

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

Printing date 05/06/2022

Reviewed on 05/06/2022

1 Identification

- **Product identifier**
- **Trade name:** Vario Sulfa 4 F10, F25 ml
- **Catalogue number:** 00532159, 00532169, 532150, 532153, 532160, 532162, 4532150, 4532160
- **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 Toxicity - Oral 3

H301 Toxic if swallowed.



GHS07

Acute Toxicity - Inhalation 4

H332 Harmful if inhaled.

Eye Irritation 2A

H319 Causes serious eye irritation.

Specific Target Organ Toxicity - Single Exposure 3 H335 May cause respiratory irritation.

- **Label elements**

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

- **Hazard pictograms**



GHS06



GHS07

- **Signal word** Danger

- **Hazard-determining components of labeling:**

barium chloride dihydrate

citric acid

- **Hazard statements**

H301 Toxic if swallowed.

H332 Harmful if inhaled.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

- **Precautionary statements**

P261 Avoid breathing dust.

P280 Wear protective gloves/protective clothing/eye protection.

P301+P310 If swallowed: Immediately call a poison center/doctor.

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.

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P405 Store locked up.

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· **Other hazards** No further relevant information available.

3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** Mixture of organic and inorganic compounds
- **Composition and Information on Ingredients:**
Percent ranges are used due to the confidential product information.

CAS: 77-92-9 EINECS: 201-069-1 Index number: 607-750-00-3 RTECS: GE 7350000	citric acid ⚠ Eye Irritation 2A, H319; Specific Target Organ Toxicity - Single Exposure 3, H335	50–60%
CAS: 10326-27-9 EINECS: 233-788-1 Index number: 056-004-00-8 RTECS: CQ 8751000	barium chloride dihydrate ⚠ Acute Toxicity - Oral 3, H301; ⚠ Acute Toxicity - Inhalation 4, H332	40–50%

- **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:** Immediately remove any clothing soiled by the product.
- **After inhalation:** Supply fresh air or oxygen; call for doctor.
- **After skin contact:** Immediately rinse with plenty of water.
- **After eye contact:** Rinse opened eye for several minutes (at least 15 min) under running water. Then consult a doctor.
- **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**
irritations
resorption
after inhalation:
mucosal irritations, cough, breathing difficulty
after swallowing:
sickness
vomiting
diarrhoea
pain
dizziness
CNS disorders
after resorption:
respiratory paralysis
- **Danger:**
Danger of circulatory collapse.
Danger of disturbed cardiac rhythm.
- **Indication of any immediate medical attention and special treatment needed:**
1-5% sodium sulfate solution in acute poisoning

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**
Substance/product is self extinguishing, but can burn when combined with flammable material.
Formation of toxic gases is possible during heating or in case of fire.
Hydrogen chloride (HCl)
Carbon monoxide (CO) and carbon dioxide (CO₂)

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- **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.

Ensure adequate ventilation

Use respiratory protective device against the effects of fume/dust/aerosol.

- **Advice for emergency responders:** Protective equipment: see section 8

- **Environmental precautions:** Do not allow product to reach sewage system or any water course.

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

Ensure adequate ventilation.

Pick up mechanically.

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.

Ensure good ventilation/exhaustion at the workplace.

Prevent formation of dust.

- **Hygiene measures:**

Do not inhale dust / smoke / mist.

Avoid contact with the eyes.

Take off immediately all contaminated clothing.

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**

- **Requirements to be met by storerooms and receptacles:** Store in a cool location.

- **Information about storage in one common storage facility:** Not required.

- **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.

Store in dry conditions.

Protect from humidity and water.

- **Recommended storage temperature:** 20°C +/- 5°C (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: 10326-27-9 barium chloride dihydrate

PEL (USA)	Long-term value: 0.5 mg/m ³ as Ba
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REL (USA)	Long-term value: 0.5 mg/m ³ as Ba
TLV (USA)	Long-term value: 0.5 mg/m ³ as Ba, A4
EL (Canada)	Long-term value: 0.5 mg/m ³ as Ba

- **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:**
Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled.
- **Breathing equipment:** Use respiratory protective device against the effects of fume/dust/aerosol.
- **Recommended filter device for short term use:** Filter P2
- **Protection of hands:**
Protective 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
Recommended thickness of the material: ≥ 0.11 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:**
Safety glasses
Use protective goggles that have been tested and approved in accordance with government standards (like NIOSH).
- **Body protection:** Protective work clothing
- **Limitation and supervision of exposure into 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:** Powder
- **Color:** White
- **Odor:** Odorless
- **Odor threshold:** Not applicable.
- **pH-value (12 g/l) at 20°C (68°F):** 2.3
- **Melting point/freezing point:** Not determined.
- **Initial boiling point and boiling range:** Not determined.
- **Flash point:** Not applicable.
- **Flammability (solid, gas):** The product is not combustible.
- **Ignition temperature:** Not applicable (solid).
- **Decomposition temperature:** $> 100^{\circ}\text{C}$ ($> 212^{\circ}\text{F}$) (CAS 20326-27-9)
- **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 applicable.
- **Density at 20°C (68°F):** 2.65 g/cm³ (22.11 lbs/gal)
- **Relative density:** Not determined.
- **Vapor density:** Not applicable.
- **Evaporation rate:** Not applicable.
- **Solubility(ies)**
- **Water:** Soluble.

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- **Partition coefficient (n-octanol/water):** Not applicable (mixture).
- **Viscosity:**
- **Kinematic:** Not applicable (solid).
- **Other information**
- **Solids content:** 100.0 %

10 Stability and reactivity

- **Reactivity** see section "Possibility of hazardous reactions"
- **Chemical stability** Stable at ambient temperature (room temperature).
- **Possibility of hazardous reactions**
 Aqueous solution reacts acidic.
 Aqueous solution reacts with metals.
 Reacts with acids.
 Reacts with reducing agents.
 Reacts with various metals.
 Citric acid: incompatible with bases, strong oxidizers, amines. Contact with metal nitrates may be explosive. Attacks aluminum, copper, zinc und their alloys, when wet.
 Reacts with strong oxidizing agents.
 furan-2-percarbonic acid
 ----> Danger of explosion.
- **Conditions to avoid** Strong heating (decomposition)
- **Incompatible materials:**
 metals
 aluminum, copper, zinc, metal ions
 combustible materials
- **Hazardous decomposition products:**
 Chlorine compounds
 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)	214 mg/kg (.)
Inhalative	GHS ATE _(MIX)	3.3 mg/l/4h (dust)

· **LD/LC50 values that are relevant for classification:**

CAS: 77-92-9 citric acid

Oral	LD50	3000 mg/kg (rat) (IUCLID)
Dermal	LD50.	>2000 mg/kg (rat) (limit test: there were no deaths)

CAS: 10326-27-9 barium chloride dihydrate

Oral	LD50	100 mg/kg (ATE) (for calculation) 118 mg/kg (rat) (anhydrous - IUCLID)
Inhalative	LC50/4h	1.5 mg/l (ATE)

- **Primary irritant effect:**
- **on the skin:** Based on available data, the classification criteria are not met.
- **on the eye:** Causes serious eye irritation.
- **Information on components:**
 CAS 10326-27-9: chronic: dermatitis
 Citric acid: A single drop of a 2% or 5% solution in water causes little or no irritation.
 A 0.5% solution held in contact with the eye causes irreversible tissue damage to the cornea.
 Citric Acid caused mild irritation when 500 mg was tested on rabbit skin in a 24-hour test.
 (CHEMINFO, Canadian Centre for Occupational Health and Safety)

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CAS: 77-92-9 citric acid

Irritation of skin	OECD 404	(rabbit: no irritation)
Irritation of eyes	OECD 405	(rabbit: severe irritations)

· **Sensitization:** Based on available data, the classification criteria are not met.

· **Information on components:****CAS: 77-92-9 citric acid**

Sensitization	OECD 406	(guinea pig: negative) (EPA OPP 81-6: Guinea pig maximisation test)
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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.· **STOT (specific target organ toxicity) -single exposure** May cause respiratory irritation.· **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.· **Information on components:****CAS: 77-92-9 citric acid**

OECD 471	(negative) (Bacterial Reverse Mutation Test - Ames test)
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· **Additional toxicological information:**

CAS 10326-27-9: Absorption through gastro-intestinal tract, mucous membranes

CAS: 77-92-9 citric acid

·	(source: GESTIS)
	Main toxic effects:
	Acute: Irritant effect on the eyes and upper respiratory tract; no evidence of systemic toxic effects under occupationally relevant exposure conditions
	chronic: irritative effects on mucous membranes and skin.
	Enamel damage, dermatitis (Merck)
	Further information:
	Depending on the pH value, dust or concentrated aqueous solutions are highly irritating to corrosive to the eye.

· **Other information** Other dangerous properties can not be excluded.

12 Ecological information

· **Toxicity**· **Aquatic toxicity:****CAS: 77-92-9 citric acid**

EC50	~120 mg/l (Daphnia magna) (72 h) (IUCLID)
EC5	485 mg/l (Entosiphon sulcatum) (72h) (MERCK)
LC50	440–760 mg/l/96h (gold orfe) (IUCLID)

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CAS: 10326-27-9 barium chloride dihydrateLC50 870 mg/l/48h (gold orfe)
IUCLIDEC50 21.9 mg/l/48h (Daphnia magna)
(IUCLID)· **Bacterial toxicity:****CAS: 77-92-9 citric acid**

EC5 >10000 mg/l (Pseudomonas putida) (16h (Lit.))

· **Other information:**

Toxic for fish:

Ba > 158 mg/l

· **Persistence and degradability**

The organic portion of the product is biodegradable.

CAS: 77-92-9 citric acid

OECD 301 B 97 % / 28 d (readily biodegradable) (CO2 Evolution Test)

OECD 302 B 98 % / 2 d (readily eliminated from water) (Zahn-Wellens / EMPA Test)

· **Bioaccumulative potential**

Pow = n-octanol/wasser partition coefficient

log Pow < 1 = Does not accumulate in organisms.

CAS: 77-92-9 citric acid

log Pow -1.72 (.) (OECD 117, 20°C)

CAS: 10326-27-9 barium chloride dihydrate

log Pow 0.85 (.)

· **Mobility in soil** No further relevant information available.· **Other adverse effects**

Harmful effect due to pH shift.

Reacts with water to harmful mixtures.

Avoid transfer into the environment.

13 Disposal considerations

· **Waste treatment methods**· **Recommendation:**

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

Hand over to hazardous waste disposers.

· **Uncleaned packagings:**· **Recommendation:** Disposal must be made according to official regulations.· **Recommended cleansing agent:** Water, if necessary with cleansing agents.

14 Transport information

· **UN-Number**· **DOT, IMDG, IATA**

UN1564

· **UN proper shipping name**· **DOT**

Barium compounds, n.o.s. (barium chloride dihydrate)

· **IMDG, IATA**

BARIUM COMPOUND, N.O.S. (barium chloride dihydrate)

· **Transport hazard class(es)**· **DOT**· **Class**

6.1 Toxic substances

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· Label	6.1
· IMDG, IATA	
	
· Class	6.1 Toxic substances
· Label	6.1
· Packing group	
· DOT, IMDG, IATA	III
· Environmental hazards:	Not applicable.
· Special precautions for user	Warning: Toxic substances
· Hazard identification number (Kemler code):	60
· EMS Number:	F-A,S-A
· Stowage Category	A
· Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code	Not applicable.
· Transport/Additional information:	
· DOT	
· Quantity limitations	On passenger aircraft/rail: 100 kg On cargo aircraft only: 200 kg
· IMDG	
· Limited quantities (LQ)	5 kg
· Excepted quantities (EQ)	Code: E1 Maximum net quantity per inner packaging: 30 g Maximum net quantity per outer packaging: 1000 g

*15 Regulatory information

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

· Section 355 (Extremely hazardous substances):

None of the ingredients is listed.

· Section 313 (Specific toxic chemical listings):

CAS: 10326-27-9 | barium chloride dihydrate

· TSCA (Toxic Substances Control Act):

CAS 10326-27-9 is not on the TSCA Inventory listed, because it is a hydrate. It is listed on the CAS 10361-37-2 number for the anhydrous form.

CAS: 77-92-9 | citric acid

ACTIVE

· Hazardous Air Pollutants

None of the ingredients is 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:

None of the ingredients is listed.

· Chemicals known to cause developmental toxicity:

None of the ingredients is listed.

· New Jersey Right-to-Know List:

None of the ingredients is listed.

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· New Jersey Special Hazardous Substance List:		
None of the ingredients is listed.		
· Pennsylvania Right-to-Know List:		
None of the ingredients is listed.		
· Pennsylvania Special Hazardous Substance List:		
None of the ingredients is listed.		
· EPA (Environmental Protection Agency)		
CAS: 10326-27-9	barium chloride dihydrate	D, CBD(inh), NL(oral)
· NIOSH-Ca (National Institute for Occupational Safety and Health)		
None of the ingredients is listed.		
· Information about limitation of use: 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

H301 Toxic if swallowed.
H319 Causes serious eye irritation.
H332 Harmful if inhaled.
H335 May cause respiratory irritation.

· **Date of preparation / last revision** 05/06/2022 / 35

· Abbreviations and acronyms:

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
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
Acute Toxicity - Oral 3: Acute toxicity – Category 3
Acute Toxicity - Inhalation 4: Acute toxicity – Category 4
Eye Irritation 2A: Serious eye damage/eye irritation – Category 2A
Specific Target Organ Toxicity - Single Exposure 3: Specific target organ toxicity (single exposure) – Category 3

· 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>

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GESTIS- Stoffdatenbank (Substance Database, Germany)

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

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