

Safety Data Sheet

Section 1: Identification of the Substance/Mixture and of the Company/Undertaking

1.1 Product identifier

Product Name · Cadmium Tungstate Scintillation Crystal

Synonyms • Cadmium Tungstate

CAS Number • 7790-85-4 **EC Number** • 232-226-2

Chemical Category • Cadmium Compounds, Tungsten, insoluble compounds

Molecular Formula • CdWO4

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

Relevant identified use(s) • Radiation detection

1.3 Details of the supplier of the safety data sheet

Manufacturer • Luxium Solutions

17900 Great Lakes Parkway

Hiram, OH 44234 United States

www.Luxiumsolutions.com

Telephone (General) • 440-834-5600

1.4 Emergency telephone number

U.S. & Canada • 1-800-255-3924 Velocity EHS Contract number

International • +1-813-248-0585 6493674

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 453/2010]

According to: EU Directive 67/548/EEC (DSD) or 1999/45/EC (DPD)

2.1 Classification of the substance or mixture

• Acute Toxicity Oral 4 - H302 Acute Toxicity Dermal 4 - H312

Skin Irritation 2 - H315

Eye Irritation 2 - H319

Acute Toxicity Inhalation 4 - H332

Carcinogenicity 1 - H350

Hazardous to the aquatic environment Acute 1 - H400 Hazardous to the aquatic environment Chronic 1 - H410

Due to formed nature of this product, no airborne concentrations are expected.

DSD/DPD

Dangerous to the Environment (N)

R20/21/22, R50, R53

2.2 Label Elements CLP

DANGER







Hazard statements · H302 - Harmful if swallowed

H312 - Harmful in contact with skin

H315 - Causes skin irritation

H319 - Causes serious eye irritation

H332 - Harmful if inhaled H350 - May cause cancer. H400 - Very toxic to aquatic life

H410 - Very 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.

P264 - Wash thoroughly after handling.

P270 - Do not eat, drink or smoke when using this product.

P271 - Use only outdoors or in a well-ventilated area.

P273 - Avoid release to the environment.

P280 - Wear protective gloves/protective clothing/eye protection/face protection.

P281 - Use personal protective equipment as required.

P304+P340 - IF INHALED: Remove victim to fresh air and keep at rest in a position Response • comfortable for breathing

P312 - Call a POISON ČENTER or doctor/physician if you feel unwell.

P302+P352 - IF ON SKIN: Wash with plenty of soap and water. P362 - Take off contaminated clothing and wash before reuse. P322 - Specific measures, see supplemental first aid information. P332+P313 - If skin irritation occurs: Get medical advice/attention.

P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes.

Remove contact lenses, if present and easy to do. Continue rinsing. P337+P313 - If eye irritation persists: Get medical advice/attention. P301+P312 - IF ŚWALLOWED: Immediately call a POISON CENTER or

doctor/physician if you feel unwell.

P330 - Rinse mouth. P391 - Collect spillage.

P308+P313 - IF exposed or concerned: Get medical advice/attention.

Storage/Disposal • P405 - Store locked up.

P501 - Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

DSD/DPD





R20/21/22 - Harmful by inhalation, in contact with skin and if swallowed. Risk phrases •

R50 - Very toxic to aquatic organisms.

R53 - May cause long-term adverse effects in the aquatic environment.

Safety phrases • S57 - Use appropriate containment to avoid environmental contamination.

2.3 Other Hazards

• According to Regulation (EC) No. 1272/2008 (CLP) this material is considered

hazardous.

• This product is considered dangerous according to the European Directive

67/548/EEC.

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012 • Skin Irritation 2

Eye Irritation 2 Carcinogenicity 1

Specific Target Organ Toxicity Repeated Exposure 1

Due to formed nature of this product, no airborne concentrations are expected.

2.2 Label elements

OSHA HCS 2012

DANGER





Hazard statements · Causes skin irritation

Causes serious eye irritation

May cause cancer.

Causes damage to organs - Lungs (Inhl), Kidneys through prolonged or repeated exposure

Precautionary statements

Prevention • Obtain special instructions before use.

Do not handle until all safety precautions have been read and understood.

Do not breathe dust.

Wash thoroughly after handling.

Do not eat, drink or smoke when using this product.

Wear protective gloves/protective clothing/eye protection/face protection.

Response • If on skin: Wash with plenty of water.

Take off contaminated clothing and wash before reuse. If skin irritation occurs: Get medical advice/attention. Specific treatment, see supplemental first aid information.

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses,

if present and easy to do. Continue rinsing.

If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.

Get medical advice/attention if you feel unwell.

Storage/Disposal • Store locked up.

Dispose of content and/or container in accordance with local, regional, national, and/or

international regulations.

2.3 Other hazards

• Under United States Regulations (29 CFR 1910.1200 - Hazard Communication

Standard), this product is considered hazardous.

Canada

According to: WHMIS

2.1 Classification of the substance or mixture

WHMIS

 Other Toxic Effects - D2A Other Toxic Effects - D2B

Due to formed nature of this product, no airborne concentrations are expected.

2.2 Label elements

WHMIS

(T)

• Other Toxic Effects - D2A Other Toxic Effects - D2B

2.3 Other hazards

WHMIS

• In Canada, the product mentioned above is considered hazardous under the Workplace Hazardous Materials Information System (WHMIS).

Section 3 - Composition/Information on Ingredients

3.1 Substances

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Cadmium tungsten oxide	CAS:7790-85 -4 EINECS:232- 226-2	100%	NDA	EU DSD/DPD: Annex VI, Table 3.2 (Cadmium compounds): Xn; R20/21/22; N; R50-53 EU CLP: Annex VI, Table 3.1 (Cadmium compounds): Acute Tox. 4*, H332; Acute Tox. 4*, H312; Acute Tox. 4*, H302; Aquatic Acute 1, H400; Aquatic Chronic 1, H410 OSHA HCS 2012: STOT RE 1 (Lungs, Inhl, Kidney); Carc. 1; Skin Irrit. 2; Eye Irrit. 2	NDA

3.2 Mixtures

 Material does not meet the criteria of a mixture in accordance with Regulation (EC) No 1272/2008.

Section 4 - First Aid Measures

4.1 Description of first aid measures

Inhalation

 Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. Get medical attention.

Skin

• In case of contact with substance, immediately flush skin with running water for at least 20 minutes. If skin irritation occurs: Get medical advice/attention.

Eye

• In case of contact with substance, immediately flush eyes with running water for at least 20 minutes. If eye irritation persists: Get medical advice/attention.

Ingestion

Rinse mouth. Do not give anything by mouth to an unconscious person. If large quantities are swallowed, call a physician immediately.

4.2 Most important symptoms and effects, both acute and delayed

Refer to Section 11 - Toxicological Information.

4.3 Indication of any immediate medical attention and special treatment needed

Notes to Physician

All treatments should be based on observed signs and symptoms of distress in the
patient. Consideration should be given to the possibility that overexposure to materials

other than this product may have occurred.

Section 5 - Firefighting Measures

5.1 Extinguishing media

Suitable Extinguishing Media • Use water, carbon dioxide or foam.

Unsuitable Extinguishing Media

No data available.

5.2 Special hazards arising from the substance or mixture

Unusual Fire and Explosion Hazards

• Material is non-combustible and is not expected to pose a fire or explosion hazard.

Hazardous Combustion

Products

· No data available

5.3 Advice for firefighters

Wear positive pressure self-contained breathing apparatus (SCBA).
 Structural firefighters' protective clothing will only provide limited protection.

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

Personal Precautions

Ventilate the area. Do not walk through spilled material. Wear appropriate personal
protective equipment, avoid direct contact. Do not touch damaged containers or spilled
material unless wearing appropriate protective clothing.

Emergency Procedures

As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) in all directions. If tank, rail car or tank truck is involved in a fire, ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2 mile) in all directions. Keep unauthorized personnel away.

6.2 Environmental precautions

· Avoid release to the environment.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

 Avoid generating dust. SMALL DRY SPILLS:

SMALL DRY SPILLS: With clean shovel place material into clean, dry container and cover loosely; move containers from spill area.

LARGE SPILLS: Cover powder spill with plastic sheet or tarp to minimize spreading.

6.4 Reference to other sections

 Refer to Section 8 - Exposure Controls/Personal Protection and Section 13 - Disposal Considerations.

Section 7 - Handling and Storage

7.1 Precautions for safe handling

Handling

 Use only with adequate ventilation. Wear appropriate personal protective equipment, avoid direct contact. Avoid contact with skin, eyes or clothing. Do not breathe dust. Wash thoroughly with soap and water after handling and before eating, drinking, or using tobacco.

7.2 Conditions for safe storage, including any incompatibilities

Storage

Keep container tightly closed. Store in a cool, dry, well-ventilated place.

7.3 Specific end use(s)

Refer to Section 1.2 - Relevant identified uses.

Section 8 - Exposure Controls/Personal Protection

8.1 Control parameters

Exposure Limits/Guidelines				
	Result	ACGIH	NIOSH	
	STELs	10 mg/m3 STEL (as W)	10 mg/m3 STEL (as W)	
		as Tungsten, insoluble compounds	as Tungsten, insoluble compounds	
Cadmium tungsten oxide		0.01 mg/m3 TWA (as Cd); 0.002 mg/m3 TWA (respirable fraction, as Cd) $$		
	5 mg/m3 T	as Cadmium compounds	5 mg/m3 TWA (as W)	
		5 mg/m3 TWA (as W)	as Tungsten, insoluble compounds	
		as Tungsten, insoluble compounds		

Exposure Control Notations

ACGIH

• Cadmium tungsten oxide as Cadmium compounds: Carcinogens: (A2 - Suspected Human Carcinogen)

Exposure Limits Supplemental ACGIH

- •Cadmium tungsten oxide as Cadmium compounds: TLV Basis Critical Effects: (kidney damage)
- •Cadmium tungsten oxide as Tungsten, insoluble compounds: TLV Basis Critical Effects: (lower respiratory tract irritation)

8.2 Exposure controls

Engineering Measures/Controls

 Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level

Personal Protective Equipment

Respiratory

For limited exposure use an N95 dust mask. For prolonged exposure use an airpurifying respirator with high efficiency particulate air (HEPA) filters. Follow the OSHA
respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a
NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are
exceeded or symptoms are experienced.

Eye/Face

Wear safety goggles.

Skin/Body

Wear appropriate gloves. Wear long sleeves and/or protective coveralls.

Environmental Exposure Controls

 Follow best practice for site management and disposal of waste. Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

NIOSH = National Institute of Occupational Safety and Health

STEL = Short Term Exposure Limits are based on 15-minute exposures

TWA = Time-Weighted Averages are based on 8h/day, 40h/week exposures

Section 9 - Physical and Chemical Properties

9.1 Information on Basic Physical and Chemical Properties

Material Description					
Physical Form	Solid	Appearance/Description	Light yellow or straw-colored crystal with no odor.		
Color	Light yellow or straw-colored.	Odor	Odorless		
Odor Threshold	Data lacking				
General Properties					
Boiling Point	Data lacking	Melting Point/Freezing Point	Data lacking		
Decomposition Temperature	Data lacking	рН	Not relevant		
Specific Gravity/Relative Density	= 7.9 Water=1	Water Solubility	Negligible		
Viscosity	Data lacking	Explosive Properties	Data lacking		
Oxidizing Properties:	Data lacking				
Volatility			-		
Vapor Pressure	Data lacking	Vapor Density	Data lacking		
Evaporation Rate	Data lacking	VOC (Wt.)	Data lacking		
Volatiles (Wt.)	Data lacking				
Flammability					
Flash Point	Not relevant	UEL	Not relevant		
LEL	Not relevant	Autoignition	Data lacking		
Flammability (solid, gas)	Data lacking				
Environmental		•			
Octanol/Water Partition coefficient	Data lacking				

9.2 Other Information

No additional physical and chemical parameters noted.

Section 10: Stability and Reactivity

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

· Stable under normal temperatures and pressures.

10.3 Possibility of hazardous reactions

· Hazardous polymerization not indicated.

10.4 Conditions to avoid

· None expected.

10.5 Incompatible materials

· None expected.

10.6 Hazardous decomposition products

· None expected.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

GHS Properties	Classification
	EU/CLP • Acute Toxicity - Dermal 4; Acute Toxicity - Inhalation 4; Acute Toxicity - Oral

Acute toxicity	4 OSHA HCS 2012 • Data lacking
Skin corrosion/Irritation	EU/CLP • Skin Irritation 2 OSHA HCS 2012 • Skin Irritation 2
Serious eye damage/Irritation	EU/CLP • Eye Irritation 2 OSHA HCS 2012 • Eye Irritation 2
Skin sensitization	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Respiratory sensitization	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Aspiration Hazard	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Carcinogenicity	EU/CLP • Carcinogenicity 1 OSHA HCS 2012 • Carcinogenicity 1
Germ Cell Mutagenicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
Toxicity for Reproduction	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
STOT-SE	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking
STOT-RE	EU/CLP • Data lacking OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 1

Potential Health Effects Inhalation

Acute (Immediate)

 Harmful if inhaled. Exposure to dust may cause irritation. Processes such as cutting, grinding, crushing, or impact may result in generation of excessive amounts of airborne dusts in the workplace. Nuisance dust may affect the lungs but reactions are typically reversible.

Chronic (Delayed)

 Repeated and prolonged exposure to dust may cause lung effects including pneumoconiosis.

Skin

Acute (Immediate)

· Causes skin irritation.

Chronic (Delayed)

No data available.

Eye

Acute (Immediate)

• Causes serious eye irritation. Excessive concentrations of nuisance dust in the workplace may reduce visibility and may cause unpleasant deposits in eyes.

Chronic (Delayed)

No data available.

Ingestion

Acute (Immediate)

 Excessive concentrations of nuisance dust in the workplace may cause mechanical irritation to mucous membranes.

Chronic (Delayed) • No data available.

Other

Chronic (Delayed)

 Excessive Cadmium absorption can result in pulmonary emphysema and/or kidney dysfunction.

Carcinogenic Effects

May cause cancer.

	Carcinogenic Effects			
CAS OSHA IARC NTP	CAS OSHA IARC NTP			

Cadmium tungsten oxide as Cadmium Compounds NDA Specifically Regulated Carcinogen Group 1-Carcinogenic Known Human Carcinogen

Section 12 - Ecological Information

12.1 Toxicity

Very toxic to aquatic life. Very toxic to aquatic life with long lasting effects.

12.2 Persistence and degradability

Material data lacking.

12.3 Bioaccumulative potential

Material data lacking.

12.4 Mobility in Soil

· Material data lacking.

12.5 Results of PBT and vPvB assessment

· No PBT and vPvB assessment has been conducted.

12.6 Other adverse effects

· No studies have been found.

Section 13 - Disposal Considerations

13.1 Waste treatment methods

Product waste

• Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Packaging waste

 Dispose of content and/or container in accordance with local, regional, national, and/or international regulations.

Section 14 - Transport Information

	14.1 UN number	14.2 UN proper shipping name	14.3 Transport hazard class(es)	14.4 Packing group	14.5 Environmental hazards
DOT	NDA	Not Regulated	NDA	NDA	NDA
TDG	NDA	Not Regulated	NDA	NDA	NDA
IMO/IMDG	NDA	Not Regulated	NDA	NDA	NDA
IATA/ICAO	NDA	Not Regulated	NDA	NDA	NDA

14.6 Special precautions for user

None specified.

14.7 Transport in bulk according to Annex II of Marpol and the IBC Code

Data lacking.

14.8 Other information

Not regulated according to animal toxicity testing results.

Section 15 - Regulatory Information

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

SARA Hazard Classifications • Acute, Chronic

Inventory						
Component	CAS	Canada DSL	Canada NDSL	EU EINECS	EU ELNICS	TSCA
Cadmium tungsten oxide	7790-85-4	No	Yes	Yes	No	Yes

Canada

Labor			
Canada - WHMIS - Classifications of Substances			
Cadmium tungsten oxide	7790-85-4	Not Listed	
Cadmium tungsten oxide as Cadmium compounds		Not Listed	
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed	
Canada - WHMIS - Ingredient Disclosure List			
Cadmium tungsten oxide	7790-85-4	Not Listed	
Cadmium tungsten oxide as Cadmium compounds		Not Listed	
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed	

Environment Canada - CEPA - Priority Substances List		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed

United States

Labor		
U.S OSHA - Process Safety Management - Highly Hazardous Chemicals		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed
U.S OSHA - Specifically Regulated Chemicals		
Cadmium tungsten oxide	7790-85-4	Not Listed
		5 μg/m3 TWA (See 29 CFR
Cadmium tungsten oxide as Cadmium compounds		1910.1027, as Cd); 2.5 μg/m3
		Action Level (as Cd)
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed

Environment U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants · Cadmium tungsten oxide 7790-85-4 Not Listed (including any unique chemical substance that contains · Cadmium tungsten oxide as Cadmium compounds Cadmium as part of its infrastructure) · Cadmium tungsten oxide as Tungsten, insoluble compounds Not Listed U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities · Cadmium tungsten oxide 7790-85-4 Not Listed · Cadmium tungsten oxide as Cadmium compounds Not Listed · Cadmium tungsten oxide as Tungsten, insoluble compounds Not Listed

U.S CERCLA/SARA - Radionuclides and Their Reportable Quantities		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed
U.S CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed
U.S CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed
U.S CERCLA/SARA - Section 313 - Emission Reporting		
Cadmium tungsten oxide	7790-85-4	Not Listed
		0.1 % de minimis
Cadmium tungsten oxide as Cadmium compounds		concentration (Chemical
		Category N078)
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed
U.S CERCLA/SARA - Section 313 - PBT Chemical Listing		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed

United States - California

U.S California - Proposition 65 - Carcinogens List		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		carcinogen, initial date 10/1/87
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed
U.S California - Proposition 65 - Developmental Toxicity		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed
U.S California - Proposition 65 - Maximum Allowable Dose Levels (MADL)		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed
U.S California - Proposition 65 - No Significant Risk Levels (NSRL)		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed
U.S California - Proposition 65 - Reproductive Toxicity - Female		
Cadmium tungsten oxide	7790-85-4	Not Listed
Cadmium tungsten oxide as Cadmium compounds		Not Listed
Cadmium tungsten oxide as Tungsten, insoluble compounds		Not Listed

· Cadmium tungsten oxide 7790-85-4 Not Listed

· Cadmium tungsten oxide as Cadmium compounds

Not Listed · Cadmium tungsten oxide as Tungsten, insoluble compounds Not Listed

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out.

15.3 Other Information

 WARNING: This product contains a chemical known to the State of California to cause cancer.

Section 16 - Other Information

Revision Date

Preparation Date

Disclaimer/Statement of

 28/May/2024 20/May/2015

Liability

Information presented herein has been compiled from sources considered to be dependable, and is accurate and reliable to the best of our knowledge and belief but is not guaranteed to be so. Since conditions of use are beyond our control, we make no warranties, expressed or implied, except those that may be contained in our written contract of sale or acknowledgement.

Key to abbreviations NDA = No data available