

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

Printing date 06/01/2022

Reviewed on 06/01/2022

1 Identification

- **Product identifier**
- **Trade name: Vario FE in MO RGT 2**
- **Catalogue number:** 00530329, 530320, 530322, 00530321
- **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**



Eye Irritation 2A
Specific Target Organ Toxicity - Single Exposure 3

H319 Causes serious eye irritation.
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**



- **Signal word** Warning
- **Hazard-determining components of labeling:**
citric acid
- **Hazard statements**
H319 Causes serious eye irritation.
H335 May cause respiratory irritation.
- **Precautionary statements**
P261 Avoid breathing dust.
P280 Wear eye protection / face protection.
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P312 Call a poison center/doctor if you feel unwell.
P337+P313 If eye irritation persists: Get medical advice/attention.
- **Other hazards** No further relevant information available.

* 3 Composition/information on ingredients

- **Chemical characterization: Mixtures**
- **Description:** mixture of organic compounds

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Trade name: Vario FE in MO RGT 2

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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	20–30%
CAS: 12125-02-9 EINECS: 235-186-4 Index number: 017-014-00-8 RTECS: BP 4550000	ammonium chloride ⚠ Acute Toxicity - Oral 4, H302; Eye Irritation 2A, H319	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:** Immediately remove any clothing soiled by the product.

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.

· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

· **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.

If symptoms persist consult doctor.

· **Most important symptoms and effects, both acute and delayed**

irritations

after inhalation:

mucosal irritations, cough, breathing difficulty

after swallowing of large amounts:

sickness

vomiting

diarrhoea

pain

Systemic effects:

narcotic conditions

respiratory paralysis

disorder of electrolyte balance

· **Danger:**

Risk of corneal clouding.

Danger of circulatory collapse.

· **Indication of any immediate medical attention and special treatment needed:** No further relevant information available.

* 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**

mixture with combustible ingredients

Formation of toxic gases is possible during heating or in case of fire.

· **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.

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Avoid substance contact.

Ensure adequate ventilation

Avoid breathing dust.

· **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:** 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.

Unsuitable material for container: metals, metal alloys

· **Information about storage in one common storage facility:** Not required.· **Further information about storage conditions:**

Protect from heat and direct sunlight.

Store in cool, dry conditions in well sealed receptacles.

Protect from exposure to the light.

Protect from humidity and water.

This product is hygroscopic.

· **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:**

The following constituent is the only constituent of the product which has a PEL, TLV or other recommended exposure limit.

CAS: 12125-02-9 ammonium chlorideREL (USA) Short-term value: 20 mg/m³Long-term value: 10 mg/m³TLV (USA) Short-term value: 20 mg/m³Long-term value: 10 mg/m³EL (Canada) Short-term value: 20 mg/m³Long-term value: 10 mg/m³

fume

EV (Canada) Short-term value: 20 mg/m³Long-term value: 10 mg/m³

fume

· **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.

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- **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:** Beige
- **Odor:** Odorless
- **Odor threshold:** Not applicable.
- **pH-value (35.6 g/l) at 20°C (68°F):** 3.5
- **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:** $>175^{\circ}\text{C}$ ($>347^{\circ}\text{F}$) (CAS 77-92-9)
- **Auto-ignition temperature:** Product is not self-igniting.
- **Danger of explosion:** Risk of dust explosion if enriched with fine dust in the presence of air.
- **Flammability or explosive limits:**
- **Lower:** Not determined.
- **Upper:** Not applicable (solid).
- **Oxidizing properties:** none
- **Vapor Pressure:** Not applicable (solid).
- **Density at 20°C (68°F):** ~ 1.1 g/cm³ (~ 9.18 lbs/gal)
- **Relative density:** Not determined.
- **Vapor density:** Not applicable.
- **Evaporation rate:** Not applicable.
- **Solubility(ies)**
- **Water:** Soluble.
- **Partition coefficient (n-octanol/water):** Not applicable (mixture).
- **Viscosity:** Not applicable.
- **Kinematic:** Not applicable (solid).
- **Other information**
- **Solids content:** 100 %

* 10 Stability and reactivity

- **Reactivity** Dust can combine with air to form an explosive mixture.
- **Chemical stability** Stable at ambient temperature (room temperature).

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· Possibility of hazardous reactions

Aqueous solution reacts acidic.

Aqueous solution reacts with metals.

Reacts with reducing agents.

Reacts with oxidizing agents.

Citric acid: incompatible with bases, strong oxidizers, amines. Contact with metal nitrates may be explosive. Attacks aluminum, copper, zinc und their alloys, when wet.

· **Conditions to avoid** Strong heating (decomposition)

· Incompatible materials:

metals

aluminum, copper, zinc, metal ions

· **Hazardous decomposition products:** see section 5

* 11 Toxicological information

· Information on toxicological effects

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

· 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: 12125-02-9 ammonium chloride

Oral	LD50	1410 mg/kg (rat) (OECD 1410) (Merck)
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· 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:

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)

CAS: 77-92-9 citric acid

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

CAS: 12125-02-9 ammonium chloride

Irritation of eyes	OECD 405	(rabbit: irritation)
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· **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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CAS: 12125-02-9 ammonium chloride

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

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- **CMR effects (carcinogenity, 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:**
 - OECD 414: Teratogenicity testing
 - OECD 473: Mutagenicity testing
 - OECD 471, 474, 476, 487: Germ cell mutagenicity testing

CAS: 77-92-9 citric acid	
OECD 471	(negative) (Bacterial Reverse Mutation Test - Ames test)
CAS: 12125-02-9 ammonium chloride	
OECD 471	(negative) (Escherichia coli / Salmonella typhimurium)

- **Additional toxicological information:**

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.
CAS: 12125-02-9 ammonium chloride	
.	(source: GESTIS) Main toxic effects: acute: pronounced irritation of the eyes, mucous membranes and respiratory tract, slightly irritating to the skin; after high oral doses: acidosis chronic: irritation of the eyes, mucous membranes and respiratory tract, slightly irritating to the skin; after high oral doses: systemic effects with metabolic acidosis and impairment of general well-being

- **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)
CAS: 12125-02-9 ammonium chloride	
EC50	>100 mg/l/48h (Daphnia magna)
LC50	42.91 mg/l/96h (rainbow trout) (Merck)
Bacterial toxicity:	
CAS: 77-92-9 citric acid	
EC5	>10000 mg/l (Pseudomonas putida) (16h (Lit.))

- **Other information:**

Toxic for fish:

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NH₄⁺ > 0.3 mg/l
Persistence and degradability
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: 12125-02-9 ammonium chloride

log Pow | -4.37 (.)

Mobility in soil No further relevant information available.

Other adverse effects 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 none

UN proper shipping name
DOT, IMDG, IATA none

Transport hazard class(es)
DOT, IMDG, IATA
Class none

Packing group
DOT, IMDG, IATA none

Environmental hazards:
Marine pollutant: No

Special precautions for user

Not applicable.

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code

Not applicable.

Transport/Additional information:

Not dangerous according to the above specifications.

*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):

None of the ingredients is listed.

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· TSCA (Toxic Substances Control Act):
All components have the value 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:
CAS: 12125-02-9 ammonium chloride
· New Jersey Special Hazardous Substance List:
None of the ingredients is listed.
· Pennsylvania Right-to-Know List:
CAS: 12125-02-9 ammonium chloride
· Pennsylvania Special Hazardous Substance List:
CAS: 12125-02-9 ammonium chloride
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· EPA (Environmental Protection Agency)
None of the ingredients is listed.
· NIOSH-Ca (National Institute for Occupational Safety and Health)
None of the ingredients is listed.
· Information about limitation of use: Not required.
· 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

H302 Harmful if swallowed.

H319 Causes serious eye irritation.

H335 May cause respiratory irritation.

· **Date of preparation / last revision** 06/01/2022 / 5

· 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

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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 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.
ECHA: European CHemicals Agency <http://echa.europa.eu>
GESTIS- Stoffdatenbank (Substance Database, Germany)
IUCLID (International Uniform Chemical Information Database)

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

US