

Section 1. Identification

Product identifier : AL-T-005-0

Other means of identification

Product name Blueshield	Classification CSA	Classification AWS
LA T-9	E492T-9-H8 / E492T-9M-H8	E70T-9-H8 / E70T-9M-H8
LA T-9 PLUS	E492T-9-H8 / E492T-9M-H8	E70T-9-H8 / E70T-9M-H8
LA T-9 LF	E492T-9-H8	E70T-9C-H8
LA T-91	E491T-9-H8 / E491T-9M-H8	E71T-9C-H8 / E71T-9M-H8
LA T-91 PLUS	E491T-9-H8 / E491T-9M-H8	E71T-9C-H8 / E71T-9M-H8
LA T-91 LF	E491T-9-H4 / E491T-9M-H4	E71T-9-H4 / E71T-9M-H4
LA 91-T12M	E491T-12J-H4 / E491T-12MJ-H4	E71T-12CJ-H4 / E71-T12MJ-H4

Product type : Solid. [Tubular wire]

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

Product use : Covered electrodes for electric arc welding.
FCAW - Carbon Steel Flux-Cored Wires, Gas Shielded.

Area of application : Industrial applications, Professional applications.

Supplier's details : Air Liquide Canada Inc.
1250, René-Lévesque West, Suite 1700
Montreal, QC
H3B 5E6
www.airliquide.ca
1-800-817-7697

Emergency telephone number : (514) 878-1667

Section 2. Hazard identification

Classification of the substance or mixture : H315 SKIN IRRITATION - Category 2
H318 SERIOUS EYE DAMAGE - Category 1
H317 SKIN SENSITIZATION - Category 1
H350 CARCINOGENICITY - Category 1
H361 TOXIC TO REPRODUCTION (Fertility) - Category 2
H372 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (bones, central nervous system (CNS), lungs, respiratory tract, teeth) - Category 1

GHS label elements

These hazards relate to welding fumes (electrodes in use) and not to the electrodes as sold.

Hazard pictograms :



Signal word : Danger

Hazard statements : H318 - Causes serious eye damage.
H315 - Causes skin irritation.
H317 - May cause an allergic skin reaction.
H350 - May cause cancer.
H361 - Suspected of damaging fertility.
H372 - Causes damage to organs through prolonged or repeated exposure. (bones, central nervous system (CNS), lungs, respiratory tract, teeth)

Precautionary statements

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Section 2. Hazard identification

Prevention	: P201 - Obtain special instructions before use. P202 - Do not handle until all safety precautions have been read and understood. P280 - Wear protective gloves. Wear protective clothing: Recommended: Full suit. Fire resistant.. Wear eye or face protection: Recommended: Face shield with radiation shielding.. P260 - Do not breathe dust. P270 - Do not eat, drink or smoke when using this product. P264 - Wash hands thoroughly after handling. P272 - Contaminated work clothing should not be allowed out of the workplace.
Response	: P314 - Get medical attention if you feel unwell. P308 + P313 - IF exposed or concerned: Get medical attention. P302 + P352 + P362+P364 - IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. P333 + P313 - If skin irritation or rash occurs: Get medical attention. P305 + P351 + P338 + P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or physician.
Storage	: P405 - Store locked up.
Disposal	: P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.
Supplemental label elements	: Percentage of the mixture consisting of ingredient(s) of unknown oral toxicity: 27.5% Percentage of the mixture consisting of ingredient(s) of unknown dermal toxicity: 37% Percentage of the mixture consisting of ingredient(s) of unknown inhalation toxicity: 34%
Other hazards which do not result in classification	: ELECTRIC SHOCK can kill. FUMES AND GASES can be dangerous to your health. ARC RAYS can injure eyes and burn skin. Air contaminants may be formed during use of the product. Occupational exposure limits, if available, are listed in Section 8.

Section 3. Composition/information on ingredients

Substance/mixture	: Mixture
CAS number/other identifiers	
CAS number	: Not applicable.
Product code	: AL-T-005-0

Ingredient name	% (w/w)	CAS number
iron	70 - 98	7439-89-6
diiron trioxide	0 - 12	1309-37-1
calcium fluoride	0 - 12	7789-75-5
chromium	0 - 10	7440-47-3
titanium dioxide	0 - 10	13463-67-7
barium	0 - 10	7440-39-3
lithium	0 - 9	7439-93-2
Aluminium powder (stabilized)	0 - 5	7429-90-5
manganese	0 - 4	7439-96-5
silicon	0 - 3	7440-21-3
crystalline silica, respirable powder	0 - 3	14808-60-7
Nickel	0 - 3	7440-02-0
Magnesium, non flammable solid	0 - 3	7439-95-4
molybdenum	0 - 1.2	7439-98-7
aluminium oxide	0 - 1	1344-28-1
Zirconium	0 - 1	7440-67-7
copper	0 - 0.8	7440-50-8
titanium	0 - 0.5	7440-32-6
Natural graphite	0 - 0.5	7782-42-5
niobium	0 - 0.3	7440-03-1
vanadium	0 - 0.3	7440-62-2

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

The fumes emitted by the electrodes, in use, are hazardous. This SDS is written for workers using these electrodes.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First-aid measures

Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. In the event of any complaints or symptoms, avoid further exposure. Wash clothing before reuse. Clean shoes thoroughly before reuse.
- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : No known significant effects or critical hazards.
- Skin contact** : Causes skin irritation. May cause an allergic skin reaction.
- Ingestion** : No known significant effects or critical hazards.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Adverse symptoms may include the following:
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
stomach pains
reduced fetal weight
increase in fetal deaths
skeletal malformations

Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.
- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

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Section 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media : Use an extinguishing agent suitable for the surrounding fire.

Unsuitable extinguishing media : Do not use water jet.

Specific hazards arising from the chemical : No specific fire or explosion hazard.

Hazardous thermal decomposition products : Decomposition products may include the following materials:
halogenated compounds
metal oxide/oxides

Special protective actions for fire-fighters : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training.

Special protective equipment for fire-fighters : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.

For emergency responders : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

Environmental precautions : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

Methods and materials for containment and cleaning up

Small spill : Move containers from spill area. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Place spilled material in a designated, labeled waste container. Dispose of via a licensed waste disposal contractor.

Large spill : Move containers from spill area. Approach release from upwind. Prevent entry into sewers, water courses, basements or confined areas. Avoid dust generation. Do not dry sweep. Vacuum dust with equipment fitted with a HEPA filter and place in a closed, labeled waste container. Dispose of via a licensed waste disposal contractor. Note: see Section 1 for emergency contact information and Section 13 for waste disposal.

Section 7. Handling and storage

Precautions for safe handling

Protective measures : Put on appropriate personal protective equipment (see Section 8). Persons with a history of skin sensitization problems should not be employed in any process in which this product is used. Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not ingest. If during normal use the material presents a respiratory hazard, use only with adequate ventilation or wear appropriate respirator. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Empty containers retain product residue and can be hazardous. Do not reuse container.

Advice on general occupational hygiene : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

Conditions for safe storage, including any incompatibilities : Store in accordance with local regulations. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

Section 8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

Occupational exposure limits		TWA (8 hours)			STEL (15 mins)			Ceiling			Notations
Ingredient	List name	ppm	mg/m ³	Other	ppm	mg/m ³	Other	ppm	mg/m ³	Other	
diiron trioxide	US ACGIH 3/2017	-	5	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	5	-	-	-	-	-	-	-	[b]
	BC 6/2017	-	5	-	-	-	-	-	-	-	[c]
	BC 6/2017	-	5	-	-	10	-	-	-	-	[d]
diiron trioxide, as Fe		-	3	-	-	-	-	-	-	-	[e]
		-	10	-	-	-	-	-	-	-	[f]
	ON 1/2018	-	5	-	-	-	-	-	-	-	[g]
	QC 1/2014	-	5	-	-	-	-	-	-	-	[h]
diiron trioxide, measured as Fe	SK 7/2013	-	5	-	-	10	-	-	-	-	[h]
	US ACGIH 3/2017	-	2.5	-	-	-	-	-	-	-	
	AB 4/2009	-	2.5	-	-	-	-	-	-	-	
	BC 6/2017	-	2.5	-	-	-	-	-	-	-	
calcium fluoride, as F	ON 1/2018	-	2.5	-	-	-	-	-	-	-	
	QC 1/2014	-	2.5	-	-	-	-	-	-	-	
	US ACGIH 3/2017	-	0.5	-	-	-	-	-	-	-	
	AB 4/2009	-	0.5	-	-	-	-	-	-	-	
chromium, measured as Cr	BC 6/2017	-	0.5	-	-	-	-	-	-	-	
	ON 1/2018	-	0.5	-	-	-	-	-	-	-	[i]
chromium, as Cr	QC 1/2014	-	0.5	-	-	-	-	-	-	-	
	SK 7/2013	-	0.5	-	-	1.5	-	-	-	-	
chromium, measured as Cr	US ACGIH 3/2017	-	10	-	-	-	-	-	-	-	
	AB 4/2009	-	10	-	-	-	-	-	-	-	
	BC 6/2017	-	3	-	-	-	-	-	-	-	[e]
		-	10	-	-	-	-	-	-	-	[f]
titanium dioxide	ON 1/2018	-	10	-	-	-	-	-	-	-	
	QC 1/2014	-	10	-	-	-	-	-	-	-	[j]
	SK 7/2013	-	10	-	-	20	-	-	-	-	
	US ACGIH 3/2017	-	0.5	-	-	-	-	-	-	-	
barium, as Ba	AB 4/2009	-	0.5	-	-	-	-	-	-	-	
	BC 6/2017	-	0.5	-	-	-	-	-	-	-	
	SK 7/2013	-	0.5	-	-	1.5	-	-	-	-	
barium, measured as Ba	US ACGIH 3/2017	-	1	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	10	-	-	-	-	-	-	-	[k]
Aluminium powder (stabilized)	BC 6/2017	-	1	-	-	-	-	-	-	-	[b]
	ON 1/2018	-	1	-	-	-	-	-	-	-	[g]
	QC 1/2014	-	10	-	-	-	-	-	-	-	
Aluminium powder (stabilized), as Al	SK 7/2013	-	10	-	-	20	-	-	-	-	[l]
	SK 7/2013	-	5	-	-	10	-	-	-	-	[m]
manganese, as Mn	US ACGIH 3/2017	-	0.1	-	-	-	-	-	-	-	[n]
	US ACGIH 3/2017	-	0.02	-	-	-	-	-	-	-	[a]
	AB 4/2009	-	0.2	-	-	-	-	-	-	-	
	BC 6/2017	-	0.2	-	-	-	-	-	-	-	
manganese, measured as Mn	ON 1/2018	-	0.2	-	-	-	-	-	-	-	
	QC 1/2014	-	0.2	-	-	-	-	-	-	-	[j]
	SK 7/2013	-	0.2	-	-	0.6	-	-	-	-	
	BC 6/2017	-	3	-	-	-	-	-	-	-	[e]
silicon	BC 6/2017	-	10	-	-	-	-	-	-	-	[f]
	QC 1/2014	-	10	-	-	-	-	-	-	-	[j]
	SK 7/2013	-	10	-	-	20	-	-	-	-	
	US ACGIH 3/2017	-	0.025	-	-	-	-	-	-	-	[a]
crystalline silica, respirable powder	AB 4/2009	-	0.025	-	-	-	-	-	-	-	[o]
	BC 6/2017	-	0.025	-	-	-	-	-	-	-	[b]
	ON 1/2018	-	0.1	-	-	-	-	-	-	-	[g]
	QC 1/2014	-	0.1	-	-	-	-	-	-	-	[p]
Nickel	SK 7/2013	-	0.05	-	-	-	-	-	-	-	[q]
	US ACGIH 3/2017	-	1.5	-	-	-	-	-	-	-	[n]
Nickel, as Ni	AB 4/2009	-	1.5	-	-	-	-	-	-	-	
	BC 6/2017	-	0.05	-	-	-	-	-	-	-	
Nickel	ON 1/2018	-	1	-	-	-	-	-	-	-	[r]
	QC 1/2014	-	1	-	-	-	-	-	-	-	
Natural graphite	SK 7/2013	-	1.5	-	-	3	-	-	-	-	[n]
	US ACGIH 3/2017	-	2	-	-	-	-	-	-	-	[a]

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Section 8. Exposure controls/personal protection

Limestone	AB 4/2009	-	2	-	-	-	-	-	-	-	[s]
	BC 6/2017	-	2	-	-	-	-	-	-	-	[b]
	ON 1/2018	-	2	-	-	-	-	-	-	-	[g]
	QC 1/2014	-	2	-	-	-	-	-	-	-	[p]
	SK 7/2013	-	2	-	-	4	-	-	-	-	[q]
	AB 4/2009	-	10	-	-	-	-	-	-	-	-
Chromium, ion (Cr6+), measured as Cr	BC 6/2017	-	3	-	-	-	-	-	-	-	[e]
		-	10	-	-	-	-	-	-	-	[f]
		-	-	-	-	20	-	-	-	-	-
	QC 1/2014	-	10	-	-	-	-	-	-	-	[j]
	SK 7/2013	-	10	-	-	20	-	-	-	-	-
	US ACGIH 3/2017	-	0.05	-	-	-	-	-	-	-	-
Chromium, ion (Cr6+), measured as Cr cobalt, as Co	AB 4/2009	-	0.05	-	-	-	-	-	0.1	-	-
	BC 6/2017	-	0.025	-	-	-	-	-	-	-	-
	ON 1/2018	-	0.05	-	-	-	-	-	-	-	[t]
	QC 1/2014	-	0.05	-	-	-	-	-	-	-	[3]
	SK 7/2013	-	0.05	-	-	0.15	-	-	-	-	-
	US ACGIH 3/2017	-	0.02	-	-	-	-	-	-	-	-
cobalt, measured as Co magnesium carbonate	US ACGIH 3/2017	-	0.005	-	-	-	-	-	-	-	[4] [u]
	AB 4/2009	-	0.02	-	-	-	-	-	-	-	-
	BC 6/2017	-	0.02	-	-	-	-	-	-	-	-
	ON 1/2018	-	0.02	-	-	-	-	-	-	-	[i]
	QC 1/2014	-	0.02	-	-	-	-	-	-	-	[3]
	SK 7/2013	-	0.02	-	-	0.06	-	-	-	-	-
magnesium oxide	BC 6/2017	-	3	-	-	-	-	-	-	-	[e]
	BC 6/2017	-	10	-	-	-	-	-	-	-	[f]
	QC 1/2014	-	10	-	-	-	-	-	-	-	[i]
	SK 7/2013	-	10	-	-	20	-	-	-	-	-
	US ACGIH 3/2017	-	10	-	-	-	-	-	-	-	[n]
	AB 4/2009	-	10	-	-	-	-	-	-	-	[d]
magnesium oxide, as Mg tungsten, as W	BC 6/2017	-	10	-	-	-	-	-	-	-	[v]
		-	3	-	-	10	-	-	-	-	[w]
	ON 1/2018	-	10	-	-	-	-	-	-	-	[r]
	QC 1/2014	-	10	-	-	-	-	-	-	-	[x]
	SK 7/2013	-	10	-	-	20	-	-	-	-	[n]
	US ACGIH 3/2017	-	3	-	-	-	-	-	-	-	[b]
tungsten tungsten, as W tungsten, measured as W	AB 4/2009	-	5	-	-	10	-	-	-	-	-
	BC 6/2017	-	5	-	-	10	-	-	-	-	-
	ON 1/2018	-	5	-	-	10	-	-	-	-	-
	SK 7/2013	-	5	-	-	10	-	-	-	-	-

[3]Skin sensitization [4]Respiratory sensitization

Form: [a]Respirable fraction [b]Respirable [c]Dust [d]Fume [e]Respirable dust [f]Total dust [g]Respirable fraction. [h]dust and fume [i]Inorganic [j]Total dust. [k]Metal Dust [l]Metal dust [m]Pyro powder [n]Inhalable fraction [o]Respirable particulate [p]Respirable dust. [q]respirable fraction [r]Inhalable fraction. [s]Respirable (all forms except graphite fibres) [t]Soluble [u]Thoracic fraction [v]Inhalable fume [w]Respirable dust and fume [x]fume

- Appropriate engineering controls** : If user operations generate dust, fumes, gas, vapor or mist, use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits.
- Environmental exposure controls** : Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.
- Individual protection measures**
- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Contaminated work clothing should not be allowed out of the workplace. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead. Recommended: Face shield with radiation shielding.
- Skin protection**

Section 8. Exposure controls/personal protection

- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
Gloves. Fire resistant.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: Full suit. Fire resistant.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. Recommended: Metal cap, safety boots.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use. Recommended: Dust respirator.

Section 9. Physical and chemical properties

Appearance

- Physical state** : Solid. [Tubular wire]
- Color** : Various
- Odor** : Odorless.
- Odor threshold** : Not applicable.
- pH** : Not applicable.
- Melting point** : 1100°C (2012°F)
- Boiling point** : Not available.
- Flash point** : Not available.
- Evaporation rate** : Not available.
- Flammability (solid, gas)** : Not applicable.
- Lower and upper explosive (flammable) limits** : Not available.
- Vapor pressure** : Not available.
- Vapor density** : Not available.
- Relative density** : Not available.
- Density** : 5.54 to 8.3 g/cm³ [0.2-0.3 lbs/in³]
- Solubility** : Not available.
- Partition coefficient: n-octanol/ water** : Not available.
- Auto-ignition temperature** : Not available.
- Decomposition temperature** : Not available.
- Viscosity** : Not available.

Section 10. Stability and reactivity

- Reactivity** : No specific test data related to reactivity available for this product or its ingredients.
- Chemical stability** : The product is stable.
- Possibility of hazardous reactions** : Under normal conditions of storage and use, hazardous reactions will not occur.
Under normal conditions of storage and use, hazardous polymerization will not occur.
- Conditions to avoid** : No specific data.
- Incompatible materials** : No specific data.
- Hazardous decomposition products** : Under normal conditions of storage and use, hazardous decomposition products should not be produced.
Arc radiation can support the production of ozone and nitrogen oxides.

Section 11. Toxicological information

Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
calcium fluoride	LD50 Oral	Rat	4250 mg/kg	-
titanium dioxide	LD50 Dermal	Rabbit	>5000 mg/kg	-
	LD50 Oral	Rat	>5000 mg/kg	-
manganese	LC50 Inhalation Dusts and mists	Rat	5.14 mg/l	4 hours
	LD50 Oral	Rat	9 g/kg	-
silicon	LD50 Oral	Rat	3160 mg/kg	-

Conclusion/Summary : Not available.

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
manganese	Eyes - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 milligrams	-
silicon	Eyes - Mild irritant	Rabbit	-	3 milligrams	-

Conclusion/Summary

Skin : Not available.

Eyes : Not available.

Respiratory : Not available.

Sensitization

Conclusion/Summary

Skin : Not available.

Respiratory : Not available.

Mutagenicity

Conclusion/Summary : Not available.

Carcinogenicity

Classification

Product/ingredient name	ACGIH	OSHA	IARC	NTP	EU
titanium dioxide	A4	-	2B	-	-
crystalline silica, respirable powder	A2	-	1	Known to be a human carcinogen.	-
Nickel	A5	-	2B	Reasonably anticipated to be a human carcinogen.	Carc. 2, H351

Reproductive toxicity

Conclusion/Summary : Not available.

Teratogenicity

Conclusion/Summary : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
barium	Category 3	Not applicable.	Respiratory tract irritation
Aluminium powder (stabilized)	Category 3	Not applicable.	Respiratory tract irritation

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
calcium fluoride	Category 2	Not determined	bones and teeth
Aluminium powder (stabilized)	Category 2	Not determined	lungs
manganese	Category 2	Not determined	central nervous system (CNS) and lungs
crystalline silica, respirable powder	Category 1	Inhalation	lungs
Nickel	Category 1	Inhalation	respiratory tract
Natural graphite	Category 1	Inhalation	lungs

Section 11. Toxicological information

Aspiration hazard

Not available.

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation.

Potential acute health effects

Eye contact : Causes serious eye damage.
Inhalation : No known significant effects or critical hazards.
Skin contact : Causes skin irritation. May cause an allergic skin reaction.
Ingestion : No known significant effects or critical hazards.

Symptoms related to the physical, chemical and toxicological characteristics

Eye contact : Adverse symptoms may include the following:
 pain
 watering
 redness

Inhalation : Adverse symptoms may include the following:
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

Skin contact : Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

Ingestion : Adverse symptoms may include the following:
 stomach pains
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Long term exposure

Potential immediate effects : Not available.
Potential delayed effects : Not available.

Potential chronic health effects

Conclusion/Summary : Not available.

General : Causes damage to organs through prolonged or repeated exposure. Once sensitized, a severe allergic reaction may occur when subsequently exposed to very low levels.

Carcinogenicity : May cause cancer. Risk of cancer depends on duration and level of exposure.

Mutagenicity : No known significant effects or critical hazards.

Teratogenicity : No known significant effects or critical hazards.

Developmental effects : No known significant effects or critical hazards.

Fertility effects : Suspected of damaging fertility.

Numerical measures of toxicity

Acute toxicity estimates

Route	ATE value
Oral	53698.8 mg/kg

Section 12. Ecological information

Toxicity

Product/ingredient name	Result	Species	Exposure
titanium dioxide	Acute LC50 3 mg/l Fresh water	Crustaceans - Ceriodaphnia dubia - Neonate	48 hours
barium	Acute LC50 6.5 mg/l Fresh water	Daphnia - Daphnia pulex - Neonate	48 hours
	Acute LC50 >1000000 µg/l Marine water	Fish - Fundulus heteroclitus	96 hours
	Acute EC50 28 mg/l Fresh water	Algae - Pseudokirchneriella subcapitata	96 hours
	Acute EC50 26000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
lithium	Acute LC50 410000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 198 mg/l Fresh water	Fish - Lepomis macrochirus	96 hours
Aluminium powder (stabilized)	Chronic NOEC 1.7 mg/l Fresh water	Daphnia	21 days
	Acute LC50 38000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 120 µg/l Fresh water	Fish - Oncorhynchus mykiss - Embryo	96 hours
	Chronic NOEC 9 mg/l Fresh water	Aquatic plants - Ceratophyllum demersum	3 days
manganese	Acute EC50 31000 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute LC50 29000 µg/l Fresh water	Daphnia - Daphnia magna	48 hours
	Acute LC50 28 mg/l Fresh water	Fish - Pimephales promelas	96 hours
	Chronic NOEC 1.7 mg/l Fresh water	Daphnia - Water Flea- Ceriodaphnia dubia	8 days
Nickel	Acute EC50 2 ppm Marine water	Algae - Macrocystis pyrifera - Young	4 days
	Acute EC50 450 µg/l Fresh water	Aquatic plants - Lemna minor	4 days
	Acute EC50 1000 µg/l Marine water	Daphnia - Daphnia magna	48 hours
	Acute IC50 0.31 mg/l Marine water	Crustaceans - Americamysis bahia - Juvenile (Fledgling, Hatchling, Weanling)	48 hours
	Acute LC50 47.5 mg/L Fresh water	Fish - Heteropneustes fossilis	96 hours
	Chronic NOEC 100 mg/l Marine water	Algae - Glenodinium halli	72 hours
	Chronic NOEC 3.5 µg/l Fresh water	Fish - Cyprinus carpio	4 weeks

Conclusion/Summary : Not available.

Persistence and degradability

Conclusion/Summary : Not available.

Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
silicon	57 to 77	-	high

Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

Section 14. Transport information

	TDG Classification	DOT Classification	ADR/RID	IMDG	IATA
UN number	Not regulated.	Not regulated.	Not regulated.	Not regulated.	Not regulated.
UN proper shipping name	-	-	-	-	-
Transport hazard class(es)	-	-	-	-	-
Packing group	-	-	-	-	-
Environmental hazards	No.	No.	No.	No.	No.
Additional information	-	-	-	-	-

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to Annex II of MARPOL and the IBC Code : Not available.

Section 15. Regulatory information

Canadian lists

Canadian NPRI : The following components are listed: Calcium fluoride; Chromium (and its compounds); Aluminum (fume or dust only); Manganese (and its compounds); Nickel (and its compounds)

CEPA Toxic substances : The following components are listed: Inorganic fluorides

Canada inventory : All components are listed or exempted.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol (Annexes A, B, C, E)

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Section 16. Other information

History

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Section 16. Other information

Key to abbreviations

:	ATE = Acute Toxicity Estimate
	BCF = Bioconcentration Factor
	GHS = Globally Harmonized System of Classification and Labelling of Chemicals
	IATA = International Air Transport Association
	IBC = Intermediate Bulk Container
	IMDG = International Maritime Dangerous Goods
	LogPow = logarithm of the octanol/water partition coefficient
	MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
	UN = United Nations
	HPR = Hazardous Products Regulations
	ACGIH=American Conference of Governmental Industrial Hygiene.
	ACGIH-A1-Confirmed Human Carcinogen.
	ACGIH-A2-Suspected Human Carcinogen.
	ACGIH-A3-Animal Carcinogen.
	ACGIH-A4-Not Classifiable as a Human Carcinogen.
	ACGIH-A5-Not suspected as a Human Carcinogen.
	IARC=International Agency for Research on Cancer
	IARC 1: Proven.
	IARC 2A: Probable for human.
	IARC 2B: Possible for human.
	IARC 3: Not classifiable for human.
	EU= European Union
	Carc. 1A : May cause cancer (Known)
	Carc. 1B : May cause cancer (Presumed)
	Carc. 2 : Suspected of causing cancer
	NTP=National Toxicology program.

Procedure used to derive the classification

Classification	Justification
SKIN IRRITATION - Category 2	Calculation method
SERIOUS EYE DAMAGE - Category 1	Calculation method
SKIN SENSITIZATION - Category 1	Calculation method
CARCINOGENICITY - Category 1	Calculation method
TOXIC TO REPRODUCTION (Fertility) - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) (bones, central nervous system (CNS), lungs, respiratory tract, teeth) - Category 1	Calculation method

References

: HPR = Hazardous Products Regulations

Indicates information that has changed from previously issued version.

Notice to reader

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