### Safety Data Sheet



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

#### 1.1 Product identifier

Product Name • Polyvinyl Toluene & Organic fluors with Boron

Synonyms • Plastic Scintillators

• BC-454; BC-45410; BC-49981; BC-49982

### 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 • Saint-Gobain Crystals

17900 Great Lakes Parkway

Hiram, OH 44234 United States

www.crystals.saint-gobain.com scintillation@saint-gobain.com

**Telephone (General)** • 440-834-5600

# 1.4 Emergency telephone number

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

### 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

CLPNot classifiedNot classified

### 2.2 Label Elements

**CLP** 

Hazard statements · No label element(s) required

DSD/DPD

Risk phrases · No label element(s) required

#### 2.3 Other Hazards

• According to Regulation (EC) No. 1272/2008 (CLP) this material is not considered

hazardous.

• According to European Directive 1999/45/EC this preparation is not considered

dangerous.

**United States (US)** 

According to: OSHA 29 CFR 1910.1200 HCS

### 2.1 Classification of the substance or mixture

OSHA HCS 2012 • Not classified

2.2 Label elements

OSHA HCS 2012

**Hazard statements** • No label element(s) required

2.3 Other hazards

• This product is not considered hazardous under the U.S. OSHA 29 CFR 1910.1200

Hazard Communication Standard.

Canada

According to: WHMIS

### 2.1 Classification of the substance or mixture

WHMIS • Not classified

2.2 Label elements

WHMIS
 No label element(s) required.

2.3 Other hazards

In Canada, the product mentioned above is not 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 in accordance with Regulation (EC) No 1272/2008.

### 3.2 Mixtures

Composition						
Chemical Name	Identifiers	%	LD50/LC50	Classifications According to Regulation/Directive	Comments	
Vinyl toluene	CAS:25013- 15-4 EINECS:246- 562-2	85.8002% TO 91.6329%	Ingestion/Oral-Rat LD50 • 2255 mg/kg	<b>EU DSD/DPD:</b> Xi; R36/37/38; R67 <b>EU CLP:</b> Flam. Liq. 3, H226; Skin Irrit. 2, H315; STOT SE 3: Resp. Irrit., H335; STOT SE 3: Narc., H336; <b>OSHA HCS 2012:</b> Flam. Liq. 3; Eye Irrit. 2; Skin Irrit. 2; STOT SE 3: Resp. Irrit. & Narc.	NDA	

Boron	CAS:16872- 09-6 EINECS:240- 897-8	6.2258% TO 11.7813%	NDA	EU DSD/DPD: Not Classified EU CLP: Not Classified OSHA HCS 2012: Not Classified	NDA
Organic fluors	Proprietary	0% TO 2.5515%	NDA	EU DSD/DPD: Not Classified EU CLP: Not Classified OSHA HCS 2012: Not Classified	NDA
Organic fluors	Proprietary	0% TO 2.0523%	NDA	EU DSD/DPD: Xn; R22 EU CLP: Acute Tox. 4, H302 OSHA HCS 2012: Acute Tox. 4 (orl)	NDA
Organic fluors	Proprietary	0.0279% TO 0.0308%	Ingestion/Oral-Rat LD50 • 890 mg/kg	EU CLP: Community workplace exposure limit OSHA HCS 2012: Exposure limits	NDA
Organic fluors	Proprietary	0% TO 0.0041%	Ingestion/Oral-Rat LD50 • >10 g/kg	EU CLP: Community workplace exposure limit OSHA HCS 2012: Exposure limits	NDA

See Section 16 for full text of H-statements and R-phrases.

#### **Section 4 - First Aid Measures**

### 4.1 Description of first aid measures

Inhalation • Move victi

 Move victim to fresh air. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult. If signs/symptoms continue, get medical attention.

 Wash skin with soap and water. If irritation develops and persists, get medical attention.

• Flush eyes with water for at least 15 minutes while holding eyelids open. If eye

irritation persists: Get medical advice/attention.

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 • Water fog, carbon dioxide, foam, dry chemical.

**Unsuitable Extinguishing** • No data available.

Media

Skin

Eye

### 5.2 Special hazards arising from the substance or mixture

**Unusual Fire and Explosion** • May emit toxic fumes when exposed to high heat.

Hazards

Hazardous Combustion • No data available

**Products** 

#### 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 before entry. Do not walk through spilled material. Wear appropriate personal protective equipment, avoid direct contact.

**Emergency Procedures** 

As an immediate precautionary measure, isolate spill or leak area for at least 25 meters (75 feet) 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: 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. Minimize dust generation and accumulation. Wear appropriate personal protective equipment, avoid direct contact. 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

Store in a cool, dry, well ventilated area.

### 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	OSHA		
Organic fluors (Proprietary)	TWAs	Not established	10 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable dust)	15 mg/m3 TWA (total dust); 5 mg/m3 TWA (respirable fraction)		
Organic fluors (Proprietary)	Ceilings	Not established	0.5 ppm Ceiling; 5 mg/m3 Ceiling	Not established		
Organic fluors (Proprietary)	TWAs	2 mg/m3 TWA (inhalable fraction and vapor)	10 mg/m3 TWA	Not established		
Vinyl toluene	TWAs	50 ppm TWA	100 ppm TWA; 480 mg/m3 TWA	100 ppm TWA; 480 mg/m3 TWA		
(25013-15-4)	STELs	100 ppm STEL	Not established	Not established		

### **Exposure Control Notations**

•Vinyl toluene (25013-15-4): Carcinogens: (A4 - Not Classifiable as a Human Carcinogen)

Organic fluors (Proprietary): Carcinogens: (A4 - Not Classifiable as a Human Carcinogen)

#### **Exposure Limits Supplemental ACĠIH**

- •Vinyl toluene (25013-15-4): TLV Basis Critical Effects: (eye and upper respiratory tract irritation)
- •Organic fluors (Proprietary): TLV Basis Critical Effects: (upper respiratory tract irritation)

### 8.2 Exposure controls

Engineering Measures/Controls

 Adequate ventilation systems as needed to control concentrations of airborne contaminants below applicable threshold limit values. Ensure that dust handling systems (such as exhaust ducts, dust collectors, vessels and processing equipment) are designed in a manner to prevent the escape of dust into the work area (i.e., there is not leakage from the equipment).

### **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.

#### Key to abbreviations

ACGIH = American Conference of Governmental

Industrial Hygiene

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

NIOSH = National Institute of Occupational Safety and Health

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

OSHA = Occupational Safety and Health
Administration

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	Clear, blue, fluorescent plastic.
Color	Clear, blue.	Odor	Data lacking
Odor Threshold	Data lacking		
General Properties			
Boiling Point	Data lacking	Melting Point/Freezing Point	Data lacking
Decomposition Temperature	Data lacking	рН	Data lacking
Specific Gravity/Relative Density	> 1 Water=1	Water Solubility	Data lacking
Viscosity	Data lacking	Explosive Properties	Data lacking
Oxidizing Properties:	Data lacking		
Volatility			
Vapor Pressure	Data lacking	Vapor Density	Data lacking
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

# 10.3 Possibility of hazardous reactions

· Hazardous polymerization not indicated.

### 10.4 Conditions to avoid

• Temperatures over 300° C.

# 10.5 Incompatible materials

· No data available

# 10.6 Hazardous decomposition products

• Toxic fumes of carbon monoxide, carbon dioxide, borane, boron oxides.

# **Section 11 - Toxicological Information**

# 11.1 Information on toxicological effects

	Components				
Vinyl toluene (85.8002% TO 91.6329%)	25013-15- 4	Acute Toxicity: Ingestion/Oral-Rat LD50 • 2255 mg/kg; Sense Organs and Special Senses:Eye:Lacrimation; Behavioral:Somnolence (general depressed activity); Skin and Appendages:Other:Hair; Irritation: Eye-Rabbit • 90 mg • Mild irritation; Skin-Rabbit • 100 % • Moderate irritation			
Organic fluors (0% TO 2.0523%)	Proprietary	Acute Toxicity: Ingestion/Oral-Rat LD50 • 1000 mg/kg; Liver:Changes in liver weight; Multi-dose Toxicity: Ingestion/Oral-Rat TDLo • 1680 mg/kg 14 Day(s)-Continuous; Blood:Changes in serum composition (e.g., TP, bilirubin cholesterol); Biochemical:Metabolism (intermediary):Lipids, including transport			

GHS Properties	Classification	
Acute toxicity	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking	
Skin corrosion/Irritation	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking	
Serious eye damage/Irritation	EU/CLP • Data lacking OSHA HCS 2012 • Data lacking	
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 • Data lacking OSHA HCS 2012 • Data lacking
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 • Data lacking

### Potential Health Effects Inhalation

Acute (Immediate)

 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)

Exposure to dust may cause mechanical irritation.

Chronic (Delayed)

No data available.

Eye

Acute (Immediate)

 Exposure to dust may cause mechanical 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.

#### Key to abbreviations

LD = Lethal Dose
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	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.

# **Section 15 - Regulatory Information**

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

SARA Hazard Classifications • None

Inventory						
Component	CAS	Canada DSL	Canada NDSL	EU EINECS	EU ELNICS	TSCA
Boron	16872-09-6	No	Yes	Yes	No	Yes
Organic fluors	Proprietary	Yes	No	Yes	No	Yes
Organic fluors	Proprietary	No	Yes	Yes	No	Yes
Organic fluors	Proprietary	Yes	No	Yes	No	Yes
Vinyl toluene	25013-15-4	Yes	No	Yes	No	Yes
Organic fluors	Proprietary	Yes	No	Yes	No	Yes

#### Canada

#### Labor

Canada - WHMIS - Classifications of Substances

· Vinyl toluene 25013-15-4 B3, D2B · Organic fluors Proprietary Not Listed

> Uncontrolled product according to WHMIS

Proprietary · Organic fluors

		classification criteria	
• Boron	16872-09-6	Not Listed	
Organic fluors	Proprietary	Not Listed	
Organic fluors	Proprietary	Not Listed	
Canada - WHMIS - Ingredient Disclosure List	05040 45 4	4.0/	
Vinyl toluene     Operation floorer	25013-15-4	1 %	
Organic fluors	Proprietary	1 %	
Organic fluors	Proprietary	1 %	
Boron     Operation floorers	16872-09-6	Not Listed	
Organic fluors	Proprietary	1 %	
Organic fluors	Proprietary	Not Listed	
Environment			_
Canada - CEPA - Priority Substances List			
Vinyl toluene	25013-15-4	Not Listed	
Organic fluors	Proprietary	Not Listed	
Organic fluors	Proprietary	Not Listed	
• Boron	16872-09-6	Not Listed	
Organic fluors	Proprietary	Not Listed	
Organic fluors	Proprietary	Not Listed	
United States			
Labor U.S OSHA - Process Safety Management - Highly Hazardous Chemicals			
Vinyl toluene	25013-15-4	Not Listed	
Organic fluors	Proprietary	Not Listed	
Organic fluors	Proprietary	Not Listed	
Boron	16872-09-6	Not Listed	
	Proprietary	Not Listed	
Organic fluors     Organic fluors	Proprietary	Not Listed	
	rropinolary	Ttot Liotod	
U.S OSHA - Specifically Regulated Chemicals			
Vinyl toluene	25013-15-4	Not Listed	
Organic fluors	Proprietary	Not Listed	
Organic fluors	Proprietary	Not Listed	
• Boron	16872-09-6	Not Listed	
Organic fluors	Proprietary	Not Listed	
Organic fluors	Proprietary	Not Listed	
Environment			
U.S CAA (Clean Air Act) - 1990 Hazardous Air Pollutants			
Vinyl toluene	25013-15-4	Not Listed	
Organic fluors	Proprietary	Not Listed	
Organic fluors	Proprietary	Not Listed	
• Boron	16872-09-6	Not Listed	
Organic fluors	Proprietary	Not Listed	
Organic fluors	Proprietary	Not Listed	
U.S CERCLA/SARA - Hazardous Substances and their Reportable Quantitie	es		
Vinyl toluene	25013-15-4	Not Listed	
1 * VIIIVI LUIUEITE	2:3() 1.3-1:3-4		
Organic fluors     Organic fluors	Proprietary Proprietary	Not Listed Not Listed	

Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S CERCLA/SARA - Radionuclides and Their Reportable Quantities		
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S CERCLA/SARA - Section 302 Extremely Hazardous Substances EPCRA RQs		
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S CERCLA/SARA - Section 302 Extremely Hazardous Substances TPQs		
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S CERCLA/SARA - Section 313 - Emission Reporting		
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S CERCLA/SARA - Section 313 - PBT Chemical Listing		
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
	Proprietary Proprietary	Not Listed
Organic fluors	гторпесату	INOL LISIEU

# **United States - California**

Environment U.S California - Proposition 65 - Carcinogens List		
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S California - Proposition 65 - Developmental Toxicity		
Vinyl toluene	25013-15-4	Not Listed

T		
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S California - Proposition 65 - Maximum Allowable Dose Levels (	MADL)	
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S California - Proposition 65 - No Significant Risk Levels (NSRL)		
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S California - Proposition 65 - Reproductive Toxicity - Female		
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
U.S California - Proposition 65 - Reproductive Toxicity - Male		
Vinyl toluene	25013-15-4	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed
• Boron	16872-09-6	Not Listed
Organic fluors	Proprietary	Not Listed
Organic fluors	Proprietary	Not Listed

# 15.2 Chemical Safety Assessment

· No Chemical Safety Assessment has been carried out.

# **Section 16 - Other Information**

### Relevant Phrases (code & full text)

H226 - Flammable liquid and vapour

H302 - Harmful if swallowed

H315 - Causes skin irritation

H335 - May cause respiratory irritation

H336 - May cause drowsiness or dizziness

R22 - Harmful if swallowed.

R36/37/38 - Irritating to eyes, respiratory system and skin.

R67 - Vapours may cause drowsiness and dizziness.

24/May/2017

Revision Date: 24/May/2017

#### **Preparation Date**

# Disclaimer/Statement of Liability

**Key to abbreviations**NDA = No data available

#### 27/March/2015

Reasonable care has been taken in the preparation of this information, but the supplier
gives no warranty of merchantability or of fitness for a particular purpose. Any product
purchased is sold on the assumption the purchaser will make his own tests to
determine the quality and suitability of the product. Supplier expressly disclaims any
and all liability for incidental and/or consequential property damage arising out of the
use of this product. No information provided shall be deemed to be a recommendation
to use any product in conflict with any existing patent rights. Read the Safety Data
Sheet before handling product.