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

Printing date 03/14/2022 Reviewed on 03/14/2022

1 Identification

· **Product identifier**

· **Trade name: Vario DEHA 2 RGT**

· **Catalogue number:** 531410, 4531410, 424457, 531410-0

· **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**

GHS05 Corrosion

Corrosive to Metals 1	H290 May be corrosive to metals.
Skin Corrosion 1B	H314 Causes severe skin burns and eye damage.
Eye Damage 1	H318 Causes serious eye damage.

GHS07

Acute Toxicity - Inhalation 4 H332 Harmful if inhaled.

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

GHS05 GHS07

· **Signal word** Danger
· **Hazard-determining components of labeling:**
nitric acid 14%
iron(III) nitrate nonahydrate
· **Hazard statements**
H290 May be corrosive to metals.
H332 Harmful if inhaled.
H314 Causes severe skin burns and eye damage.
· **Precautionary statements**

P260	Do not breathe mist/vapours/spray.
P280	Wear protective gloves/protective clothing/eye protection.
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.

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P310 Immediately call a poison center/doctor.

· **Other hazards**
Acid burns have to treated immediately, as it may otherwise cause badly curing wounds.
Corrosive to the respiratory tract.

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: 7697-37-2 EINECS: 231-714-2 Index number: 007-030-00-3	nitric acid Oxidizing Liquids 3, H272; Acute Toxicity - Inhalation 3, H331; Corrosive to Metals 1, H290; Skin Corrosion 1A, H314	10–<20%
CAS: 7782-61-8 EINECS: 233-899-5	iron(III) nitrate nonahydrate Oxidizing Solids 3, H272; Skin Corrosion 1B, H314; Eye Damage 1, H318	2.5–<3%

· **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.
Immediately remove any clothing soiled by the product.
· **After inhalation:** Supply fresh air or oxygen; call for doctor.
· **After skin contact:**
Immediately wash with polyethylene glycol 400.
Immediately rinse with plenty of water.
Immediate medical treatment necessary. Failure to treat burns can prevent wounds from healing.
· **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.
Do not induce vomiting; immediately call for medical help.
· **Most important symptoms and effects, both acute and delayed**
burns
after inhalation:
damage to the affected mucous membranes
coughing
breathing difficulty
after swallowing:
strong caustic effect
pain
cramps
vomiting
bloody diarrhoea
after absorption of large amounts:
methaemoglobinaemia
· **Danger:**
Danger of circulatory collapse.
Danger of gastric perforation.
Danger of pulmonary edema.
· **Indication of any immediate medical attention and special treatment needed:**
If swallowed or in case of vomiting, danger of entering the lungs.
Later observation for pneumonia and pulmonary edema.

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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.
In case of fire, the following can be released:
nitrous gases
Nitrogen oxides (NOx)
iron oxide
· **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 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.
Neutralize with diluted sodium hydroxide solution or by throwing on lime sand, lime or sodium carbonate.
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:**
Ensure good ventilation/exhaustion at the workplace.
Prevent formation of aerosols.
· **Hygiene measures:**
Do not inhale gases / fumes / aerosols.
Do not get in eyes, on skin, or on clothing.
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.
Keep only in original container.
· **Information about storage in one common storage facility:**
Store away from metals.
Store away from flammable substances.
Store away from reducing agents.
Do not store together with alkalis (caustic solutions).
· **Further information about storage conditions:**
Keep receptacle tightly sealed.

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Protect from heat and direct sunlight.
Protect from exposure to the light.
Store in the dark.
Protect from humidity and water.

· **Recommended storage temperature:** 10°C - 25°C (50°F - 77°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: 7697-37-2 nitric acid	
PEL (USA)	Long-term value: 5 mg/m³, 2 ppm
REL (USA)	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm
TLV (USA)	Short-term value: 4 ppm Long-term value: 2 ppm
EL (Canada)	Short-term value: 4 ppm Long-term value: 2 ppm
EV (Canada)	Short-term value: 10 mg/m³, 4 ppm Long-term value: 5 mg/m³, 2 ppm

· **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:** Combination filter E-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:**
Tightly sealed goggles
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:**	Solution
· **Color:**	Colorless
· **Odor:**	Pungent
· **Odor threshold:**	CAS 7697-37-2: 0.27 ppm (anhydrous substance)
· **pH-value at 20°C (68°F):**	< 1 Strongly acidic

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· **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.
· **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:**	Oxidizing potential CAS 7697-37-2 / 7782-61-8: is classified as oxidizing.
· **Vapor Pressure:**	Not determined.
· **Density at 20°C (68°F):**	1.07 g/cm³ (8.93 lbs/gal)
· **Relative density:**	Not determined.
· **Vapor density:**	Not determined.
· **Evaporation rate:**	Not determined.
· **Solubility(ies)**	
· **Water:**	Fully miscible.
· **Partition coefficient (n-octanol/water):**	Not applicable (mixture).
· **Viscosity:**	Not determined.
· **Kinematic:**	Not determined.
· **Other information**	
· **Solids content:**	< 5 %
· **Solvent content:**	
· **Organic solvents:**	0 %
· **Water:**	> 80 %

· **Information with regard to physical hazard classes** May be corrosive to metals.

* 10 Stability and reactivity

· **Reactivity** see section "Possibility of hazardous reactions"
· **Chemical stability**
Stable at ambient temperature (room temperature).
sensitivity to light
· **Possibility of hazardous reactions**
Reacts with metals forming hydrogen (Danger of explosion!)
Corrosive action on metals.
Reacts with alcohols.
Reacts with reducing agents.
Reacts with metals to form nitrous fumes and hydrogen (Danger of explosion!).
Acts as an oxidizing agent on organic materials such as wood, paper and fats.
Reacts with acids and alkali (lyes).
Reacts with ammonia (NH_3).
· **Conditions to avoid** To avoid thermal decomposition do not overheat.
· **Incompatible materials:**
metals
alkali metals
combustible materials
organic solvents
organic substances
· **Hazardous decomposition products:**
nitrous gases
In case of fire: see section 5.

* 11 Toxicological information

· **Information on toxicological effects**

· **Acute toxicity:**
Classification according to calculation procedure.

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Harmful if inhaled.

· **Acute toxicity estimate ($ATE_{(MIX)}$) - Calculation method:**		
Inhalative	GHS $ATE_{(MIX)}$	19 mg/l/4h (vapour)

· **LD/LC50 values that are relevant for classification:**		
CAS: 7697-37-2 nitric acid		
Oral	LDLo	430 mg/kg (human) (IUCLID)
Inhalative	LC50/4h	2.65 mg/l (ATE) Registrant, ECHA: Under the conditions of the study (OECD 403) the LC50 for male and female rats after inhalation exposure to vapor atmosphere of nitric acid containing 0.8 % aerosol fraction is > 2.65 mg/L (referring to pure nitric acid).
CAS: 7782-61-8 iron(III) nitrate nonahydrate		
Oral	LD50	3250 mg/kg (rat) (RTECS)
Dermal	LD50.	>2000 mg/kg (rat) (OECD 402) Registrant, ECHA: No deaths occurred at the limit dose level of 2000 mg/kg/bw.

· **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.

· **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 (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** 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 applies to soluble iron compounds: nausea and vomiting after swallowing. The absorption of large quantities is followed by cardiovascular disorders. Toxic effect on liver and kidneys.
Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.
The aerosol is corrosive to the eyes, the skin and the respiratory tract. Inhalation of aerosols may cause lung oedema.

CAS: 7697-37-2 nitric acid
. (source: GESTIS) Main toxic effects Acute: Irritation and corrosion to the eyes, airways and skin, danger of severe damage to the eyes and lungs, after swallowing life threatening chemical burns in the gastrointestinal tract Chronic: Diseases of the airways, damage to the teeth

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CAS: 7782-61-8 iron(III) nitrate nonahydrate

. (source: GESTIS)
Main toxic effects CAS 10421-48-4, (anhydrous):
Acute effects: irritant and corrosive effect on the eyes, the mucosae and the skin
Oral toxicities cause injuries of the gastrointestinal tract, the liver and the cardiovascular system, life-threatening toxicities are possible.
In susceptible individuals and after exposure to high nitrate doses: methaemoglobin formation.
Chronic effects: accumulation entails tissue damage of the internal organs.
In susceptible individuals and after exposure to high nitrate doses: methaemoglobin formation.

* 12 Ecological information

· **Toxicity**

· **Aquatic toxicity:**

CAS: 7697-37-2 nitric acid

LC50	72 mg/l/96h (mosquitofish) (IUCLID)

· **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: 7697-37-2 nitric acid

log Pow	-2.3 (.)

· **Mobility in soil** No further relevant information available.
· **Other adverse effects**
Depending on the concentration, phosphorus and/or nitrogen compounds may contribute to the eutrophication of water supplies.
Harmful effect due to pH shift.
Forms corrosive mixtures with water even if diluted.
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**	UN2031
· **UN proper shipping name**	
· **DOT**	Nitric acid mixture
· **IMDG, IATA**	NITRIC ACID mixture

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· **Transport hazard class(es)**

· **DOT**

· **Class**	8 Corrosive substances
· **Label**	8

· **IMDG, IATA**

· **Class**	8 Corrosive substances
· **Label**	8
· **Packing group**	
· **DOT, IMDG, IATA**	II
· **Environmental hazards:**	Not applicable.
· **Special precautions for user**	Warning: Corrosive substances
· **Hazard identification number (Kemler code):**	80
· **EMS Number:**	F-A,S-B
· **Segregation groups**	Strong acids
· **Stowage Category**	D
· **Segregation Code**	SG36 Stow "separated from" SGG18-alkalis. SG49 Stow "separated from" SGG6-cyanides
· **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: Forbidden On cargo aircraft only: 30 L
· **IMDG**	
· **Limited quantities (LQ)**	1L
· **Excepted quantities (EQ)**	Code: E2 Maximum net quantity per inner packaging: 30 ml Maximum net quantity per outer packaging: 500 ml

15 Regulatory information

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

· **Section 355 (Extremely hazardous substances):**

CAS: 7697-37-2	nitric acid

· **Section 313 (Specific toxic chemical listings):**

CAS: 7697-37-2	nitric acid
CAS: 7782-61-8	iron(III) nitrate nonahydrate

· **TSCA (Toxic Substances Control Act):**
CAS 7782-61-8 is not on the TSCA Inventory listed, because it is a hydrate.
It is listed on the CAS 10421-48-4 number for the anhydrous form.

All components have the value ACTIVE.

· **Hazardous Air Pollutants**

None of the ingredients is listed.

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· **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: 7697-37-2	nitric acid

· **New Jersey Special Hazardous Substance List:**

CAS: 7697-37-2	nitric acid	CO, R2

· **Pennsylvania Right-to-Know List:**

CAS: 7697-37-2	nitric acid

· **Pennsylvania Special Hazardous Substance List:**

CAS: 7697-37-2	nitric acid	E

· **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:** 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**
H272 May intensify fire; oxidizer.
H290 May be corrosive to metals.
H314 Causes severe skin burns and eye damage.
H318 Causes serious eye damage.
H331 Toxic if inhaled.

· **Date of preparation / last revision** 03/14/2022 / 20

· **Abbreviations and acronyms:**
STOT: specific target organ toxicity
SE: single exposure
RE: repeated exposure
EC50: half maximal effective concentration
IC50: hallf 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)

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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
Oxidizing Liquids 3: Oxidizing liquids – Category 3
Oxidizing Solids 3: Oxidizing solids – Category 3
Corrosive to Metals 1: Corrosive to metals – Category 1
Acute Toxicity - Inhalation 3: Acute toxicity – Category 3
Acute Toxicity - Inhalation 4: Acute toxicity – Category 4
Skin Corrosion 1A: Skin corrosion/irritation – Category 1A
Skin Corrosion 1B: Skin corrosion/irritation – Category 1B
Eye Damage 1: Serious eye damage/eye irritation – 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)
RTECS (Registry of Toxic Effects of Chemical Substances)

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