so by medical personnel. Get medical attention.

In all cases be prepared to treat for shock.

Section 5: FIREFIGHTING MEASURES

Suitable Extinguishing Media

In all cases this material does not support combustion. Water, water fog, and/or carbon dioxide (CO₂) may be used to cool fire-exposed storage containers, structures and to protect personnel.

Firefighting Procedures:

Do not flush down sewers or other drainage systems. Material is harmful to aquatic life.

Unusual Fire and Explosion Hazards

None. Material is denser than water and will mix completely into excess water when allowed to do so.

Combustion Products

Extremely high temperatures may remove water by evaporation and lead to thermal decomposition releasing nickel oxide and sulfur dioxide.

Section 6: ACCIDENTAL RELEASE MEASURES

Keep unnecessary and/or untrained people away. Isolate spill area and avoid tracking through liquid. Dike and prevent runoff to drains or sewers. For small spills, cover with lime and then scoop into polyethylene drums for later disposal. Large spill may be pumped directly into a storage container for later disposal. Do not wash residue to drain or sewer. Refer to Section 15 for spill/release reporting information.

Section 7: HANDLING and STORAGE

Handling

Do not get in eyes, on skin, or on clothing. Do not breathe mists. Keep containers closed when not being used. Use only with adequate ventilation. Use good personal hygiene practices. After handling wash hands before eating, drinking, or smoking. Remove contaminated clothing and protective equipment before entering eating areas. Remove contaminated clothing and clean before reuse.

Storage

Store in tightly closed containers in a well-ventilated area. Protect from physical damage. Empty containers may contain hazardous residue.

Section 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits**Component**

Nickel Sulfate – Inhalation as soluble

Nickel	OSHA ^c PEL:	1.0 mg/m ³
	ACGIH TLV:	0.1 mg/m ³ ACGIH 2003 ^d

Engineering Controls

Local exhaust ventilation may be necessary to control air contaminants to their exposure limits. The use of local ventilation is recommended to control emissions near the source. Provide mechanical ventilation for confined spaces.

Personal Protective Equipment (PPE)**Eye Protection**

Wear chemical safety goggles or face shield. Have eye-wash stations available where eye contact can occur.

Skin Protection

Avoid skin contact. Wear rubber or neoprene gloves that are impervious to conditions of use.

Respiratory Protection

Under mist free conditions no respiratory protection should be worn. Should TWA limits be exceeded a NIOSH approved respirator for dust is generally acceptable for concentrations up to 100 times the PEL. Respiratory protection must be provided in accordance with OSHA 29 CFR 1910.134.

Section 9: PHYSICAL and CHEMICAL PROPERTIES

Room Temperature Appearance	Green liquid
Odor	None
Odor Threshold	No data available
pH	3 - 4
Flashpoint	Does not burn

Autoignition Temperature	Does not burn
Upper/Lower Flammability Limits	Does not burn
Flammability	Does not burn
Danger of Explosion	None
Boiling Point	As water
Melting Point/Freezing Point	Crystallizes at 50°F (10°C)
Vapor Pressure	As water
Evaporation Rate	As water
Vapor Density	As water
Solubility	May be diluted with water at all concentrations
Partition Coefficient N-Octanol/Water	No data available
Decomposition Temperature	No data available
Viscosity	No data available
Specific Gravity	1.24 – 1.34
Molecular Formula	NiSO ₄ • 6H ₂ O
Molecular Weight	262.86

Section 10: STABILITY and REACTIVITY

Stability/Incompatibility

Under typical storage conditions this material is stable indefinitely. When heated and open to the air this material will lose solution water, become concentrated, and begin to crystallize. Above 103°C the formed crystals will lose their waters of hydration and become anhydrous nickel sulfate.

Hazardous Reactions/Decomposition Products

Heating anhydrous nickel sulfate to high temperatures may generate nickel oxide and sulfur oxides.

Section 11: TOXICOLOGICAL INFORMATION

Test	Results	Basis
Oral Toxicity (Rat)	Category 4 Mixture LD50 = 611 mg/kg	Database review ^f LD50 = 275 mg/kg
Dermal Toxicity	Not classified	Database and GHS review ^f
Inhalation Toxicity (Rat)	Not classified Mixture LC50 = 5.51 mg/L	Database review ^f LC50 = 2.48 mg/L
Aspiration Hazard	Not classified	No data available
Skin corrosion / Irritation	Not classified	Database review ^f Non-irritating
Eye corrosion / Irritation	Not classified	Database review ^f Non-irritating
Sensitization – Skin		
Sensitization – Respiration		
Germ Cell Mutagenicity		
Carcinogenicity		
Reproductive Toxicity		
Specific Target Organ Toxicity – Single Dose		
Specific Target Organ Toxicity – Repeated Dose		

Signs and Symptoms of Overexposure

Eye and nasal irritation, dermatitis with itching

Acute Effects

Eye Contact

Cause irritation

Skin Contact

May cause dermatitis or allergic skin reactions.

Inhalation

Inhalation of mist can cause upper respiratory tract irritation.

Ingestion

Can cause gastrointestinal disorders.

Carcinogenicity

Nickel compounds are listed by IARC^a as Group 1: carcinogenic to humans.

Nickel compounds are listed by NTP^b as known human carcinogens.

Not listed as a carcinogen by OSHA or ACGIH.

Section 12: ECOLOGICAL INFORMATION

Test	Results	Basis
Acute Aquatic Toxicity	Category 1	GHS classification review
Chronic Aquatic Toxicity	Category 1	GHS classification review

When released into the soil, this material is not expected to biodegrade. When released into the soil, this material may leach into groundwater. When released into water, this material is not expected to biodegrade. When released into water, this material is not expected to evaporate significantly. This material does not significantly bioaccumulate.

Section 13: DISPOSAL CONSIDERATIONS

In case of a spill, the nickel can be made insoluble by covering with lime or soda ash (sodium carbonate). The resulting solid material can be stored for recovery in a polyethylene drum. Do not wash residue to a drain or sewer.

Empty storage containers may be rinsed clean of product residues with clean water and the solution then treated with lime or soda ash for recovery of solid nickel carbonate/hydroxide residue. Store residue in a polyethylene drum.

After treatment with lime or soda ash, the residue is to be labeled as EPA Hazardous Waste Number F006.

Section 14: TRANSPORT INFORMATION

U.S. Department of Transportation (DOT)

Proper Shipping Name UN3082, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, LIQUID, N.O.S., (Nickel Sulfate), 9, PGIII, RQ

Hazard Class Class 9

UN/NA Number UN3082

Packing Group III

International Maritime Organization (IMDG)

Proper Shipping Name RQ, UN3082, ENVIRONMENTALLY HAZARDOUS, SUBSTANCE LIQUID, N.O.S., (Nickel Sulfate), 9, PGIII, Marine Pollutant

Hazard Class Class 9

UN/NA Number UN3082

Packing Group III

Section 15: REGULATORY INFORMATION

U.S. Federal Regulations

Comprehensive Environmental Response and Liability Act of 1980 (CERCLA):

100 lb final RQ; 45.4 kg final RQ

Toxic Substances Control Act (TSCA)

Anhydrous Nickel Sulfate (CAS # 7786-81-4) is listed on the TSCA Inventory List.

Clean Water Act (CWA)

This material (Nickel Sulfate Hexahydrate) is listed under the CWA with a reportable quantity (RQ) of 100 pounds, 45.4 kg.

Clean Air Act (CAA)

This material does not contain any hazardous air pollutants.
This material does not contain any Class 1 Ozone Depletors.
This material does not contain any Class 2 Ozone Depletors.

Superfund Amendments and Reauthorization Act (SARA) Title III Information

This material is listed only under Section 313 for Nickel Compounds.

State Regulations**California**

Nickel compounds, in general, are listed under Proposition 65 as cancer causing materials.

International Regulations**Canadian Environmental Protection Act**

CAS # 10101-97-0 is grouped into the category "Nickel, water-soluble inorganic compounds, N.O.S." at a concentration of greater than 1% wt/wt.

Canadian Workplace Hazardous Materials Information System (WHMIS)

Anhydrous Nickel Sulfate (CAS # 7786-81-4) is listed. Classification D1B, D2A, D2B

European Inventory of Existing Chemicals (EINECS)

Anhydrous Nickel Sulfate is included in the ECICS as EC # 232-104-9.

Section 16: OTHER INFORMATION**References**

- a IARC. 1990. IARC monographs on the evaluation of carcinogenic risks to humans. Volume 49: Chromium, nickel and welding. Lyon, France: International Agency for Research on Cancer, World
- b NTP. 2002. Report on carcinogens. Bethesda, MD: U.S. Department of Health and Human Services, Public Health Service, National Toxicology Program. June 6, 2003.
- c OSHA 29 CFR 1910.1000, Table Z-1
- d ACGIH [2003] Nickel Threshold limit values for chemical substances and physical agents and biological exposure indices. Cincinnati, OH: American Conference of Governmental Industrial Hygienists.
- e Contact Dermatitis. 24(1):35-39.
- f PCTEC database 3E Company

Key/Legend

TSCA = Toxic Substance Control Act;
ACGIH = American Conference of Governmental Industrial Hygienists; IARC = International Agency for Research on Cancer;
NIOSH = National Institute for Occupational Safety and Health; NTP = National Toxicology Program;
OSHA = Occupational Safety and Health Administration FDRL = Food and Drug Research Laboratories
NFPA = National Fire Protection Association STOT = Specific Target Organ Toxicity

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