SDS
SAFETY DATA SHEET

Tellurium Dioxide

Section 1. Identification of the Substance and Company

1.1 Product Identification:
Product Name: Tellurium Dioxide
Synonyms: PMR Tellurium Dioxide, TeO_2

EC No: 231-193-1
CAS No: 7446-07-3

1.2 Uses
Identified Uses:
Tellurium dioxide is an intermediate used for the recovery of metal.

1.3 Company Identification

Manufactured by:
Vale Canada Limited
Port Colborne Refinery
187 Davis Street
Port Colborne, ON
L3K 5W2, Canada

Distributed by:
Vale Canada Limited
200 Bay St., Royal Bank Plaza
Suite 1600, South Tower, PO Box 70
Toronto, ON
Canada, M5J 2K2
Email: msds@vale.com

EU REACH Contact
Vale Europe Limited
Clydach Refinery
Clydach Swansea
UK, SA6 5QR
Telephone number: +44 (0) 1792 8412501
Email: REACH@vale.com

For Fire, Spill, or chemical emergency call CHEMTREC: +1 703 527-3887
for Europe call CHEMTREC: +(44) 870 8200418

Section 2. Hazards Identification

2.1 Classification of the Substance

Acute toxicity, inhalation – Category 4
Skin sensitisation – Category 1B
Carcinogenicity – Category 2
Reproductive toxicity – Category 1B
Hazardous to aquatic environment – Chronic Category 2

Hazard Pictograms:	GHS07 – Exclamation Mark GHS08 – Health Hazard GHS09 – Environment
Signal Word:	Danger
Hazard Statements:	H332 - Harmful if inhaled H317 - May cause an allergic skin reaction H351 - Suspected of causing cancer H360 - May damage fertility or the unborn child H411 - Toxic to aquatic life with long lasting effects
Precautionary Statements:	P312, P321, P261, P271, P272, P280, P302+P352, P304+P340, P333+P313 P362+P364, P501, P201, P202, P308+P313, P405, P273, P391

2.2: Label elements

Product Identifer: Tellurium dioxide
CAS No: 7446-07-3
Symbols:

GHS07 – Exclamation mark

GHS08 - Health Hazard

GHS09 – Environment

Signal Word:	Warning
Hazard Statements:	H332 - Harmful if inhaled H317 - May cause an allergic skin reaction H351 - Suspected of causing cancer H360 - May damage fertility or the unborn child H411 - Toxic to aquatic life with long lasting effects
Precautionary Statements:	P201 – Obtain special instructions before use P202 – Do not handle until all safety precautions have been read and understood P280 – Wear protective gloves/protective clothing/eye protection/face protection P308+P313 – If exposed or concerned: Get medical advice/attention P405 – Store locked up P501 - Dispose of contents/container in accordance to local/regional/national/international regulations

(NOTE: P-statements have been reduced).
For full text of Precautionary Statements see section 15

Section 3. Composition

☒ **Substance** ☐ **Mixture**

Component	Typical Composition (% dry wt)	C.A.S. Number	EINECS/ EC Label No.
Tellurium Dioxide (TeO_2)	92-100	7446-07-3	231-193-1
Tellurium (Te)	1 - 5	13494-80-9	236-813-4
Tin (IV) Hydroxide ($Sn(OH)_4$)	1.5 – 3	12054-72-7	235-011-1
Antimony Trioxide (Sb_2O_3)	0 – 1.5%	1309-64-4	215-175-0

Section 4. First Aid Measures

Ingestion: Wash out mouth with water. Get medical advice/attention.

Inhalation: Remove to fresh air. Get medical advice/attention.

Skin: Remove contaminated clothing, and wash affected areas thoroughly with soap and water. If skin irritation or rash occurs: Get medical advice/attention.

Eyes: Irrigate eyeball thoroughly with water for at least 10 minutes. If discomfort persists get medical attention.

Section 5. Fire Fighting Measures

Suitable extinguishing media: Any, type to be selected according to materials stored in the immediate neighbourhood.

Special risks: Non-flammable. May decompose if exposed to high temperatures within a fire, to release toxic gases. Keep containers cool with water spray.

Special protective equipment for fire fighting: Do not enter fire area without proper protective equipment, including respiratory protection.

Section 6. Accidental Release Measures

Person related precautionary measures: Avoid generation of dusty atmospheres. Avoid inhalation of dust and contact with skin or eyes. Use personal protective equipment as required. Wash hands, and face thoroughly after handling.

Environmental Protection measures: Avoid release to environment. Prevent entry to sewers and public waters. Notify authorities if product enters sewers or public waters.

Procedures for Pick up and collect into appropriate bin or drum for recycling. Collect dust or

cleaning/absorption: particulates using a vacuum cleaner with a suitable filter.

Section 7. Handling And Storage

Precautions for Safe Handling: Prevent the generation of inhalable dusts e.g. by the use of suitable ventilation. Do not inhale dust. Wear appropriate nationally approved respirators if handling is likely to cause the generation of inhalable dusts. Wear suitable protective clothing and gloves. Contaminated work clothing should not be allowed out of the workplace

Conditions for Safe Storage Keep in the container supplied, and keep container closed when not in use. Keep the containers dry. Local regulations should be followed regarding the storage of this product.

Section 8. Exposure Controls / Personal Protection

8.1.1 Exposure Limits:

Hazardous Ingredients	Exposure Limit (TLV) [1] - mg/m³	Exposure Limit (WEL) [2] [3] - mg/m³
Tellurium Dioxide	0.1 mg / m³ (as Te)	0.1 mg / m³ (as Te)
Tellurium	0.1 mg / m³	0.1 mg / m³
Tin (IV) Hydroxide	Not available	2 mg / m³ (as Sn)
Antimony Trioxide	0.5 mg / m³ (as Sb)	0.5 mg / m³ (as Sb)

DNEL's

	Unit	DNEL
Inhalation		
Long-term systemic	mg TeO2/m³	0.16

8.1.2 Environmental Limits:

PNEC's

Compartment	Unit	PNEC
Freshwater	µg TeO2/L	7.24
Marine	µg TeO2/L	0.724

8.2.1 Occupational exposure controls:

Only properly trained and authorised personnel should handle this substance.
Substance-handling procedures must be well documented and strictly supervised by the site operator. When handling these process materials, make correct use of local exhaust ventilation (LEV) equipment, such as filter hoods and dust boxes. Maintain airborne dust levels as low as possible. Avoid repeated skin contact.

PPE

Respiratory protection: Use an approved respirator with particulate filters, type P3.

Eye protection: Wear safety spectacles.

Hand & Skin Protection: Wear suitable protective clothing and gloves, which should be selected specifically for the working place, depending on concentration and quantity of the hazardous material (overalls and leather/rubber gloves). Wash skin thoroughly after handling and before eating, drinking or smoking. Change contaminated clothing frequently. Launder clothing and gloves as needed.

Section 9. Physical And Chemical Properties

Moist brown odourless filter cake averaging 30-35% moisture

Physical state at 20°C and 101.3 kPa	solid
Melting / freezing point	Not available
Boiling point	Not available
Decomposition temperature	Not applicable
Relative density	Not available
Vapour pressure	Not applicable
Vapour density	Not applicable
Surface tension	Not applicable
Water solubility	Insoluble
pH	Not applicable
Evaporation rate	Not applicable
Partition coefficient n-octanol/water (log value)	Not applicable
Flash point	Not applicable
Flammability	Non-flammable
Explosive properties	Non-explosive
Self-ignition temperature	Not self-igniting
Oxidising properties	Non-oxidising

Granulometry	Not available
Stability in organic solvents and identity of relevant degradation products	Not applicable
Dissociation constant	Not applicable
Viscosity	Not applicable

Section 10. Stability and Reactivity

Reactivity: Stable under normal conditions.
Chemical stability: Stable under normal conditions.
Possibility of hazardous reactions: Dangerous compounds may be released by eating the material to high temperatures.
Conditions to avoid: Dust generation, excess heat.
Incompatible materials: Not available

Section 11. Toxicological Information[3]

Tellurium dioxide

Acute Toxicity: Harmful by inhalation LC50>2.42/m3 (wistar rat).

Sensitization: Available test data indicates that tellurium dioxide was shown to have sensitisation potential.

Carcinogenicity: Conclusive but not sufficient for classification.

Mutagenicity: Conclusive but not sufficient for classification.

Repoductivity: Available test data indicates tellurium dioxide can cause maternal toxicity and tetrogenicity.

Specific Target Organ Toxicity: Conclusive but not sufficient for classification.

Further information: Exposure to tellurium dioxide through inhalation, ingestion and skin contact imparts a strong garlic-like odour to the breath and sweat. This may be associated with a metallic taste in the mouth, a decrease in sweating, sleeplessness and nausea.

Tellurium:

Soluble tellurium compounds can be absorbed through the skin, as well as inhaled or ingested as a fume. Exposure can produce mild gastrointestinal distress, garlic odour of the breath, dryness of the mouth, metallic taste and drowsiness.

Tin (IV) Hydroxide: Little or no information regarding toxicity of tin tetrahydroxide species is available. However, toxicity of tin inorganic compounds is discussed. The acute oral toxicity of tin sulphate is 2207 mg/kg bw. Tin (IV) hydroxide is expected to be less soluble than tin sulphate, therefore

tin hydroxide is expected to have lower toxicity than tin sulphate. Inhalation exposure to inorganic tin compounds may cause stannosis, a benign pneumoconiosis. Symptoms of acute tin toxicity are nausea, vomiting, abdominal cramping, and diarrhea. Due to the low absorption of tin in the GI tract, the acute toxic symptoms are likely due to local irritation of the GI tract. There is no experimental evidence that tin compounds are carcinogenic or teratogenic..

Antimony Trioxide: Very low toxicity through ingestion in rats (LD50 => 34,600 mg/kg). Antimony trioxide is a contact irritant in humans and tends to cause nosebleeds, laryngitis and bronchitis. Inhalation exposure may cause pneumoconiosis; contact with eyes causes conjunctivitis, and contact with skin causes dermatitis and rhinitis. Ingestion causes irritation of the mouth, nose, stomach, and intestines. The general effects of antimony dust exposure in workers included chronic coughing, conjunctivitis, antimony dermatosis, upper airway inflammation, chronic bronchitis, chronic emphysema and plural adhesions. Carcinogenicity: A2 (suspected human carcinogen, ACGIH)

Section 12. Ecological Information

Environmental information on this material is not available.

Section 13. Disposal Considerations

Waste treatment methods	Recover or recycle if possible. Do not dispose, but collect in suitable bins/drums for recovery
Additional Information	No information available.

Section 14. Transport Information

International Maritime Dangerous Goods Code	UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (contains tellurium dioxide), 9, PG III, Marine Pollutant
International Civil Aviation Organization Technical Instructions for the Carriage of Dangerous Goods by Air	UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (contains tellurium dioxide), 9, PG III
U.S. Dept. of Transportation Regulations	Not Regulated
Canadian Transportation of Dangerous Goods Act	Not Regulated
European Agreement Concerning the International Carriage of Dangerous Goods by Road	UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S., (contains tellurium dioxide), 9, PG III (E)

MARPOL Annex V:
Under the 7 Criteria contained within the MARPOL Annex V, this material is classified as:

X	**Harmful to the Marine Environment (HME)**
	Not Harmful to the Marine Environment (non-HME)

Section 15. Regulatory Information

Europe:

Classification according to Part 3 of Annex VI of EU Regulation No. 1272/2008

Acute toxicity, inhalation – Category 4
Skin sensitisation – Category 1B
Carcinogenicity – Category 2
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Symbols:
GHS07 – Exclamation Mark

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GHS09 – Environment

Signal Word: Danger

Hazard Statements:
H332 - Harmful if inhaled
H317 - May cause an allergic skin reaction
H351 - Suspected of causing cancer
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H411 - Toxic to aquatic life with long lasting effects

Precautionary Statements:

Prevention:
P201– Obtain special instructions before use
P202 – Do not handle until all safety precautions have been read and understood
P261 – Avoid breathing dust/fume/gas/mist/vapours/spray
P271 – Use only outdoors or in a well-ventilated area
P272 – Contaminated work clothing should not be allowed out of the workplace
P273 – Avoid release to the environment
P280 – Wear protective gloves/protective clothing/eye protection/face protection

Response:
P302+352 – IF ON SKIN: Wash with plenty of water

P304+P340 – IF INHALED: Remove person to fresh air and keep comfortable for breathing
P308+P313 – If exposed or concerned: Get medical advice/attention
P312 – Call a poison center/doctor if you feel unwell
P321– See Safety Data Sheet for specific treatment
P333+P313 - If skin irritation or rash occurs: Get medical advice/attention.
P362+P364 – Take off contaminated clothing and wash before reuse
P391 – Collect spillage

Storage:
P405 – Store locked up

Disposal:
P501 - Dispose of contents/container in accordance to local/regional/national/international regulations

Canada:
WHMIS 2015 Classification:

- Acute toxicity, inhalation – Category 4
- Skin sensitisation – Category 1B
- Carcinogenicity – Category 2
- Reproductive toxicity – Category 1B

All components are listed on the Canadian Domestic Substances List (DSL)

Section 16. Other Information

Indications of change:

1.0 – original document
2.0 – Updated for WHMIS 2015

The following acronyms may be found in this document:

ACGIH	American Conference of Governmental Industrial Hygienists
DNEL	Derived No Effect Level
IARC	International Agency for Research on Cancer
OEL	Occupational Exposure Limits
PNEC	Predicted No Effect Concentration
TLV-TWA	Threshold Limit Value – Time Weighted Average
WEL	Workplace Exposure Limit (UK HSE EH40)

Safety Data Sheet prepared by:
Vale Canada Limited
200 Bay St., Royal Bank Plaza
Suite 1600, South Tower, PO Box 70

Toronto, Ontario, Canada, M5J 2K2

Product Stewardship (416) 361-7801
Email: msds@vale.com

Note:

Vale Canada believes that the information in this Safety Data Sheet is accurate. However, Vale Canada makes no express or implied warranty as to the accuracy of such information and expressly disclaims any liability resulting from reliance on such information.

1. Threshold Limit Values of the American Conference of Governmental Industrial Hygienists. 2016
2. Maximum Exposure Limit of the Health and Safety Executive in the U.K. in EH40/2005.
3. Describes possible health hazards of the product supplied. If user operations change it to other chemical forms, whether as end products, intermediates or fugitive emissions, the possible health hazards of such forms must be determined by the user.