

CYANTEK CORPORATION
SAFETY DATA SHEET
Nano-Strip, Nano-Strip HP



1 Product and Company Identification

Product name: Nano-Strip, Nano-Strip HP
Other product names: None
Product use: Photoresist Stripper and Cleaning Solution

Manufacturer: CYANTEK CORPORATION
3055 Osgood Court
Fremont, CA 94538
(510) 651-3341

24 Hour Emergency Telephone Number:
(U.S.) 866-706-3266, (International) 01-760-476-3961

2 Hazards Identification

GHS classification:

Oxidizing liquid: Category 3
Acute toxicity (oral): Category 4
Acute toxicity (inhalation): Category 2
Skin corrosion/irritation: Category 1A
Serious eye damage/eye irritation: Category 1
Carcinogenic substance: Category 1B
Reproductive toxicity: Category 2
Specific target organ toxicity (Single exposure): Category 1 (Respiratory, teeth)
Specific target organ toxicity (Single exposure): Category 2 (Respiratory, Central nervous system)
Specific target organ toxicity (Repeated exposure): Category 1 (Respiratory, teeth)
Acute Aquatic: Category 3
Corrosive to metals: Category 1

Signal word: Danger

Hazard statements: May intensify fire, oxidizer. Harmful if swallowed. Fatal if inhaled. Causes severe skin burns and eye damage. Causes serious eye damage. May cause cancer. Causes damage to respiratory system and teeth through prolonged or repeated exposure. May cause damage to the central nervous system. May be corrosive to metals. Harmful to aquatic life.

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2 Hazards Identification (con't.)

Precautionary statements:

Prevention: Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Keep away from spark, flame, and high temperature. Keep away from clothes, flammable materials. Use only in a well-ventilated area. Use respiratory protective equipment. Wear gloves, eye and face protection, and protective clothing, Avoid breathing vapors/mists. Do not eat, drink, or smoke when using this product. Wash thoroughly with water after handling.

First Aid Measures: If feeling unwell, immediately call a poison control center/doctor. If swallowed and victim is conscious, rinse mouth and administer water. Do NOT induce vomiting. Immediately call a poison control center/doctor. If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a poison control center/doctor. If on skin or hair, remove/take off immediately all contaminated clothing. Rinse with water/shower. Immediately call a poison control center/doctor. If in eyes, rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Immediately call a poison control center/doctor. Absorb spillage to prevent material damage. In case of fire, use water mist or Carbon Dioxide. Use water spray to cool exposed containers and to fight larger fires.

Storage: Store in original vented container locked up and tightly capped in a well-ventilated area at 10 to 25 Degrees C. (50 to 70 Degrees F).

Disposal: Dispose of contents/containers in accordance with applicable local, regional, national, regulations.

Pictograms:



3 Composition/Information on Ingredients:

Chemical formula: H₂SO₄ + H₂SO₅ + H₂O₂ + H₂O

Hazardous components:

Component	Percent by wt.	CAS Number
Sulfuric Acid	90%	7664-93-9
Peroxymonosulfuric Acid	5%	7722-86-3
Hydrogen Peroxide	<1%	7722-84-1
Water	5%	7732-18-5

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4 First Aid Measures

Inhalation: Supply fresh air; consult doctor in case of complaint.
Skin contact: Flush affected areas with plenty of water, remove contaminated clothing, get medical attention if irritation persists.
Eye contact: Rinse opened eyes for several minutes under running water. Immediately consult a doctor.
Ingestion: Give large amounts of water. Do NOT induce vomiting or aspiration into the lungs may occur and may cause permanent injury or death. Do NOT give water to an unconscious patient. Consult a doctor immediately.

5 Fire Fighting Measures

Suitable extinguishing agents: CO₂, or water spray. Fight larger fires with water spray. Use water spray to cool exposed containers.
Specific hazards: Avoid contact with solvents, combustible materials. Sulfur Dioxide gas may be given off if heated. Avoid inhalation of the substance or combustion products
Protective equipment: Wear goggles, rubber gloves and boots, self contained breathing apparatus, and acid protective clothing.

6 Accidental Release Measures

Personal precautions: Wear goggles, rubber boots and gloves, and acid-protective clothing.
Environmental precautions: Do not allow substance to enter sewage system, surface or ground water.
Methods for cleaning up: Contain the spill by diking/absorbing with liquid-binding material (sand, diatomite, acid binders, universal binders). Ensure adequate ventilation. Dispose of material in accordance with local, regional, or national regulations.

7 Handling and Storage

Ensure good ventilation/exhaust at the workplace.
Store between 10 to 25 Degrees C (50 and 77 Degrees F).
Keep containers upright and tightly sealed.
Store in original containers with original vented closures.
Store away from strong caustics, combustible materials, easily oxidizable materials, Ammonium Hydroxide, Nitric Acid, and organic solvents.

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8 Exposure Controls and Personal Protection

Engineering controls and Ventilation:

Use with adequate ventilation. Keep air below product exposure limits.

General protective and hygienic measures:

Keep away from foodstuffs and beverages.

Immediately remove all soiled and contaminated clothing

Wash hands before breaks and at the end of work.

Avoid contact with the eyes and skin.

Respiratory equipment:

In case of brief exposure or low pollution use S03 respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

Protection of hands: Acid resistant gloves.

Eye protection: Tightly sealed goggles/face shield.

Body protection: Acid resistant protective work clothing.

Exposure guidelines and limits:

Ingredient	ACGIH TLV	OSHA PEL	Other Limits
Sulfuric Acid	1 mg/m ³ (TWA) 3 mg/m ³ (STEL)	1 mg/m ³ (TWA)	16 mg/m ³ (IDLH)
Hydrogen Peroxide	1 ppm (TWA)	1 ppm (TWA)	None listed
Peroxymonosulfuric Acid	1 mg/m ³ (TWA)	1 mg/m ³ (TWA)	16 mg/m ³ (IDLH)

TLV: Threshold limit value

PEL: Permissible exposure limit

TWA: Time weighted average (8 hours) IDLH: Immediately dangerous to life and Health

9 Physical and Chemical Properties:

Physical state: Liquid

Color: Clear

Odor: Faint acid odor

Odor threshold: Unknown

pH: <1

Melting point/freezing point: Not applicable

Initial boiling point and boiling range: Approximately 300 degrees C

Flash point: Not applicable

Evaporation rate: Unknown

Lower explosion limits (LEL): Not applicable

Upper explosion limits (UEL): Not applicable

Vapor pressure (mm Hg): <1 (at 40 degrees C)

Vapor density (air = 1): >1

Relative density at 20 °C (water = 1): 1.82 g/cm³

Solubility in water: 100%

Partition coefficient (n-Octanol/water): Unknown

Auto-ignition temperature: Not applicable

Decomposition temperature: Not applicable

Viscosity: Unknown

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10 Stability and Reactivity

Dangerous reactions: Reacts violently with caustics and water. Avoid contact with organic materials, metal salts, Ammonia, Nitric Acid, Nitrates, reducing agents, and organic solvents.

Danger of explosion: If contacted with flammable materials, may cause ignition or explosion.

Thermal decomposition : May release toxic and corrosive fumes and sulfur oxides.

Dangerous products of decomposition:

Releases toxic gases (Sulfur Dioxide and Sulfur Trioxide) if heated to partial evaporation.

Hazardous polymerization: Does not occur

11 Toxicological Information

Acute toxicity:

Sulfuric Acid

Hydrogen Peroxide

LD 50 (oral-rat) 2140 mg/kg

LD 50 (oral-rat) 311 mg/kg

LC 50 (inhl-rat) 0.375 mg/l, 4 hr.

LD 50 (dermal-rat) 4060 mg/kg

LC 50 (inhl-mouse) 320 mg/m³/2 hr.

LD 50 (inhl-rat) 1438 ppm

Peroxymonosulfuric Acid: Similar toxicity data expected as for Sulfuric Acid

Potential acute and chronic side effects:

Eyes: Direct contact with eyes can cause severe burns or blindness.

Skin: Direct contact with the skin can cause irritation or damaging burns.

Ingestion: Swallowing may cause severe burns to the mouth, teeth, and digestive tract. May be fatal if swallowed.

Inhalation: Causes severe burning of mucous membranes, possible laryngeal, tracheal, bronchial, and pulmonary edema, with possible shock, collapse.

Medical conditions generally aggravated by exposure: Respiratory and skin diseases may predispose one to acute and chronic effects.

Carcinogenicity: Causes cancer to humans through occupational exposure by mist of inorganic strong acid containing Sulfuric Acid.

Sensitization: No sensitizing effects known.

Target organ systemic toxicant single exposure(Sulfuric Acid): Specific target organs - respiratory system. Symptoms include airway irritation including cough and polypnea if inhaled in low concentrations. Continual effects include pulmonary function insufficiency, emphysema and fibrosis. Acute effects include cough, polypnea, and bloody phlegm if inhaled in high concentrations.

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11 Toxicological Information (con't.)

Target organ systemic toxicant repeated exposure(Sulfuric Acid):

Specific target organs - respiratory system, teeth. Observed cellular multiplication of tunica mucosa larynges. (Inhalation exposure test for 28 days, rat) Observed dysfunction of airway and lungs including edema of nasal septum, pulmonary emphysema, detelectasis, congestion of micro bronchial tubes, edema, hemorrhage, blood clot, and histological changes including cell hyperplasia of micro bronchial tubes of lungs and wall thickening. (Inhalation exposure test for 78 weeks, Macaca fascicularis)

12 Ecological Information:

Sulfuric Acid

LC 50: 16-28 mg/l, 96 hr./bluegill

Hydrogen Peroxide

EC 50: 2.4 mg/l, 48 hr./daphnia magna

Peroxymonosulfuric Acid: Similar toxicity data expected as for Sulfuric Acid

General notes:

Do not allow product to reach ground water, water course or sewage system. Danger to drinking water if even small quantities leak into the ground.

13 Disposal Considerations

Do not allow product to reach sewage system. Dispose of product (including containers) in accordance with applicable regulations.

14 Transportation Information

Land (CFR 49), Maritime (IMDG), Air (ICAO)

Class: 8 (Corrosive Liquid), subsidiary risk 5.1 (Oxidizer)

UN Number: 3093

Proper Shipping Name: Corrosive liquids, oxidizing n.o.s.
(Sulfuric Acid, Peroxymonosulfuric Acid)

Packing Group: II

Marine pollutant: No

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15 Regulatory Information

CERCLA Hazardous Substances (with reportable quantity): Sulfuric Acid (1000 #)
Extremely Hazardous Substances (with threshold quantity): Sulfuric Acid (1000 #), Hydrogen Peroxide (1000 #)
Toxic Chemicals (Section 313): Sulfuric Acid
TSCA Inventory: All ingredients on TSCA inventory
Proposition 65 List: None
Clean Water Act Hazardous Substance List (with reportable quantity): Sulfuric Acid (1000 #)
Clean Air Act Synthetic Organic Chemical (CAA SOCM): None
Clean Air Act Accidental Release Prevention Substance, section 112 r (with threshold quantity): None
PSM Highly Hazardous Chemical List (with threshold quantity): None
NFPA Rating: Health 3, Flammability 0, Reactivity 2, Special Hazard Corrosive, Oxidizer

16 Other Information

MSDS document number: MSDS 17-139
Current date and revision: 7/24/13, revision I
Supersedes date and revision: 6/3/13, revision H

Note: This Safety Data Sheet was created using the Globally Harmonized System (GHS) format for Safety Data Sheets (SDS).

Disclaimer: This information is based upon information and sources available at the time of preparation. This shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship. It is the obligation of the user to determine product suitability and comply with the requirements of all applicable laws regarding use and disposal of this product.