

Safety Data Sheet



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

1.1 Product identifier

- Product Name** • **BC-620**
- Synonyms** • Anatase emulsion detector paint

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

- Relevant identified use(s)** • Anatase emulsion detector paint

1.3 Details of the supplier of the safety data sheet

- Manufacturer** • Saint-Gobain Crystals and Detectors
17900 Great Lakes Parkway
Hiram, OH 44234-9681
United States
www.crystals.saint-gobain.com
- Telephone (General)** • 440-834-5600

1.4 Emergency telephone number

- Manufacturer** • 1-800-424-9300 - ChemTrec
- Manufacturer** • 703-525-3887 - ChemTrec Outside U.S.

Section 2: Hazards Identification

EU/EEC

According to: Regulation (EC) No 1272/2008 (CLP)/REACH 1907/2006 [amended by 2015/830]

2.1 Classification of the substance or mixture

- CLP** • Carcinogenicity 2 - H351
Specific Target Organ Toxicity Repeated Exposure 2 - H373

2.2 Label Elements

CLP

WARNING



- Hazard statements** • H351 - Suspected of causing cancer.
H373 - May cause damage to organs through prolonged or repeated exposure.

Precautionary statements

- Prevention** • P201 - Obtain special instructions before use.
P202 - Do not handle until all safety precautions have been read and understood.
P260 - Do not breathe dust, mist, vapours and/or spray.
P280 - Wear protective gloves, clothing, and eye/face protection, .
- Response** • P314 - Get medical advice/attention if you feel unwell.
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.

2.3 Other Hazards

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

UN GHS Revision 4

According to: UN Globally Harmonized System of Classification and Labelling of Chemicals (GHS): Fourth Revised Edition

2.1 Classification of the substance or mixture

- UN GHS**
 - Skin Mild Irritation 3
 - Germ Cell Mutagenicity 2
 - Carcinogenicity 2
 - Specific Target Organ Toxicity Repeated Exposure 2
 - Hazardous to the aquatic environment Chronic 4

2.2 Label elements

UN GHS

WARNING



- Hazard statements** • Causes mild skin irritation
Suspected of causing genetic defects.
Suspected of causing cancer.
May cause damage to organs through prolonged or repeated exposure.
May cause long lasting harmful effects to aquatic life

Precautionary statements

- Prevention** • Obtain special instructions before use.
Do not handle until all safety precautions have been read and understood.
Do not breathe mist, vapours and/or spray.
Avoid release to the environment.
Wear protective gloves/protective clothing/eye protection/face protection.
- Response** • If skin irritation occurs: 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

- UN GHS**
 - According to the Globally Harmonized System for Classification and Labeling (GHS) this product is considered hazardous

United States (US)

According to: OSHA 29 CFR 1910.1200 HCS

2.1 Classification of the substance or mixture

OSHA HCS 2012

- Germ Cell Mutagenicity 2
Carcinogenicity 2
Specific Target Organ Toxicity Repeated Exposure 2

2.2 Label elements

OSHA HCS 2012

WARNING



- Hazard statements**
- Suspected of causing genetic defects.
Suspected of causing cancer.
May cause damage to organs 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, mist, vapours and/or spray.
Wear protective gloves/protective clothing/eye protection/face protection.
- Response**
- 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

OSHA HCS 2012

- Under United States Regulations (29 CFR 1910.1200 - Hazard Communication Standard), this product is considered hazardous.

Canada

According to: WHMIS 2015

2.1 Classification of the substance or mixture

WHMIS 2015

- Germ Cell Mutagenicity 2
Carcinogenicity 2
Specific Target Organ Toxicity Repeated Exposure 2

2.2 Label elements

WHMIS 2015

WARNING



- Hazard statements**
- Suspected of causing genetic defects.
Suspected of causing cancer.
May cause damage to organs 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, mist, vapours and/or spray.
Wear protective gloves/protective clothing/eye protection/face protection.
- Response**
- 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

WHMIS 2015

- 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

- Material does not meet the criteria of a substance.

3.2 Mixtures

Composition					
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments
Titanium dioxide	CAS:13463-67-7 EC Number:236-675-5	25% TO 50%	NDA	EU CLP: Muta. 2, H341; Carc. 2 (Inhl), H351; STOT RE 2 (Lungs, Inhl), H373 UN GHS Revision 4: Skin Irrit. 3; Muta. 2; Carc. 2 (inhl); STOT RE 2 (Lungs, Inhl); Aquatic Chronic 4 OSHA HCS 2012: Muta. 2; Carc. 2 (Inhl); STOT RE 2 (Lungs, Inhl) WHMIS 2015: Muta. 2; Carc. 2 (Inhl); STOT RE 2 (Lungs, Inhl)	NDA
Proprietary	Proprietary	15% TO 30%	NDA	EU CLP: Not Classified UN GHS Revision 4: Not Classified OSHA HCS 2012: Not Classified WHMIS 2015: Not Classified	NDA
Ethylene glycol	CAS:107-21-1 EC Number:203-473-3 EU Index:603-027-00-1	1% TO 3%	Ingestion/Oral-Rat LD50 • 4700 mg/kg Skin-Rabbit LD50 • 9530 µL/kg	EU CLP: Annex VI, Table 3.1: Acute Tox. 4 *, H302 UN GHS Revision 4: Acute Tox. 5 (Orl); Skin Irrit. 3; Eye Irrit. 2; STOT SE 1 (Kidney / OrL); STOT RE 1 (Kidney / OrL) OSHA HCS 2012: Eye Irrit. 2; STOT SE 1 (Kidney / OrL); STOT RE 1 (Kidney / OrL) WHMIS 2015: Eye Irrit. 2; STOT SE 1 (Kidney / OrL); STOT RE 1 (Kidney / OrL)	NDA
C12-C15 Alcohols Benzoate	CAS:68411-27-8 EINECS:270-112-4	0.5% TO 1%	NDA	EU CLP: Not Classified UN GHS Revision 4: Not Classified OSHA HCS 2012: Not Classified WHMIS 2015: Not Classified	NDA
Proprietary	Proprietary	0.1% TO 1%	NDA	EU CLP: Not Classified UN GHS Revision 4: Not Classified OSHA HCS 2012: Not Classified WHMIS 2015: Not Classified	NDA
Proprietary	Proprietary	0.1% TO 0.5%	NDA	EU CLP: Not Classified UN GHS Revision 4: Not Classified OSHA HCS 2012: Not Classified WHMIS 2015: Not Classified	NDA
Proprietary	Proprietary	0.1% TO 0.5%	NDA	EU CLP: Not Classified UN GHS Revision 4: Not Classified OSHA HCS 2012: Not Classified WHMIS 2015: Not Classified	NDA
	CAS:1336-21-6				

Ammonium hydroxide	EC Number: 215-647-6 EU Index: 007-001-01-2	< 0.1%	EU CLP: Union workplace exposure limit OSHA HCS 2012: Exposure limits	NDA
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See Section 16 for full text of H-statements.

Section 4 - First Aid Measures

4.1 Description of first aid measures

- Inhalation**
- Move victim to fresh air. Administer oxygen if breathing is difficult. Give artificial respiration if victim is not breathing. If signs/symptoms continue, get medical attention.
- Skin**
- In case of contact with substance, immediately flush skin with running water for at least 20 minutes.
- Eye**
- In case of contact with substance, immediately flush eyes with running water for at least 20 minutes.
- Ingestion**
- Do NOT induce vomiting. Obtain medical attention immediately if ingested.

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**
- In case of fire use media as appropriate for surrounding fire.
- Unsuitable Extinguishing Media**
- No data available

5.2 Special hazards arising from the substance or mixture

- Unusual Fire and Explosion Hazards**
- None known.
- Hazardous Combustion Products**
- No data available

5.3 Advice for firefighters

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

Section 6 - Accidental Release Measures

6.1 Personal precautions, protective equipment and emergency procedures

- Personal Precautions**
- Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact.
- Emergency Procedures**
- Keep unauthorized personnel away. Stay upwind.

6.2 Environmental precautions

- Avoid run off to waterways and sewers.

6.3 Methods and material for containment and cleaning up

Containment/Clean-up Measures

- Stop leak if you can do it without risk.
SMALL SPILLS: Take up with sand or other non-combustible absorbent material and place into containers for later disposal.
LARGE SPILLS: Dike far ahead of liquid spill for later disposal.

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. Do not breathe mist, vapors, or spray. Avoid contact with skin, eyes, and clothing. Do not eat, drink or smoke when using this product. 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 closed.

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	Canada British Columbia	Canada Manitoba	Canada New Brunswick	Canada Northwest Territories
Ethylene glycol (107-21-1)	Ceilings	100 mg/m ³ Ceiling (aerosol only)	100 mg/m ³ Ceiling (aerosol); 50 ppm Ceiling (vapour)	100 mg/m ³ Ceiling (aerosol only)	100 mg/m ³ Ceiling (aerosol)	100 mg/m ³ Ceiling (aerosol)
	STELs	Not established	20 mg/m ³ STEL (particulate)	Not established	Not established	Not established
	TWAs	Not established	10 mg/m ³ TWA (particulate)	Not established	Not established	Not established
Titanium dioxide (13463-67-7)	TWAs	10 mg/m ³ TWA	10 mg/m ³ TWA (total dust); 3 mg/m ³ TWA (respirable fraction)	10 mg/m ³ TWA	10 mg/m ³ TWA	10 mg/m ³ TWA
	STELs	Not established	Not established	Not established	Not established	20 mg/m ³ STEL
Exposure Limits/Guidelines (Con't.)						
	Result	Canada Nova Scotia	Canada Nunavut	Canada Ontario	Canada Quebec	Canada Yukon
Ethylene glycol (107-21-1)	Ceilings	100 mg/m ³ Ceiling (aerosol only)	100 mg/m ³ Ceiling (aerosol)	100 mg/m ³ Ceiling (aerosol only)	50 ppm Ceiling (mist and vapour); 127 mg/m ³ Ceiling (mist and vapour)	Not established
	STELs	Not established	Not established	Not established	Not established	10 ppm STEL (particulate); 20 mg/m ³ STEL (particulate); 125 ppm STEL (vapour); 325

						mg/m3 STEL (vapour)
	TWAs	Not established	Not established	Not established	Not established	10 mg/m3 TWA (particulate); 100 ppm TWA (vapour); 250 mg/m3 TWA (vapour)
Titanium dioxide (13463-67-7)	TWAs	10 mg/m3 TWA	10 mg/m3 TWA	10 mg/m3 TWA	10 mg/m3 TWAEV (containing no Asbestos and <1% Crystalline silica, total dust)	30 mppcf TWA (as Ti); 10 mg/m3 TWA (as Ti)
	STELs	Not established	20 mg/m3 STEL	Not established	Not established	20 mg/m3 STEL (as Ti)

Exposure Limits/Guidelines (Con't.)

	Result	China	Denmark	Finland	France	Germany DFG
Ammonium hydroxide (1336-21-6)	TWAs	Not established	Not established	20 ppm TWA; 14 mg/m3 TWA	Not established	Not established
Ethylene glycol (107-21-1)	STELs	40 mg/m3 STEL	Not established	Not established	40 ppm STEL [VLCT] (indicative limit, vapor); 104 mg/m3 STEL [VLCT] (indicative limit, vapor)	Not established
	TWAs	20 mg/m3 TWA	10 ppm TWA; 26 mg/m3 TWA; 10 mg/m3 TWA (atomized)	20 ppm TWA; 50 mg/m3 TWA	20 ppm TWA [VME] (indicative limit, vapor); 52 mg/m3 TWA [VME] (indicative limit, vapor)	Not established
	Ceilings	Not established	Not established	Not established	Not established	20 ppm Peak (can occur as vapor and aerosol at the same time); 52 mg/m3 Peak (can occur as vapor and aerosol at the same time)
	MAKs	Not established	Not established	Not established	Not established	10 ppm TWA MAK (can occur as vapor and aerosol at the same time); 26 mg/m3 TWA MAK (can occur as vapor and aerosol at the same time)
Titanium dioxide (13463-67-7)	STELs	16 mg/m3 STEL (total dust)	Not established	Not established	Not established	Not established
	TWAs	8 mg/m3 TWA (total dust)	6 mg/m3 TWA (as Ti)	Not established	10 mg/m3 TWA [VME] (as Ti)	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Germany TRGS	Greece	Hungary	Ireland	Italy
		10 ppm TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW)				

Ethylene glycol (107-21-1)	TWAs	and BGW values are observed; sum of vapor and aerosol, exposure factor 2); 26 mg/m3 TWA AGW (The risk of damage to the embryo or fetus can be excluded when AGW and BGW values are observed; sum of vapor and aerosol, exposure factor 2)	50 ppm TWA (vapor); 125 mg/m3 TWA (vapor)	52 mg/m3 TWA [AK]	10 mg/m3 TWA (particulate); 20 ppm TWA (vapour); 52 mg/m3 TWA (vapour)	20 ppm TWA Media Ponderata nel Tempo; 52 mg/m3 TWA Media Ponderata nel Tempo
	STELs	Not established	50 ppm STEL (vapor); 125 mg/m3 STEL (vapor)	104 mg/m3 STEL [CK]	40 ppm STEL (particulate); 104 mg/m3 STEL (vapour)	40 ppm STEL Breve termine; 104 mg/m3 STEL Breve termine
Titanium dioxide (13463-67-7)	TWAs	Not established	10 mg/m3 TWA (inhalable fraction); 5 mg/m3 TWA (respirable fraction)	Not established	10 mg/m3 TWA (total inhalable dust); 4 mg/m3 TWA (respirable dust)	Not established
	STELs	Not established	Not established	Not established	30 mg/m3 STEL (calculated, total inhalable dust); 12 mg/m3 STEL (calculated, respirable dust)	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Netherlands	OSHA	Poland	Portugal	Spain
Ethylene glycol (107-21-1)	Ceilings	Not established	Not established	Not established	100 mg/m3 Ceiling [VLE-CM] (aerosol only)	Not established
	STELs	104 mg/m3 STEL	Not established	50 mg/m3 STEL [NDSCh]	40 ppm STEL [VLE-CD] (indicative limit value); 104 mg/m3 STEL [VLE-CD] (indicative limit value)	40 ppm STEL [VLA-EC]; 104 mg/m3 STEL [VLA-EC]
	TWAs	52 mg/m3 TWA (fume); 10 mg/m3 TWA (droplets)	Not established	15 mg/m3 TWA [NDS]	20 ppm TWA [VLE-MP] (indicative limit value); 52 mg/m3 TWA [VLE-MP] (indicative limit value)	20 ppm TWA [VLA-ED] (indicative limit value); 52 mg/m3 TWA [VLA-ED] (indicative limit value)
Titanium dioxide	TWAs	Not established	15 mg/m3 TWA (total dust)	10.0 mg/m3 TWA [NDS] (<2% free crystalline silica and containing no asbestos, inhalable fraction)	10 mg/m3 TWA [VLE-MP]	10 mg/m3 TWA [VLA-ED]
	STELs	Not established	Not established	30 mg/m3 STEL [NDSCh] (as Ti) <i>as Titanium compounds</i>	Not established	Not established

Exposure Limits/Guidelines (Con't.)

	Result	Sweden
Ethylene glycol	STELs	40 ppm Binding STLV (aerosol and vapor); 104 mg/m3 Binding STLV (aerosol and vapor)

(107-21-1)	TWAs	10 ppm LLV (aerosol and vapor); 25 mg/m ³ LLV (aerosol and vapor)
Titanium dioxide (13463-67-7)	TWAs	5 mg/m ³ LLV (total dust)

Exposure Control Notations

Denmark

- Ethylene glycol (107-21-1): **Skin Notations:** (Potential for cutaneous absorption)

Portugal

- Titanium dioxide (13463-67-7): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Ethylene glycol (107-21-1): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen) | **Skin:** (skin - potential for cutaneous exposure (indicative limit value))

Italy

- Ethylene glycol (107-21-1): **Skin:** (skin - potential for cutaneous absorption)

Hungary

- Ethylene glycol (107-21-1): **Skin:** (potential for cutaneous absorption)

Netherlands

- Ethylene glycol (107-21-1): **Skin:** (skin notation)

Finland

- Ethylene glycol (107-21-1): **Skin:** (Potential for cutaneous absorption)

Ireland

- Ethylene glycol (107-21-1): **Skin:** (Potential for cutaneous absorption)

Spain

- Ethylene glycol (107-21-1): **Skin:** (skin - potential for cutaneous exposure)

Sweden

- Ethylene glycol (107-21-1): **Skin:** (Skin notation)

ACGIH

- Titanium dioxide (13463-67-7): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)
- Ethylene glycol (107-21-1): **Carcinogens:** (A4 - Not Classifiable as a Human Carcinogen)

Germany TRGS

- Ethylene glycol (107-21-1): **Skin:** (skin notation)

Germany DFG

- Titanium dioxide (13463-67-7): **Carcinogens:** (Category 3A (could be carcinogenic for man; inhalable fraction with the exception of ultra small particles))
- Ethylene glycol (107-21-1): **Pregnancy:** (no risk to embryo/fetus if exposure limits adhered to) | **Skin:** (skin notation)

Exposure Limits Supplemental

ACGIH

- Titanium dioxide (13463-67-7): **TLV Basis - Critical Effects:** (lower respiratory tract irritation)
- Ethylene glycol (107-21-1): **TLV Basis - Critical Effects:** (eye and upper respiratory tract irritation) | **Notice of Intended Changes (TLVs):** (25 ppm TWA (vapor fraction); 50 ppm STEL (vapor fraction); 10 mg/m³ STEL (inhalable particulate matter, aerosol only); A4 - not classifiable as a human carcinogen; TLV basis: eye and upper respiratory tract irritation; kidney damage)

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

- In case of insufficient ventilation, wear suitable respiratory equipment.

Eye/Face

- Wear protective eyewear (goggles, face shield, or safety glasses).

Skin/Body

- Wear appropriate gloves.

Environmental Exposure Controls

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

Key to abbreviations

ACGIH = American Conference of Governmental Industrial Hygiene

LLV = Limit Level Value is the exposure limit for 8-hour work day

MAK = Maximale Arbeitsplatz Konzentration is the maximum permissible concentration

NIOSH = National Institute of Occupational Safety and Health

OSHA = Occupational Safety and Health Administration

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

TLV = Threshold Limit Value determined by the American Conference of Governmental Industrial Hygienists (ACGIH)

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

TWAEV = Time-Weighted Average Exposure Value

Section 9 - Physical and Chemical Properties**9.1 Information on Basic Physical and Chemical Properties**

Material Description			
Physical Form	Liquid	Appearance/Description	White viscous liquid with perceptible odour.
Color	White	Odor	Perceptible odour.
Odor Threshold	Data lacking		
General Properties			
Boiling Point	> 100 °C(> 212 °F)	Melting Point/Freezing Point	Data lacking
Decomposition Temperature	Data lacking	pH	Data lacking
Specific Gravity/Relative Density	= 1.04 Water=1	Water Solubility	Data lacking
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	< 760 mmHg (torr) @ 100 °C(212 °F)	Vapor Density	> 1 Air=1
Evaporation Rate	Data lacking		
Flammability			
Flash Point	Data lacking	UEL	Data lacking
LEL	Data lacking	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 will not occur.

10.4 Conditions to avoid

- Incompatible materials.

10.5 Incompatible materials

- Keep away from strongly alkaline and acid materials.

10.6 Hazardous decomposition products

- In a fire, decomposition products such as smoke, carbon monoxide, carbon dioxide may be produced.

Section 11 - Toxicological Information

11.1 Information on toxicological effects

		Components
Titanium dioxide (25% TO 50%)	13463-67-7	<p>Irritation: Skin-Human • 300 µg 3 Day(s)-Intermittent • Mild irritation;</p> <p>Multi-dose Toxicity: Inhalation-Rat TClO • 10 mg/m³ 6 Hour(s) 13 Week(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Fibrosis (interstitial); Lungs, Thorax, or Respiration:Other changes; Biochemical:Metabolism (intermediary):Effect on inflammation or mediation of inflammation;</i> Inhalation-Rat TClO • 250 mg/m³ 6 Hour(s) 4 Week(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Chronic pulmonary edema; Lungs, Thorax, or Respiration:Other changes;</i></p> <p>Mutagen: Micronucleus test • Ingestion/Oral-Mouse • 280 mg/kg 7 Day(s)-Intermittent; DNA damage • Ingestion/Oral-Mouse • 280 mg/kg 7 Day(s)-Intermittent; Cytogenetic analysis • Ingestion/Oral-Mouse • 280 mg/kg 7 Day(s)-Intermittent;</p> <p>Tumorigen / Carcinogen: Inhalation-Rat • 10 mg/m³ 18 Hour(s) 2 Year(s)-Intermittent; <i>Tumorigenic:Carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration:Tumors;</i> Inhalation-Rat TClO • 250 mg/m³ 6 Hour(s) 2 Year(s)-Intermittent; <i>Tumorigenic:Carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration:Tumors</i></p>
Ethylene glycol (1% TO 3%)	107-21-1	<p>Acute Toxicity: Ingestion/Oral-Rat LD50 • 4700 mg/kg; Ingestion/Oral-Man TDLo • 24 g/kg; <i>Brain and Coverings:Other degenerative changes; Behavioral:Ataxia; Behavioral:Coma;</i> Ingestion/Oral-Man TDLo • 1195 mg/kg; <i>Peripheral Nerve and Sensation:Sensory change involving peripheral nerve; Kidney, Ureter, and Bladder:Renal function tests depressed;</i> Ingestion/Oral-Man TDLo • 15 g/kg; <i>Peripheral Nerve and Sensation:Sensory change involving peripheral nerve; Gastrointestinal:Ulceration or bleeding from small intestine; Kidney, Ureter, and Bladder:Renal function tests depressed;</i> Ingestion/Oral-Rat TDLo • 120 mg/kg; <i>Blood:Changes in bone marrow not included above;</i> Inhalation-Human TClO • 22 mg/m³; <i>Kidney, Ureter, and Bladder:Proteinuria;</i> Inhalation-Rat TClO • 0.004 g/m³ 2 Hour(s); <i>Behavioral:Muscle contraction or spasticity; Lungs, Thorax, or Respiration:Respiratory stimulation; Gastrointestinal:Hypermotility, diarrhea;</i> Skin-Rabbit LD50 • 9530 µL/kg;</p> <p>Irritation: Eye-Rabbit • 100 mg 1 Hour(s) • Mild irritation; Skin-Rabbit • 555 mg-Open • Mild irritation;</p> <p>Multi-dose Toxicity: Inhalation-Guinea Pig TClO • 0.003 g/m³ 45 Day(s)-Intermittent; <i>Behavioral:Excitement; Liver:Liver function tests impaired;</i> Inhalation-Rat TClO • 0.003 g/m³ 228 Day(s)-Intermittent; <i>Brain and Coverings:Other degenerative changes; Vascular:Structural changes in vessels; Lungs, Thorax, or Respiration:Emphysema;</i> Inhalation-Rat TClO • 0.02 g/m³ 153 Day(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Emphysema; Kidney, Ureter, and Bladder:Changes in tubules (including acute renal failure, acute tubular necrosis); Blood:Changes in spleen;</i> Inhalation-Rat TClO • 1 mg/m³ 32 Week(s)-Intermittent; <i>Lungs, Thorax, or Respiration:Other changes; Liver:Liver function tests impaired; Kidney, Ureter, and Bladder:Changes in tubules (including acute renal failure, acute tubular necrosis);</i></p> <p>Mutagen: Cytogenetic analysis • Ingestion/Oral-Rat • 1200 mg/kg;</p> <p>Reproductive: Ingestion/Oral-Mouse TDLo • 850 mg/kg (multigenerations); <i>Reproductive Effects:Specific Developmental Abnormalities:Urogenital system;</i> Inhalation-Mouse TClO • 1000 mg/m³ 6 Hour(s)(6-15D preg); <i>Reproductive Effects:Effects on Fertility:Post-implantation mortality; Reproductive Effects:Effects on Embryo or Fetus:Fetotoxicity (except death, e.g., stunted fetus); Reproductive Effects:Effects on Newborn:Sex ratio;</i> Inhalation-Mouse TClO • 2100 mg/m³ 6 Hour(s)(6-15D preg); <i>Reproductive Effects:Maternal Effects:Other effects; Reproductive Effects:Effects on Fertility:Pre-implantation mortality; Reproductive Effects:Effects on Fertility:Post-implantation mortality;</i> Inhalation-Rat TClO • 2500 mg/m³ 6 Hour(s)(6-15D preg); <i>Reproductive Effects:Maternal Effects:Other effects; Reproductive Effects:Specific Developmental Abnormalities:Musculoskeletal system; Reproductive Effects:Specific Developmental Abnormalities:Other developmental abnormalities</i></p>

GHS Properties	Classification
Acute toxicity	EU/CLP • Data lacking UN GHS 4 • Data lacking OSHA HCS 2012 • Data lacking

	WHMIS 2015 • Data lacking
Skin corrosion/Irritation	EU/CLP • Data lacking UN GHS 4 • Skin Mild Irritation 3 OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
Serious eye damage/Irritation	EU/CLP • Data lacking UN GHS 4 • Data lacking OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
Skin sensitization	EU/CLP • Data lacking UN GHS 4 • Data lacking OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
Respiratory sensitization	EU/CLP • Data lacking UN GHS 4 • Data lacking OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
Aspiration Hazard	EU/CLP • Data lacking UN GHS 4 • Data lacking OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
Carcinogenicity	EU/CLP • Carcinogenicity 2; Suspected of causing cancer UN GHS 4 • Carcinogenicity 2 OSHA HCS 2012 • Carcinogenicity 2 WHMIS 2015 • Carcinogenicity 2
Germ Cell Mutagenicity	EU/CLP • Data lacking UN GHS 4 • Germ Cell Mutagenicity 2 OSHA HCS 2012 • Germ Cell Mutagenicity 2 WHMIS 2015 • Germ Cell Mutagenicity 2
Toxicity for Reproduction	EU/CLP • Data lacking UN GHS 4 • Data lacking OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
STOT-SE	EU/CLP • Data lacking UN GHS 4 • Data lacking OSHA HCS 2012 • Data lacking WHMIS 2015 • Data lacking
STOT-RE	EU/CLP • Specific Target Organ Toxicity Repeated Exposure 2 UN GHS 4 • Specific Target Organ Toxicity Repeated Exposure 2 OSHA HCS 2012 • Specific Target Organ Toxicity Repeated Exposure 2 WHMIS 2015 • Specific Target Organ Toxicity Repeated Exposure 2

Potential Health Effects

Inhalation

Acute (Immediate)

- No data available

Chronic (Delayed)

- An adverse pulmonary reaction has occurred among Finnish workers using titanium dioxide as a mordant in the dying process. Recurrent episodes of bronchitis & presumably granulomatous lesions in the lungs were reported.

Skin

- Acute (Immediate)** • Causes mild skin irritation.
- Chronic (Delayed)** • No data available

Eye

- Acute (Immediate)** • No data available
- Chronic (Delayed)** • No data available

Ingestion

- Acute (Immediate)** • No data available
- Chronic (Delayed)** • No data available

Mutagenic Effects

- Repeated and prolonged exposure may cause mutagenic effects.

Carcinogenic Effects

- Repeated and prolonged exposure may cause cancer.

Carcinogenic Effects		
	CAS	IARC
Titanium dioxide	13463-67-7	Group 2B-Possible Carcinogen

Reproductive Effects

- Repeated and prolonged exposure may cause reproductive effects.

Key to abbreviations

LD = Lethal Dose

TC = Toxic Concentration

TD = Toxic Dose

Section 12 - Ecological Information**12.1 Toxicity**

- Material data lacking.

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	Not Applicable	Not Regulated	Not Applicable	Not Applicable	NDA
TDG	Not Applicable	Not Regulated	Not Applicable	Not Applicable	NDA
IMO/IMDG	Not Applicable	Not Regulated	Not Applicable	Not Applicable	NDA
IATA/ICAO	Not Applicable	Not Regulated	Not Applicable	Not Applicable	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.

Section 15 - Regulatory Information

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

SARA Hazard Classifications • Chronic

State Right To Know		
Component	CAS	PA
Ammonium hydroxide	1336-21-6	Yes
Titanium dioxide	13463-67-7	Yes

Inventory						
Component	CAS	Canada DSL	Canada NDSL	China	EU EINECS	EU ELNICS
Ammonium hydroxide	1336-21-6	Yes	No	Yes	Yes	No
Titanium dioxide	13463-67-7	Yes	No	Yes	Yes	No

Inventory (Con't.)			
Component	CAS	Korea KECL	TSCA
Ammonium hydroxide	1336-21-6	Yes	Yes
Titanium dioxide	13463-67-7	Yes	Yes

Canada

Labor

Canada - WHMIS 1988 - Classifications of Substances

• Titanium dioxide	13463-67-7	D2A (In certain cases, this classification does not apply. For more information, consult the section Substance Specific Issues - Titanium dioxide, mixture containing on Health Canada's WHMIS Division website.)
• Ammonium hydroxide	1336-21-6	E (including 1N)

Canada - WHMIS 1988 - Ingredient Disclosure List

• Titanium dioxide	13463-67-7	Not Listed
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• Ammonium hydroxide	1336-21-6	1 %
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Environment**Canada - CEPA - Priority Substances List**

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

China**Environment****China - Ozone Depleting Substances - First Schedule**

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

China - Ozone Depleting Substances - Second Schedule

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

China - Ozone Depleting Substances - Third Schedule

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

Other**China - Annex I & II - Controlled Chemicals Lists**

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

China - Dangerous Goods List

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

Germany**Labor****Germany - Immission Control - Qualifying Quantities for Major Accident Prevention**

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

Germany - Immission Control - Qualifying Quantities for Safety Reporting

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

Germany - TRGS 505 - Specific Lead Regulations

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

Environment**Germany - TA Luft - Types and Classes**

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

Germany - TA Luft - Emission Limits for Carcinogenic Substances

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

Germany - TA Luft - Emission Limits for Fibers

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
Germany - TA Luft - Emission Limits for Inorganic Dusts		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
Germany - TA Luft - Emission Limits for Inorganic Gases		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
Germany - TA Luft - Emission Limits for Organic Substances		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
Germany - Water Classification (VwVwS) - Annex 1		
• Titanium dioxide	13463-67-7	1345, not considered hazardous to water
• Ammonium hydroxide	1336-21-6	Not Listed
Germany - Water Classification (VwVwS) - Annex 2 - Water Hazard Classes		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	ID Number 211, hazard class 2 - hazard to waters
Germany - Water Classification (VwVwS) - Annex 3		
• Titanium dioxide	13463-67-7	ID Number 1345, not considered hazardous to water
• Ammonium hydroxide	1336-21-6	Not Listed

United States

Labor		
U.S. - OSHA - Process Safety Management - Highly Hazardous Chemicals		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - OSHA - Specifically Regulated Chemicals		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

Environment		
U.S. - CAA (Clean Air Act) - 1990 Hazardous Air Pollutants		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - CERCLA/SARA - Hazardous Substances and their Reportable Quantities		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	1000 lb final RQ; 454 kg final RQ
U.S. - CERCLA/SARA - Radionuclides and Their Reportable Quantities		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs		

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - CERCLA/SARA - Section 313 - Emission Reporting		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - CERCLA/SARA - Section 313 - PBT Chemical Listing		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

United States - California

Environment

U.S. - California - Proposition 65 - Carcinogens List

• Titanium dioxide	13463-67-7	carcinogen, 9/2/2011 (airborne, unbound particles of respirable size)
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - California - Proposition 65 - Developmental Toxicity		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - California - Proposition 65 - Maximum Allowable Dose Levels (MADL)		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - California - Proposition 65 - No Significant Risk Levels (NSRL)		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Female		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed
U.S. - California - Proposition 65 - Reproductive Toxicity - Male		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	Not Listed

United States - Pennsylvania

Labor

U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List

• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	
U.S. - Pennsylvania - RTK (Right to Know) - Special Hazardous Substances		
• Titanium dioxide	13463-67-7	Not Listed
• Ammonium hydroxide	1336-21-6	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

Relevant Phrases (code & full text)

- H302 - Harmful if swallowed
H341 - Suspected of causing genetic defects.

Revision Date

- 14/August/2017

Preparation Date

- 05/February/2009

Disclaimer/Statement of Liability

- The information herein is presented in good faith and believed to be accurate as of the effective date given. However, no warranty, expressed or implied, is given. It is the buyer's responsibility to ensure that its activities comply with Federal, State or provincial, and local laws.

Key to abbreviations

NDA = No Data Available