

Safety Data Sheet acc. to OSHA HCS (HazCom 2012)

Printing date 07/09/2018

Reviewed on 07/04/2018

1 Identification

- **Product identifier**
- **Trade name:** Vario Alkaline-Cyanide Reagent Solution
- **Catalogue number:** 530620, 4530620, 530621, 530622, 530620-0, 424452
- **Application of the substance / the mixture:** Reagent for water analysis
- **Manufacturer/Supplier:**
Tintometer Inc.
6456 Parkland Drive
Sarasota, FL 34243
USA
phone: (941) 756-6410
fax: (941) 727-9654
www.lovibond.us
Made in Germany
- **Emergency telephone number:** + 1 866 928 0789 (English, French, Spanish)

2 Hazard(s) identification

- **Classification of the substance or mixture**



GHS06 Skull and crossbones

Acute Tox. 3 H301 Toxic if swallowed.
Acute Tox. 2 H310 Fatal in contact with skin.
Acute Tox. 3 H331 Toxic if inhaled.



GHS05 Corrosion

Met. Corr. 1 H290 May be corrosive to metals.
Skin Corr. 1B H314 Causes severe skin burns and eye damage.
Eye Dam. 1 H318 Causes serious eye damage.



GHS09 Environment

Aquatic Acute 1 H400 Very toxic to aquatic life.
Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.

- **Label elements**
- **GHS label elements** The product is classified and labeled according to the Hazard Communication Standard (HCS).
- **Hazard pictograms**



GHS05



GHS06



GHS09

- **Signal word** Danger
- **Hazard-determining components of labeling:**
sodium cyanide
sodium hydroxide
- **Hazard statements**
H290 May be corrosive to metals.

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- H301+H331 Toxic if swallowed or if inhaled.
 H310 Fatal in contact with skin.
 H314 Causes severe skin burns and eye damage.
 H400 Very toxic to aquatic life.
 H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

- P260 Do not breathe mist/vapours/spray.
 P301+P330+P331 If swallowed: Rinse mouth. Do NOT induce vomiting.
 P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water or shower.
 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.
 P308+P310 IF exposed or concerned: Immediately call a poison center/doctor.

- **Other hazards** Contact with skin and inhalation of aerosols/ vapours of the preparation should be avoided.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** aqueous solution
- **Composition and Information on Ingredients:**
 Percent ranges are used due to the confidential product information.

CAS: 143-33-9 EINECS: 205-599-4 Index number: 006-007-00-5 RTECS: VZ7525000	sodium cyanide Acute Tox. 2, H300; Acute Tox. 1, H310; Acute Tox. 2, H330; Met. Corr.1, H290; Aquatic Acute 1, H400 (M=10); Aquatic Chronic 1, H410 (M=10)	5–10%
CAS: 1310-73-2 EINECS: 215-185-5 Index number: 011-002-00-6 RTECS: WB4900000	sodium hydroxide Met. Corr.1, H290; Skin Corr. 1A, H314	2.5–<5%

- **Additional information:** For the wording of the listed hazard phrases refer to section 16.

4 First-aid measures

- **Description of first aid measures**
- **General information:**
 Personal protection for the First Aider.
 Provide oxygen treatment if affected person has difficulty breathing.
 Immediately remove any clothing soiled by the product.
 Keep warm, position comfortably and cover well.
 Remove breathing apparatus only after contaminated clothing have been completely removed.
- **After inhalation:**
 Supply fresh air or oxygen.
 In case of unconsciousness remove to fresh air, apply artificial respiration, and consult a physician.
 Call a doctor immediately.
- **After skin contact:**
 Immediately rinse with plenty of water.
 Call a doctor immediately.
- **After eye contact:**
 Rinse opened eye for several minutes (at least 15 min) under running water.
 Call a doctor immediately.
- **After swallowing:**
 Rinse out mouth and then drink 1-2 glasses of water.
 Call a doctor immediately.
- **Most important symptoms and effects, both acute and delayed**
 burns
 resorption
 after resorption:
 breathing difficulty
 unconsciousness
 headache
 drowsiness
 vomiting

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coma
 CNS disorders
 cardiovascular disorders
 cramps

· **Danger:**

blockade of cellular respiration
 Danger of disturbed cardiac rhythm.
 Danger of gastric perforation.

· **Indication of any immediate medical attention and special treatment needed:**

If blue colouring appears (lips, ear-lobes, finger-nails), give oxygen treatment as quickly as possible.
 antidotes: sodium thiosulfate, dimethylaminophenol

5 Fire-fighting measures

· **Extinguishing media**

· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.

· **Special hazards arising from the substance or mixture**

The product is not combustible.
 Formation of toxic gases is possible during heating or in case of fire.
 Hydrogen cyanide (HCN)
 cyanide compounds, sodium monoxide

· **Advice for firefighters**

· **Protective equipment:**

Wear self-contained respiratory protective device.
 Wear fully protective suit.

· **Additional information**

Collect contaminated fire fighting water separately. It must not enter the sewage system.
 Dispose of fire debris and contaminated fire fighting water in accordance with official regulations.
 Ambient fire may liberate hazardous vapours.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**

· **Advice for non-emergency personnel:**

Wear protective equipment. Keep unprotected persons away.
 Avoid substance contact.
 Ensure adequate ventilation
 Use respiratory protective device against the effects of fumes/dust/aerosol.

· **Advice for emergency responders:**

Mount respiratory protective device.
 Protective equipment: see section 8

· **Environmental precautions:**

Do not allow product to reach sewage system or any water course.
 Inform respective authorities in case of seepage into water course or sewage system.

· **Methods and material for containment and cleaning up:**

Ensure adequate ventilation.
 Absorb with liquid-binding material (sand, diatomite, universal binders).
 Dispose contaminated material as waste according to item 13.

· **Reference to other sections**

See Section 8 for information on personal protection equipment.
 See Section 13 for disposal information.

7 Handling and storage

· **Precautions for safe handling**

· **Advice on safe handling:**

Open and handle receptacle with care.
 Work only in fume cabinet.
 Prevent formation of aerosols.

· **Hygiene measures:**

Do not inhale gases / fumes / aerosols.
 Do not get in eyes, on skin, or on clothing.

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Take off immediately all contaminated clothing.
 Store protective clothing separately.
 Wash hands before breaks and at the end of work.
 Do not eat, drink or smoke when using this product.

- **Conditions for safe storage, including any incompatibilities**

- **Storage:**

- **Requirements to be met by storerooms and receptacles:**

Store in a cool location.
 Store only in the original receptacle.
 Unsuitable material for container: metals, metal alloys
 Unsuitable material for receptacle: aluminium

- **Information about storage in one common storage facility:**

Store away from metals.
 Do not store together with acids.

- **Further information about storage conditions:**

Store under lock and key and with access restricted to technical experts or their assistants only.
 Protect from heat and direct sunlight.
 Protect from exposure to the light.
 Protect from humidity and water.

- **Recommended storage temperature:** 20°C +/- 3° (approx. 68°F)

- **Specific end use(s)** No further relevant information available.

8 Exposure controls/personal protection

- **Control parameters**

- **Components with limit values that require monitoring at the workplace:**

CAS: 143-33-9 sodium cyanide

PEL (USA)	Long-term value: 5 mg/m ³ as CN; Skin
REL (USA)	Ceiling limit value: 5* mg/m ³ , 4.7* ppm as CN; *10-min
TLV (USA)	Ceiling limit value: 5 mg/m ³ , 4.7 ppm as CN; Skin
EL (Canada)	Ceiling limit value: 5 mg/m ³ as CN; Skin
EV (Canada)	Ceiling limit value: 5 mg/m ³ Skin

CAS: 1310-73-2 sodium hydroxide

PEL (USA)	Long-term value: 2 mg/m ³
REL (USA)	Ceiling limit value: 2 mg/m ³
TLV (USA)	Ceiling limit value: 2 mg/m ³
EL (Canada)	Ceiling limit value: 2 mg/m ³
EV (Canada)	Ceiling limit value: 2 mg/m ³

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Engineering measures:**

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.
 See item 7.

- **Personal protective equipment:**

- **Breathing equipment:**

Use respiratory protective device against the effects of fumes/dust/aerosol.
 In case of brief exposure or low pollution use respiratory filter device. In case of intensive or longer exposure use respiratory protective device that is independent of circulating air.

- **Recommended filter device for short term use:** Combination filter B-P3

- **Protection of hands:**

Alkaline resistant gloves
 Preventive skin protection by use of skin-protecting agents is recommended.
 After use of gloves apply skin-cleaning agents and skin cosmetics.

- **Material of gloves**

Nitrile rubber, NBR

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Recommended thickness of the material: ≥ 0.35 mm
· Penetration time of glove material
Value for the permeation: Level ≤ 1 (10 min)

The exact break through time has to be found out by the manufacturer of the protective gloves and has to be observed.

· Eye protection: Tightly sealed goggles

· Body protection: Alkaline resistant protective clothing

· Limitation and supervision of exposure into the environment:

Avoid release to the environment.

Do not allow product to reach sewage system or any water course.

9 Physical and chemical properties

· Information on basic physical and chemical properties
· Appearance:

Form / Physical state:	Fluid
Color:	Colorless

· Odor: Odorless

· Odor threshold: Not applicable.

· pH-value at 20°C (68°F): 13.7

· Melting point/freezing point: Not determined.

· Initial boiling point and boiling range: Not determined.

· Flash point: Not applicable.

· Flammability (solid, gas): Not applicable.

· Decomposition temperature: Not determined.

· Auto-ignition temperature: Product is not self-igniting.

· Danger of explosion: Product does not present an explosion hazard.

· Flammability or explosive limits:

Lower:	Not applicable.
Upper:	Not applicable.

· Oxidizing properties: none

· Vapor Pressure: Not determined.

· Density at 20°C (68°F): 1.04 g/cm³ (8.68 lbs/gal)

· Relative density: Not determined.

· Vapor density: Not determined.

· Evaporation rate: Not determined.

· Solubility(ies)

Water:	Fully miscible.
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· Partition coefficient (n-octanol/water): Not determined.

· Viscosity: Not determined.

· Solvent content:

Organic solvents:	0 %
Water:	> 90 %
Solids content:	< 10 %

· Other information No further relevant information available.

10 Stability and reactivity

· Reactivity see section "Possibility of hazardous reactions"

· Chemical stability Stable at ambient temperature (room temperature).

· Possibility of hazardous reactions

Corrosive action on metals.

Reacts with metals forming hydrogen (Danger of explosion!)

Corrodes aluminium and zinc.

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Exothermic reaction with acids.

Reacts with acids releasing Hydrogen cyanide (prussic acid).

· **Conditions to avoid** No further relevant information available.· **Incompatible materials:**

metals

light metals

aluminum

zinc

organic substances

· **Hazardous decomposition products:**

Hydrogen cyanide (prussic acid HCN)

In case of fire: see section 5.

11 Toxicological information

· **Information on toxicological effects**· **Acute toxicity:** Classification according to calculation procedure.· **Acute toxicity estimate (ATE_(MIX)) - Calculation method:**

Oral	GHS ATE _(MIX)	92 mg/kg (.)
Dermal	GHS ATE _(MIX)	133 mg/kg (.)
Inhalative	GHS ATE _(MIX)	0.9 mg/l/4h (aerosol)

· **LD/LC50 values that are relevant for classification:****CAS: 143-33-9 sodium cyanide**

Oral	LD50	5.09 mg/kg (rat) (Registrant, ECHA)
	LD ₀₁	2.8 mg/kg (human)
	LDLo	500 mg/kg (rabbit)
Dermal	LD50	7.35 mg/kg (rabbit) (Registrant, ECHA)
	LC50	0.05 mg/l/4h (ATE)

CAS: 1310-73-2 sodium hydroxide

Oral	LDLo	500 mg/kg (rabbit) (IUCLID)
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· **Primary irritant effect:**· **on the skin:** Causes severe skin burns.· **on the eye:**

Causes serious eye damage.

Risk of blindness!

· **Sensitization:** Based on available data, the classification criteria are not met.· **Information on components:****CAS: 1310-73-2 sodium hydroxide**

Sensitization	Patch test (human)	(negative)
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· **Carcinogenic categories**· **IARC (International Agency for Research on Cancer)**

None of the ingredients is listed.

· **NTP (National Toxicology Program)**

None of the ingredients is listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

None of the ingredients is listed.

· **Other information:** see section 8 / 15· **Synergistic Products:** None· **CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction):** The following statements refer to the mixture:· **Germ cell mutagenicity** Based on available data, the classification criteria are not met.· **Carcinogenicity** Based on available data, the classification criteria are not met.· **Reproductive toxicity** Based on available data, the classification criteria are not met.

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- **STOT (specific target organ toxicity) -single exposure** Based on available data, the classification criteria are not met.
- **STOT (specific target organ toxicity) -repeated exposure** Based on available data, the classification criteria are not met.
- **Aspiration hazard** Based on available data, the classification criteria are not met.

- **Additional toxicological information:**

The following complies to cyanogen compounds / nitriles in general:

Utmost caution! Release of hydrocyanic acid is possible - blockade of cellular respiration.

CAS 143-33-9: Danger through skin absorption.

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

12 Ecological information

- **Toxicity**

- **Aquatic toxicity:**

CAS: 143-33-9 sodium cyanide

NOEC 0.011 mg/l/96h (fish)

LC50 0.083 mg/l/96h (bluegill)
(IUCLID)

0.057 mg/l/96h (rainbow trout)
(IUCLID)

0.12 mg/l/96h (fathead minnow)

CAS: 1310-73-2 sodium hydroxide

LC50 40.4 mg/l/48h (Ceriodaphnia sp.)
(ECHA)

- **Bacterial toxicity:**

CAS: 1310-73-2 sodium hydroxide

EC50 22 mg/l (Photobacterium phosphoreum) (15 min)

- **Persistence and degradability .**

- **Other information:**

Mixture of inorganic compounds.

Methods for the determination of biodegradability are not applicable to inorganic substances.

- **Bioaccumulative potential**

Pow = n-octanol/wasser partition coefficient

log Pow < 1 = Does not accumulate in organisms.

CAS: 143-33-9 sodium cyanide

log Pow 0.44 (.)

- **Mobility in soil** No further relevant information available.

- **Other adverse effects**

Forms corrosive mixtures with water even if diluted.

Harmful effect due to pH shift.

Reacts with water to form toxic decomposition products.

Avoid transfer into the environment.

13 Disposal considerations

- **Waste treatment methods**

- **Recommendation:**

Hand over to hazardous waste disposers.

Must not be disposed of together with household garbage. Do not allow product to reach sewage system.

- **Uncleaned packagings:**

- **Recommendation:** Disposal must be made according to official regulations.

- **Recommended cleansing agent:** Water, if necessary with cleansing agents.

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14 Transport information

<ul style="list-style-type: none"> · UN-Number · DOT, IMDG, IATA 	UN2922
<ul style="list-style-type: none"> · UN proper shipping name · DOT · IMDG · IATA 	Corrosive liquids, toxic, n.o.s. (Sodium hydroxide, Sodium cyanide) CORROSIVE LIQUID, TOXIC, N.O.S. (SODIUM HYDROXIDE, SODIUM CYANIDE), MARINE POLLUTANT CORROSIVE LIQUID, TOXIC, N.O.S. (SODIUM HYDROXIDE, SODIUM CYANIDE)
<ul style="list-style-type: none"> · Transport hazard class(es) · DOT 	<div style="display: flex; align-items: center; gap: 10px;">   </div>
<ul style="list-style-type: none"> · Class · Label 	8 Corrosive substances 8, 6.1
<ul style="list-style-type: none"> · IMDG 	<div style="display: flex; align-items: center; gap: 10px;">    </div>
<ul style="list-style-type: none"> · Class · Label 	8 Corrosive substances 8/6.1
<ul style="list-style-type: none"> · IATA 	<div style="display: flex; align-items: center; gap: 10px;">   </div>
<ul style="list-style-type: none"> · Class · Label 	8 Corrosive substances 8 (6.1)
<ul style="list-style-type: none"> · Packing group · DOT, IMDG, IATA 	II
<ul style="list-style-type: none"> · Environmental hazards: · Marine pollutant: 	Product contains environmentally hazardous substances: sodium cyanide Yes Symbol (fish and tree)
<ul style="list-style-type: none"> · Special precautions for user · Danger code (Kemler): · EMS Number: · Segregation groups · Stowage Category · Stowage Code 	Warning: Corrosive substances 86 F-A,S-B Alkalis, cyanides B SW2 Clear of living quarters.
<ul style="list-style-type: none"> · Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code 	Not applicable.
<ul style="list-style-type: none"> · Transport/Additional information: · DOT · Quantity limitations · Limited quantity (LQ): · Excepted quantities (EQ) 	On passenger aircraft/rail: 1 L On cargo aircraft only: 30 L 1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml

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<ul style="list-style-type: none"> · IMDG · Limited quantities (LQ) · Excepted quantities (EQ) 	1L Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml
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15 Regulatory information

- Safety, health and environmental regulations/legislation specific for the substance or mixture
- Sara

· Section 355 (Extremely hazardous substances):

CAS: 143-33-9 | sodium cyanide

· Section 313 (Specific toxic chemical listings):

CAS: 143-33-9 | sodium cyanide

· TSCA (Toxic Substances Control Act):

All ingredients are listed.

· Proposition 65

· Chemicals known to cause cancer:

None of the ingredients is listed.

· Chemicals known to cause reproductive toxicity for females:

None of the ingredients is listed.

· Chemicals known to cause reproductive toxicity for males:

CAS: 143-33-9 | sodium cyanide

· Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

· New Jersey Right-to-Know List:

CAS: 143-33-9 | sodium cyanide

CAS: 1310-73-2 | sodium hydroxide

· New Jersey Special Hazardous Substance List:

CAS: 1310-73-2 | sodium hydroxide

CO, R1

· Pennsylvania Right-to-Know List:

CAS: 143-33-9 | sodium cyanide

CAS: 1310-73-2 | sodium hydroxide

· Pennsylvania Special Hazardous Substance List:

CAS: 143-33-9 | sodium cyanide

E

CAS: 1310-73-2 | sodium hydroxide

E

· EPA (Environmental Protection Agency)

CAS: 143-33-9 | sodium cyanide

II

· NIOSH-Ca (National Institute for Occupational Safety and Health)

None of the ingredients is listed.

· Information about limitation of use:

Employment restrictions concerning pregnant and lactating women must be observed.

Employment restrictions concerning young persons must be observed.

- **Chemical safety assessment:** A Chemical Safety Assessment has not been carried out.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant phrases

H290 May be corrosive to metals.

H300 Fatal if swallowed.

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H310 Fatal in contact with skin.
 H314 Causes severe skin burns and eye damage.
 H330 Fatal if inhaled.
 H400 Very toxic to aquatic life.
 H410 Very toxic to aquatic life with long lasting effects.

- **Recommended restriction of use:** professional/industrial use only
- **Date of preparation / last revision** 07/09/2018 / 37

- **Abbreviations and acronyms:**

EC50: effective concentration, 50 percent (in vivo)
 OECD: Organisation for Economic Co-operation and Development
 STOT: specific target organ toxicity
 SE: single exposure
 RE: repeated exposure
 EC50: half maximal effective concentration
 IC50: half maximal inhibitory concentration
 NOEL or NOEC: No Observed Effect Level or Concentration
 ACGIH[®] - American Conference of Governmental Industrial Hygienists
 •A1 - Confirmed human carcinogen
 •A2 - Suspected human carcinogen
 •A3 - Confirmed animal carcinogen with unknown relevance to humans
 •A4 - Not classifiable as a human carcinogen
 •A5 - Not suspected as a human carcinogen
 IARC - International Agency for Research on Cancer
 •Group 1 - Carcinogenic to humans
 •Group 2A - Probably carcinogenic to humans
 •Group 2B - Possibly carcinogenic to humans
 •Group 3 - Not classifiable as to carcinogenicity to humans
 •Group 4 - Probably not carcinogenic to humans
 NTP - National Toxicology Program, U.S. Department of Health and Human Services
 •Group K - Known to be Human Carcinogens
 •Group R - Reasonably Anticipated to be Human Carcinogens
 ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
 RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
 IMDG: International Maritime Code for Dangerous Goods
 DOT: US Department of Transportation
 IATA: International Air Transport Association
 EINECS: European Inventory of Existing Commercial Chemical Substances
 ELINCS: European List of Notified Chemical Substances
 CAS: Chemical Abstracts Service (division of the American Chemical Society)
 LC50: Lethal concentration, 50 percent
 LD50: Lethal dose, 50 percent
 NIOSH: National Institute for Occupational Safety
 OSHA: Occupational Safety & Health
 TLV: Threshold Limit Value
 PEL: Permissible Exposure Limit
 REL: Recommended Exposure Limit
 Met. Corr. 1: Corrosive to metals – Category 1
 Acute Tox. 2: Acute toxicity – Category 2
 Acute Tox. 3: Acute toxicity – Category 3
 Acute Tox. 1: Acute toxicity – Category 1
 Skin Corr. 1A: Skin corrosion/irritation – Category 1A
 Skin Corr. 1B: Skin corrosion/irritation – Category 1B
 Eye Dam. 1: Serious eye damage/eye irritation – Category 1
 Aquatic Acute 1: Hazardous to the aquatic environment - acute aquatic hazard – Category 1
 Aquatic Chronic 1: Hazardous to the aquatic environment - long-term aquatic hazard – Category 1

- **Sources**

Data arise from safety data sheets, reference works and literature.
 IUCLID (International Uniform Chemical Information Database)
 ECHA: European Chemicals Agency <http://echa.europa.eu>
 GESTIS- Stoffdatenbank (Substance Database, Germany)

- * **Data compared to the previous version altered.**