

SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
 Name : Vanadium tetrachloride
 EC no : 231-561-1
 CAS No : 7632-51-1
 Formula : VCl₄

1.2. Relevant identified uses of the substance or mixture and uses advised against

1.2.1. Relevant identified uses

Use of the substance/mixture : Synthesis intermediate

1.2.2. Uses advised against

No additional information available

1.3. Details of the supplier of the safety data sheet

MSSA S.A.S.
 111, Rue de la Volta - Pomblière
 73600 SAINT-MARCEL - France
 T +33 (0)4 79 24 70 70 - F +33 (0)4 79 24 70 50
fds-msds@metauxspeciaux.fr

1.4. Emergency telephone number

Country	Organisation/Company	Address	Emergency number
United Kingdom	National Poisons Information Service (Birmingham Centre) City Hospital	Dudley Road B18 7QH Birmingham	0844 892 0111

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Acute Tox. 3 (Oral) H301
 Acute Tox. 3 (Dermal) H311
 Acute Tox. 3 (Inhalation:dust,mist) H331
 Skin Corr. 1B H314
 Aquatic Chronic 2 H411

Full text of classification categories and H statements : see section 16

Adverse physicochemical, human health and environmental effects : Toxic if swallowed, in contact with skin or if inhaled. Causes severe skin burns and eye damage. Reacts violently with water. Contact with water liberates toxic gas. Toxic to aquatic life with long lasting effects.

2.2. Label elements

Labelling according to Regulation (EC) No. 1272/2008 [CLP]

Hazard pictograms (CLP) :



Signal word (CLP) : Danger
 Hazard statements (CLP) : H301+H311+H331 - Toxic if swallowed, in contact with skin or if inhaled
 H314 - Causes severe skin burns and eye damage
 H411 - Toxic to aquatic life with long lasting effects
 Precautionary statements (CLP) : P260 - Do not breathe vapours
 P280 - Wear protective gloves, protective clothing, eye protection, face protection
 P301+P310 - IF SWALLOWED: immediately call a POISON CENTER or doctor/physician
 P303+P361+P353 - IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
 P304+P340 - IF INHALED: remove victim to fresh air and keep at rest in a position comfortable for breathing

Vanadium tetrachloride

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

	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 or doctor/physician if you feel unwell
	P403+P233 - Store in a well-ventilated place. Keep container tightly closed
	P501 - Dispose of contents/container to an approved waste disposal plant
EUH-statements	: EUH014 - Reacts violently with water EUH029 - Contact with water liberates toxic gas

2.3. Other hazards

No additional information available

SECTION 3: Composition/information on ingredients

3.1. Substance

Name	: Vanadium tetrachloride
CAS No	: 7632-51-1
EC no	: 231-561-1

3.2. Mixture

Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures general	: In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.
First-aid measures after inhalation	: Move the affected person away from the contaminated area and into the fresh air. Keep victim warm and rested. If breathing is difficult, give oxygen. Immediately call a POISON CENTER or doctor/physician.
First-aid measures after skin contact	: Immediately remove contaminated clothing or footwear. Rinse immediately with plenty of water. Be careful, the product may remain trapped under clothing, footwear or a wrist-watch. Immediately call a POISON CENTER or doctor/physician.
First-aid measures after eye contact	: Rinse immediately and thoroughly, pulling the eyelids well away from the eye (15 minutes minimum). Remove contact lenses, if present and easy to do. Continue rinsing. Consult an eye specialist immediately, even if there are no immediate symptoms.
First-aid measures after ingestion	: Do not induce vomiting. Give nothing to eat or drink. Rinse mouth out with water. Give activated charcoal. Call a physician immediately. If possible show him this sheet. Failing this, show him the packaging or label. Transfer to hospital rapidly.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after inhalation	: Irritation to respiratory tract.
Symptoms/injuries after skin contact	: Burns. Ulcerations. Bleeding. Bloody scabs.
Symptoms/injuries after eye contact	: Burns. Serious damage to eyes.
Symptoms/injuries after ingestion	: Corrosion or irritation of the linings of the mouth, throat, and gastrointestinal tract.

4.3. Indication of any immediate medical attention and special treatment needed

Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Suitable extinguishing media	: Carbon dioxide (CO ₂). Powder.
Unsuitable extinguishing media	: Water.

5.2. Special hazards arising from the substance or mixture

Hazardous decomposition products in case of fire	: hydrogenchloride. Chlorine. Vanadium oxides.
--	--

5.3. Advice for firefighters

Firefighting instructions	: Contain the extinguishing fluids by bunding.
Protection during firefighting	: Do not attempt to take action without suitable protective equipment : Self-contained breathing apparatus. Complete protective clothing.

Vanadium tetrachloride

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures : Avoid contact with skin and eyes. Do not breathe vapours. In case of important spillage : Only qualified personnel equipped with suitable protective equipment may intervene.

6.1.2. For emergency responders

Protective equipment : Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection".

6.2. Environmental precautions

Contain the spilled material by bunding (product is hazardous for the environment). Do not discharge into drains or rivers. Notify authorities if liquid enters sewers or public waters.

6.3. Methods and material for containment and cleaning up

For containment : Liquid spill: take up in sand, earth, vermiculite.

Methods for cleaning up : Wash contaminated area with large amounts of water. Clean preferably with a detergent - Avoid the use of solvents. Dispose of contaminated materials in accordance with current regulations.

6.4. Reference to other sections

For further information refer to section 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling : Ensure good ventilation of the work station. Vapour extraction at source. Avoid any direct contact with the product. Do not breathe vapours. Avoid contact of substance with water. Never open the packages under pressure. Access forbidden to unauthorised personnel. Smoking is forbidden. Closed system, if it is technically possible.

Hygiene measures : Do not drink, eat or smoke in the workplace. Always wash hands after handling the product. If on skin, take off contaminated clothing.

7.2. Conditions for safe storage, including any incompatibilities

Storage conditions : Store in dry, well-ventilated area. Keep container tightly closed. Keep away from food, drink and animal feeding stuffs.

Incompatible materials : Water.

Special rules on packaging : Store always product in container of same material as original container.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Vanadium tetrachloride (7632-51-1)

PNEC (Oral)

PNEC oral (secondary poisoning) Bioaccumulation unlikely

8.2. Exposure controls

Appropriate engineering controls : Ensure good ventilation of the work station. Extraction to remove vapours at their source. Safety shower. Eye fountain.

Personal protective equipment : Safety glasses. Gloves. Protective clothing. Gas mask.

Hand protection : Chemical resistant gloves (according to European standard NF EN 374 or equivalent). Breakthrough time : refer to the recommendations of the supplier

Eye protection : Safety glasses with side shields conformes à a norme NF EN166. In case of increased risk : Face shield

Skin and body protection : If there is a risk of liquid being splashed : Chemically impervious to liquids protective clothing (type 3) according to standard NF EN14605. If there is a risk of splashes : Chemically protective clothing (type 6) according to standard NF EN13034. Boots

Respiratory protection : Breathing apparatus with filter : ABE (NF EN14387)



Vanadium tetrachloride

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state	: Liquid
Appearance	: Fluid.
Molecular mass	: 192.75 g/mol
Colour	: brown -, red.
Odour	: chlorine.
Odour threshold	: No data available
pH	: Not applicable
Relative evaporation rate (butyl acetate=1)	: No data available
Melting point	: No data available
Freezing point	: No data available
Boiling point	: 150 °C
Flash point	: Not applicable (inorganic substance)
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Flammability (solid, gas)	: Not applicable
Vapour pressure	: No data available
Relative vapour density at 20 °C	: No data available
Relative density	: No data available
Density	: > 1
Solubility	: Water: Soluble
Log Pow	: Not applicable (inorganic substance)
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosive properties	: Not explosive.
Oxidising properties	: Non oxidizing material according to EC criteria.
Explosive limits	: No data available

9.2. Other information

No additional information available

SECTION 10: Stability and reactivity

10.1. Reactivity

Reacts violently with water. Contact with water liberates toxic gas.

10.2. Chemical stability

Stable at ambient temperature and under normal conditions of use.

10.3. Possibility of hazardous reactions

Reacts violently with water. Exothermic reaction with water.

10.4. Conditions to avoid

Moisture. Air contact.

10.5. Incompatible materials

Water. Alkali metals. Strong oxidizing agents.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity : Toxic if swallowed. Toxic in contact with skin. Toxic if inhaled.

Vanadium tetrachloride (7632-51-1)

LD50 oral rat	160 mg/kg
---------------	-----------

Skin corrosion/irritation : Causes severe skin burns and eye damage.
pH: Not applicable

Serious eye damage/irritation : Serious eye damage/eye irritation, Category 1
pH: Not applicable

Respiratory or skin sensitisation : Not classified (Lack of data)

Vanadium tetrachloride

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Germ cell mutagenicity	: Not classified (Lack of data)
Carcinogenicity	: Not classified (Lack of data)
Reproductive toxicity	: Not classified (Lack of data)
Specific target organ toxicity (single exposure)	: Not classified (Lack of data)
Specific target organ toxicity (repeated exposure)	: Not classified (Lack of data)
Aspiration hazard	: Not classified (Lack of data)

SECTION 12: Ecological information

12.1. Toxicity

Ecology - general : Toxic to aquatic life with long lasting effects.

12.2. Persistence and degradability

Vanadium tetrachloride (7632-51-1)	
Persistence and degradability	Hydrolysis : Instantaneous decomposition in the presence of moisture in the air.
Biodegradation	Not applicable (inorganic substance)

12.3. Bioaccumulative potential

Vanadium tetrachloride (7632-51-1)	
Log Pow	Not applicable (inorganic substance)

12.4. Mobility in soil

No additional information available

12.5. Results of PBT and vPvB assessment

No additional information available

12.6. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Waste treatment methods : Dispose of in accordance with relevant local regulations. Destroy at an authorised site.
Additional information : Empty the packaging completely prior to disposal. The user's attention is drawn to the possible existence of specific european, national or local regulations regarding disposal.

SECTION 14: Transport information

In accordance with ADR / RID / IMDG / IATA / ADN

14.1. UN number

UN-No. (ADR)	: 2444
UN-No. (IMDG)	: 2444
UN-No. (IATA)	: 2444
UN-No. (ADN)	: 2444
UN-No. (RID)	: 2444

14.2. UN proper shipping name

Proper Shipping Name (ADR)	: VANADIUM TETRACHLORIDE
Proper Shipping Name (IMDG)	: VANADIUM TETRACHLORIDE
Proper Shipping Name (IATA)	: Vanadium tetrachloride
Proper Shipping Name (ADN)	: VANADIUM TETRACHLORIDE
Proper Shipping Name (RID)	: VANADIUM TETRACHLORIDE
Transport document description (ADR)	: UN 2444 VANADIUM TETRACHLORIDE, 8, I, (E), ENVIRONMENTALLY HAZARDOUS
Transport document description (IMDG)	: UN 2444 VANADIUM TETRACHLORIDE, 8, I, MARINE POLLUTANT/ENVIRONMENTALLY HAZARDOUS

14.3. Transport hazard class(es)

ADR

Transport hazard class(es) (ADR)	: 8
Hazard labels (ADR)	: 8

Vanadium tetrachloride

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830



IMDG

Transport hazard class(es) (IMDG) : 8

Danger labels (IMDG) : 8



IATA

Transport hazard class(es) (IATA) : 8

Hazard labels (IATA) : 8



ADN

Transport hazard class(es) (ADN) : 8

Danger labels (ADN) : 8



RID

Transport hazard class(es) (RID) : 8

Danger labels (RID) : 8



14.4. Packing group

Packing group (ADR) : I

Packing group (IMDG) : I

Packing group (IATA) : I

Packing group (ADN) : I

Packing group (RID) : I

14.5. Environmental hazards

Dangerous for the environment : Yes

Marine pollutant : Yes

Other information :



Dangerous for the environment

Vanadium tetrachloride

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

14.6. Special precautions for user

- Overland transport

Classification code (ADR)	: C1
Limited quantities (ADR)	: 0
Excepted quantities (ADR)	: E0
Packing instructions (ADR)	: P802
Mixed packing provisions (ADR)	: MP8, MP17
Portable tank and bulk container instructions (ADR)	: T10
Portable tank and bulk container special provisions (ADR)	: TP2
Tank code (ADR)	: L10BH
Vehicle for tank carriage	: AT
Transport category (ADR)	: 1
Special provisions for carriage - Operation (ADR)	: S20
Hazard identification number (Kemler No.)	: X88
Orange plates	:



Tunnel restriction code (ADR)	: E
EAC code	: 4WE
APP code	: B

- Transport by sea

Limited quantities (IMDG)	: 0
Excepted quantities (IMDG)	: E0
Packing instructions (IMDG)	: P802
Tank instructions (IMDG)	: T10
Tank special provisions (IMDG)	: TP2
EmS-No. (Fire)	: F-A
EmS-No. (Spillage)	: S-B
Stowage category (IMDG)	: C
MFAG-No	: 137

- Air transport

PCA Excepted quantities (IATA)	: E0
PCA Limited quantities (IATA)	: Forbidden
PCA limited quantity max net quantity (IATA)	: Forbidden
PCA packing instructions (IATA)	: Forbidden
PCA max net quantity (IATA)	: Forbidden
CAO packing instructions (IATA)	: 854
CAO max net quantity (IATA)	: 2.5L
Special provisions (IATA)	: A1
ERG code (IATA)	: 8W

- Inland waterway transport

Classification code (ADN)	: C1
Limited quantities (ADN)	: 0
Excepted quantities (ADN)	: E0
Equipment required (ADN)	: PP, EP
Number of blue cones/lights (ADN)	: 0
Carriage prohibited (ADN)	: No
Not subject to ADN	: No

- Rail transport

Classification code (RID)	: C1
Limited quantities (RID)	: 0
Excepted quantities (RID)	: E0

Vanadium tetrachloride

Safety Data Sheet

according to Regulation (EC) No. 1907/2006 (REACH) with its amendment Regulation (EU) 2015/830

Packing instructions (RID)	: P802
Mixed packing provisions (RID)	: MP8, MP17
Portable tank and bulk container instructions (RID)	: T10
Portable tank and bulk container special provisions (RID)	: TP2
Tank codes for RID tanks (RID)	: L10BH
Special provisions for RID tanks (RID)	: TU38, TE22
Transport category (RID)	: 1
Hazard identification number (RID)	: X88
Carriage prohibited (RID)	: No

14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture

15.1.1. EU-Regulations

No REACH Annex XVII restrictions

Vanadium tetrachloride is not on the REACH Candidate List

Vanadium tetrachloride is not on the REACH Annex XIV List

15.1.2. National regulations

No additional information available

15.2. Chemical safety assessment

No chemical safety assessment has been carried out

SECTION 16: Other information

Indication of changes:

This sheet was updated (refer to the date at the top of this page). This sheet has been revised completely (changes were not marked).

Abbreviations and acronyms:

ADR	European Agreement concerning the International Carriage of Dangerous Goods by Road
RID	Regulations concerning the International Carriage of Dangerous Goods by Rai
IMDG	International Maritime Dangerous Goods
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
WGK	Wassergefährdungsklasse (Water Hazard Class).

Other information : Safety data sheet established by : LISAM SERVICES - TELEGIS
17, Rue de la Couture F-60400 PASSEL
Safety Made Easy with www.lisam.com.

Full text of H- and EUH-statements:

Acute Tox. 3 (Dermal)	Acute toxicity (dermal), Category 3
Acute Tox. 3 (Inhalation:dust,mist)	Acute toxicity (inhalation:dust,mist) Category 3
Acute Tox. 3 (Oral)	Acute toxicity (oral), Category 3
Aquatic Chronic 2	Hazardous to the aquatic environment — Chronic Hazard, Category 2
Skin Corr. 1B	Skin corrosion/irritation, Category 1B
H301	Toxic if swallowed
H311	Toxic in contact with skin
H314	Causes severe skin burns and eye damage
H331	Toxic if inhaled
H411	Toxic to aquatic life with long lasting effects
EUH014	Reacts violently with water
EUH029	Contact with water liberates toxic gas

This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product