

Vanadium trichloride oxide

Safety Data Sheet

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 07/28/2015

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Version: 2.0

SECTION 1: Identification

1.1. Identification

Product form : Substance
 Name : Vanadium trichloride oxide
 CAS-No. : 7727-18-6
 Formula : VOCl₃

1.2. Recommended use and restrictions on use

Use of the substance/mixture : Synthesis intermediate

1.3. Supplier

MSSA S.A.S.
 111, Rue de la Volta - Pomblière
 SAINT-MARCEL, 73600 - 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

Emergency number : Chemtrec (USA only) : 1-800-424-9300

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification

Skin corrosion/irritation Category 1A	H314	Causes severe skin burns and eye damage
Hazardous to the aquatic environment - Acute Hazard Category 2	H401	Toxic to aquatic life
Hazardous to the aquatic environment - Chronic Hazard Category 3	H412	Harmful to aquatic life with long lasting effects

Full text of H statements : see section 16

2.2. GHS Label elements, including precautionary statements

GHS-US labeling

Hazard pictograms (GHS-US) :



Signal word (GHS-US) :

Danger

Hazard statements (GHS-US) :

H314 - Causes severe skin burns and eye damage
 H401 - Toxic to aquatic life
 H412 - Harmful to aquatic life with long lasting effects

Precautionary statements (GHS-US) :

P273 - Avoid release to the environment.
 P280 - Wear protective gloves, protective clothing, eye protection, face protection.
 P303+P361+P353 - If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower
 P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
 P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
 P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

2.3. Other hazards which do not result in classification

No additional information available

2.4. Unknown acute toxicity (GHS US)

Not applicable

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SECTION 3: Composition/Information on ingredients

3.1. Substances

Name	Product identifier	%	GHS-US classification
Vanadium trichloride oxide (Main constituent)	(CAS-No.) 7727-18-6	>= 99.8	Skin Corr. 1A, H314 Aquatic Acute 2, H401 Aquatic Chronic 3, H412

Full text of hazard classes and H-statements : see section 16

3.2. Mixtures

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. Call a doctor.
- 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... If skin burns appear, call a doctor immediately.
- 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. On ingestion in large quantities: Transfer to hospital rapidly.

4.2. Most important symptoms and effects (acute and delayed)

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

4.3. Immediate medical attention and special treatment, if necessary

Treat symptomatically.

SECTION 5: Fire-fighting measures

5.1. Suitable (and unsuitable) extinguishing media

- Suitable extinguishing media : Carbon dioxide (CO₂). Powder.
- Unsuitable extinguishing media : Water.

5.2. Specific hazards arising from the chemical

- Fire hazard : On combustion or on thermal decomposition (pyrolysis) releases : Hydrogen chloride. divanadium pentoxide, vanadium pentoxide.
- Reactivity : Reacts violently with water. Contact with water liberates toxic gas.

5.3. Special protective equipment and precautions for fire-fighters

- 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.

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 vapors. 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.

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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. Avoid any direct contact with the product. Do not breathe vapors. Avoid contact of substance with water. Never open the packages under pressure. Access forbidden to unauthorized personnel. Smoking is forbidden.
- 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.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

No additional information available

8.2. Appropriate engineering controls

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

8.3. Individual protection measures/Personal protective equipment

Personal protective equipment:

Safety glasses. Gloves. Protective clothing. Gas mask with filter type E.

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 spectacles with side shields. If there is a risk of liquid being splashed : 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:

Filtering Half-face mask (DIN EN 149). breathing apparatus with filter : P3 (EN 143) / E (EN 141). In the event of exposure to high concentrations : Gas mask with filter type : ABEK P3 (EN 136). breathing apparatus with filter : B / E (EN 141) / P3 (EN 143)

Personal protective equipment symbol(s):



SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical state : Liquid

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Appearance	: Fluid liquid.
Color	: light yellow
Odor	: chlorine
Odor threshold	: No data available
pH	: Not applicable
Melting point	: -77 °C (101.3 kPa)
Freezing point	: No data available
Boiling point	: 127 °C (101.3 kPa)
Flash point	: Not applicable (inorganic substance)
Relative evaporation rate (butyl acetate=1)	: No data available
Flammability (solid, gas)	: Not applicable.
Vapor pressure	: 19.3 mm Hg (25°C)
Relative vapor density at 20 °C	: No data available
Relative density	: 1.822 (20°C)
Molecular mass	: 173.4 g/mol
Solubility	: Soluble in : Water, Ethanol, Ethers, acetic acid.
Log Pow	: Not applicable (inorganic substance)
Auto-ignition temperature	: No data available
Decomposition temperature	: No data available
Viscosity, kinematic	: No data available
Viscosity, dynamic	: No data available
Explosion limits	: No data available
Explosive properties	: Not explosive.
Oxidizing properties	: Non oxidizing material according to EC criteria.

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

On combustion or on thermal decomposition (pyrolysis) releases : Hydrogen chloride, divanadium pentoxide, vanadium pentoxide.

SECTION 11: Toxicological information

11.1. Information on toxicological effects

Acute toxicity	: Not classified (Technical impossibility to obtain the data)
Skin corrosion/irritation	: Causes severe skin burns and eye damage. pH: Not applicable
Serious eye damage/irritation	: Not classified pH: Not applicable
Respiratory or skin sensitization	: Not classified (Technical impossibility to obtain the data)

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Germ cell mutagenicity	: Not classified (Technical impossibility to obtain the data)
Carcinogenicity	: Not classified (Technical impossibility to obtain the data)
Reproductive toxicity	: Not classified (Technical impossibility to obtain the data)
Specific target organ toxicity – single exposure	: Not classified (Technical impossibility to obtain the data)
Specific target organ toxicity – repeated exposure	: Not classified (Technical impossibility to obtain the data)
Aspiration hazard	: Not classified (Technical impossibility to obtain the data)
Symptoms/effects after inhalation	: Irritation to respiratory tract.
Symptoms/effects after skin contact	: Burns. Ulcerations. Bleeding. Bloody scabs.
Symptoms/effects after eye contact	: Burns. Serious damage to eyes.
Symptoms/effects after ingestion	: Corrosion or irritation of the linings of the mouth, throat, and gastrointestinal tract.

SECTION 12: Ecological information

12.1. Toxicity

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

Vanadium trichloride oxide (7727-18-6)	
LC50 fish	4 mg/l/96h (Danio rerio) (Test method EU C.1) (Published data) - Information related to: vanadium element
EC50 Daphnia	3.5 mg/l/48h (Daphnia magna) (Test method EU C.2) (Published data) - Information related to: vanadium element
ErC50 (algae)	9.5 mg/l/72h (Pseudokirchnerella subcapitata) (OECD 201 method) - Information related to: vanadium element
NOEC chronic fish	0.17 mg/l/ 28 d (Jordanelia floridae) (Published data) - Information related to: vanadium element
NOEC chronic crustacea	0.56 mg/l (Daphnia magna, 14 weeks) (Published data) - Information related to: vanadium element

12.2. Persistence and degradability

Vanadium trichloride oxide (7727-18-6)	
Persistence and degradability	Hydrolysis : Instantaneous decomposition in the presence of moisture in the air.
Biodegradation	Not applicable (inorganic substance)

12.3. Bioaccumulative potential

Vanadium trichloride oxide (7727-18-6)	
BCF	13 (28 days, OECD 305) (Published data)
Log Pow	Not applicable (inorganic substance)
Bioaccumulative potential	Not bioaccumulative.

12.4. Mobility in soil

Vanadium trichloride oxide (7727-18-6)	
Ecology - soil	The product is not mobile in soil.

12.5. Other adverse effects

No additional information available

SECTION 13: Disposal considerations

13.1. Disposal methods

Waste treatment methods	: Dispose of in accordance with relevant local regulations. Destroy at an authorized 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.

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SECTION 14: Transport information

Department of Transportation (DOT)

In accordance with DOT

Transport document description : UN2443 Vanadium oxytrichloride, 8, II
UN-No.(DOT) : UN2443
Proper Shipping Name (DOT) : Vanadium oxytrichloride
Class (DOT) : 8 - Class 8 - Corrosive material 49 CFR 173.136
Packing group (DOT) : II - Medium Danger
Hazard labels (DOT) : 8 - Corrosive



DOT Packaging Non Bulk (49 CFR 173.xxx) : 202
DOT Packaging Bulk (49 CFR 173.xxx) : 242
DOT Special Provisions (49 CFR 172.102) : A3 - For combination packaging, if glass inner packaging (including ampoules) are used, they must be packed with absorbent material in tightly closed metal receptacles before packing in outer packaging.
A6 - For combination packaging, if plastic inner packaging are used, they must be packed in tightly closed metal receptacles before packing in outer packaging.
A7 - Steel packaging must be corrosion-resistant or have protection against corrosion.
B2 - MC 300, MC 301, MC 302, MC 303, MC 305, and MC 306 and DOT 406 cargo tanks are not authorized.
B16 - The lading must be completely covered with nitrogen, inert gas or other inert materials.
IB2 - Authorized IBCs: Metal (31A, 31B and 31N); Rigid plastics (31H1 and 31H2); Composite (31HZ1). Additional Requirement: Only liquids with a vapor pressure less than or equal to 110 kPa at 50 C (1.1 bar at 122 F), or 130 kPa at 55 C (1.3 bar at 131 F) are authorized.
N34 - Aluminum construction materials are not authorized for any part of a packaging which is normally in contact with the hazardous material.
T7 - 4 178.274(d)(2) Normal..... 178.275(d)(3)
TP2 - a. The maximum degree of filling must not exceed the degree of filling determined by the following: (image) Where: tr is the maximum mean bulk temperature during transport, tf is the temperature in degrees celsius of the liquid during filling, and a is the mean coefficient of cubical expansion of the liquid between the mean temperature of the liquid during filling (tf) and the maximum mean bulk temperature during transportation (tr) both in degrees celsius. b. For liquids transported under ambient conditions may be calculated using the formula: (image) Where: d15 and d50 are the densities (in units of mass per unit volume) of the liquid at 15 C (59 F) and 50 C (122 F), respectively.
DOT Packaging Exceptions (49 CFR 173.xxx) : 154
DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) : Forbidden
DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) : 30 L
DOT Vessel Stowage Location : C - The material must be stowed "on deck only" on a cargo vessel and on a passenger vessel.
DOT Vessel Stowage Other : 40 - Stow "clear of living quarters"
Emergency Response Guide (ERG) Number : 137
Other information : Dangerous for the environment.

Transportation of Dangerous Goods

Transport document description : UN2443 VANADIUM OXYTRICHLORIDE, 8, II
UN-No. (ADR/RID) (TDG) : UN2443
Proper Shipping Name (Transportation of Dangerous Goods) : VANADIUM OXYTRICHLORIDE
TDG Primary Hazard Classes : 8 - Class 8 - Corrosives
Packing group : II - Medium Danger
Explosive Limit and Limited Quantity Index : 1 L
Passenger Carrying Road Vehicle or Passenger Carrying Railway Vehicle Index : Forbidden

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Transport by sea

Transport document description (IMDG) : UN 2443 VANADIUM OXYTRICHLORIDE, 8, II
UN-No. (IMDG) : 2443
Proper Shipping Name (IMDG) : VANADIUM OXYTRICHLORIDE
Class (IMDG) : 8 - Corrosive substances
Packing group (IMDG) : II - substances presenting medium danger
MFAG-No : 137

Air transport

Transport document description (IATA) : UN 2443 Vanadium oxytrichloride, 8, II
UN-No. (IATA) : 2443
Proper Shipping Name (IATA) : Vanadium oxytrichloride
Class (IATA) : 8 - Corrosives
Packing group (IATA) : II - Medium Danger

SECTION 15: Regulatory information

15.1. US Federal regulations

Vanadium trichloride oxide (7727-18-6)

Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Vanadium trichloride oxide (7727-18-6)

Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations

Vanadium trichloride oxide (7727-18-6)

Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances)

National regulations

Vanadium trichloride oxide (7727-18-6)

Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)
Japanese Poisonous and Deleterious Substances Control Law
Japanese Pollutant Release and Transfer Register Law (PRTR Law)

15.3. US State regulations

No additional information available

SECTION 16: Other information

Revision date : 04/27/2018
Other information : Safety data sheet established by : LISAM SERVICES - TELEGIS
17 rue de la Couture F-60400 Passel
www.lisam-telegis.fr.

Full text of H-phrases:

H314	Causes severe skin burns and eye damage
H401	Toxic to aquatic life
H412	Harmful to aquatic life with long lasting effects

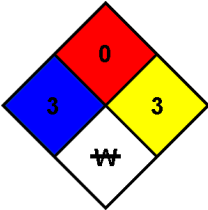
Abbreviations and acronyms:

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

NFPA health hazard	: 3 - Materials that, under emergency conditions, can cause serious or permanent injury.	
NFPA fire hazard	: 0 - Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand.	
NFPA reactivity	: 3 - Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction but that require a strong initiating source or must be heated under confinement before initiation.	
NFPA specific hazard	: W - Materials that react violently or explosively with water.	
Hazard Rating		
Health	: 3 Serious Hazard - Major injury likely unless prompt action is taken and medical treatment is given	
Flammability	: 0 Minimal Hazard - Materials that will not burn	
Physical	: 2 Moderate Hazard - Materials that are unstable and may undergo violent chemical changes at normal temperature and pressure with low risk for explosion. Materials may react violently with water or form peroxides upon exposure to air.	
Personal protection	: D D - Face shield and eye protection, Gloves, Synthetic apron	

Indication of changes:

This sheet was updated (refer to the date at the top of this page). SDS changed sections : 2, 3, 12.

SDS US (GHS HazCom 2012)

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