TERRAFUSE INC.

Safety Data Sheet
TF Structural Fine Part A

SECTION 1: Identification

1.1 Product identifier

Product name	TF Structural Fine Part A

1.3 Recommended use of the chemical and restrictions on use

Used for repair of concrete substrates.

1.4 Supplier's details

Name	Terrafuse Inc.
Address	1325 Hastings Cres. SE Calgary AB T2G 4C8 Canada
Telephone	403-243-3000
Fax	403-243-3050
email	info@terrafuse.ca

1.5 Emergency phone number(s)

CANUTEC 1-888-CANUTEC (226-8832)
CHEMTREC USA 800-424-9300

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

GHS classification in accordance with: OSHA (29 CFR 1910.1200)

- Carcinogenicity, Cat. 1A
- Specific target organ toxicity (repeated exposure), Cat. 1
- Eye damage/irritation, Cat. 2A
- Specific target organ toxicity (single exposure), Cat. 3

2.2 GHS label elements, including precautionary statements

Pictogram

Signal word **Danger**

Hazard statement(s)

H319	Causes serious eye irritation if dust or particles get in eye

H335	May cause respiratory irritation
H336	May cause drowsiness or dizziness
H350	May cause cancer through chronic inhalation
H372	Causes damage to lungs through prolonged or repeated inhalation.

Precautionary statement(s)

P202	Do not handle until all safety precautions have been read and understood.
P260	Do not breathe dust
P264	Wash hands/forearms and exposed areas thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P271	Use only outdoors or in a well-ventilated area.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
P308+P313	If exposed or concerned: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.
P337+P313	If eye irritation persists: Get medical advice/attention.
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P501	Dispose of contents according to local regulations

SECTION 3: Composition/information on ingredients

3.2 Mixtures

Hazardous components

1. Silica, crystalline

Concentration	45 - 70 % (weight), Trade secret
EC no.	238-878-4
CAS no.	14808-60-7

- Carcinogenicity, Cat. 1A
- Specific target organ toxicity (repeated exposure), Cat. 1

2. Ashes (residues)

Concentration	10 - 30 % (weight), Trade secret
CAS no.	68131-74-8

- Eye damage/irritation, Cat. 2B
- Carcinogenicity, Cat. 1A
- Specific target organ toxicity (repeated exposure), Cat. 1

3. Titanium(IV) oxide

Concentration	0.1 - 1 % (weight), Trade secret
EC no.	236-675-5
CAS no.	13463-67-7

Trade secret statement (OSHA 1910.1200(i))

The exact percentages of composition have been withheld as a trade secret.

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

General advice	Never give anything by mouth to an unconcious person. If you feel unwell, seek medical advice, and bring a copy of this SDS.
If inhaled	If exposed to dust through inhalation, get into open, fresh air and ventilate suspected area. Obtain medical attention if breathing is difficult, or if you feel unwell. Bring a copy of this SDS.
In case of skin contact	Remove contaminated clothing. Rinse affected area with water for 15 minutes. Obtain medical attention if irritation develops or persists.
In case of eye contact	If eyes are affected, remove contact lenses, if present and easy to do, and carefully rinse eyes for 15 minutes. Obtain medical attention.
If swallowed	Rinse mouth. Do NOT induce vomiting. Obtain medical attention.

Personal protective equipment for first-aid responders

Avoid inhalation of dust. Use gloves.. respirationm, and eye protection, and suitable PPE for situational requirements.

4.2 Most important symptoms/effects, acute and delayed

General: May cause cancer. Causes damage to organs through prolonged or repeated exposure. Causes eye irritation.
Inhalation: The three types of silicosis include: 1) Simple chronic silicosis – which results from long-term exposure (more than 20 years) to low amounts of respirable crystalline silica. Nodules of chronic inflammation and scarring provoked by the respirable crystalline silica form in the lungs and chest lymph nodes. This disease may feature breathlessness and may resemble chronic obstructive pulmonary disease (COPD); 2) Accelerated silicosis – occurs after exposure to larger amounts of respirable crystalline silica over a shorter period of time (5-15 years); 3) Acute silicosis – results from short-term exposure to very large amounts of respirable crystalline silica. The lungs become very inflamed and may fill with fluid, causing severe shortness of breath and low blood oxygen levels. Inflammation, scarring, and symptoms progress faster in accelerated silicosis than in simple silicosis. Progressive massive fibrosis may occur in simple or accelerated silicosis, but is more common in the accelerated form. Progressive massive fibrosis results from severe scarring and leads to the destruction of normal lung structures.
Skin contact: Causes mechanical skin irritation.
Eye Contact: Causes eye irritation if particles or dust get in eye.
Ingestion: Ingestion of large quantities may cause discomfort and/or distress, nausea or vomiting.
Chronic Symptoms: May cause cancer. Causes damage to organs through prolonged or repeated exposure

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

If exposed or concerned, get medical advice and attention. If medical advice is needed, have product SDS on hand.

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Water spray, dry chemical, foam, carbon dioxide.

5.2 Specific hazards arising from the chemical

If heated to decomposition (>1700 °C), oxide fumes may be generated. Phosphorus oxides may be realeased. Silicon oxides may be released.

5.3 Special protective actions for fire-fighters

Precautionary Measures Fire: Exercise caution when fighting any chemical fire.

Firefighting Instructions: Use water spray or fog for cooling exposed containers.
Protection During Firefighting: Do not enter fire area without proper protective equipment, including respiratory protection.
Hazardous Combustion Products: Silicon oxides, oxide fumes, phosphorus oxides.

Further information
No components of this material are classified as flammable or explosive.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
General Measures: Do not breathe dust. Do not get in eyes, on skin, or on clothing. Do not handle until all safety precautions have been read and understood.
6.1.1. For Non-Emergency Personnel
Protective Equipment: Use appropriate personal protective equipment (PPE).
Emergency Procedures: Evacuate unnecessary personnel.
6.1.2. For Emergency Personnel
Protective Equipment: Equip cleanup crew with proper protection.
Emergency Procedures: Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit. Ventilate area.

6.2 Environmental precautions
Prevent entry to sewers and public waters.

6.3 Methods and materials for containment and cleaning up
For Containment: Contain solid spills with appropriate barriers and prevent migration and entry into sewers or streams.
Methods for Cleaning Up: Clean up spills immediately and dispose of waste safely. Recover the product by vacuuming, shoveling or sweeping. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

Reference to other sections
See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Mixing of product with Part B will create dust. Ensure good ventilation/exhaustion at the workplace. DO NOT BREATHE DUST. In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator and tight fitting goggles is essential to avoid exposure. Wear appropriate PPE (See section 8). Do not mix with other chemical products, except as indicated by the manufacturer. Do not get in eyes, on skin or clothing. Good housekeeping is important to prevent accumulation of dust.
Mixing and placing large volumes of product, creates a highly exothermic reaction, and may generate a large amount of heat. Never seal mixed product into and container or vessel, until well after the reaction has finished.

7.2 Conditions for safe storage, including any incompatibilities
Storage Conditions: Store away from incompatible materials. Store in a dry area. Keep lid tightly sealed to avoid release of dust.
Incompatible Materials: Strong acids, strong bases, strong oxidizers. Dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas. Water will cause powder to harden.

Specific end use(s)
TF Structural is a rapid curing repair mortar, meant for repairs of deteriorated concrete. It is only designed to be mixed with TF Structural Part B, in accordance with instructions found on the technical data sheet.

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

1. Silica, crystalline (CAS: 14808-60-7 EC: 238-878-4)
PEL-TWA (Inhalation): 10 mg/m3 / (% Silica + 2) respirable 30 mg/m3 / (% Silica + 2) total (OSHA)
OSHA Annotated Table Z-1, www.osha.gov

PEL (Inhalation): 0.05 mg/m3 (Cal/OSHA)
OSHA Annotated Table Z-1, www.osha.gov

REL (Inhalation): Ca 0.05 mg/m3 (NIOSH)
OSHA Annotated Table Z-1, www.osha.gov

TLV® (Inhalation): 0.025 mg/m3 (resp.) for α-quartz and cristobalite (ACGIH)

2. Titanium dioxide
PEL (Inhalation): 5 mg/m3 (Resp), 15 mg/m3 (Total) (OSHA)
Lower Respiratory Tract irritation

3. Titanium dioxide - Total dust (CAS: 13463-67-7)
PEL (Inhalation): See PNOR (Cal/OSHA)
OSHA Annotated Table Z-1, www.osha.gov

REL (Inhalation): Ca, (ultrafine particles), 2.4 mg/m3 (fine), 0.3 mg/m3(ultrafine), See Appendix A, See Appendix C (NIOSH)
OSHA Annotated Table Z-1, www.osha.gov

TLV® (Inhalation): 10 mg/m3 (ACGIH)
OSHA Annotated Table Z-1, www.osha.gov

4. Titanium dioxide
PEL (Inhalation): 5 mg/m3 (Resp), 10 mg/m3 (Total) (Cal/OSHA)
OSHA Annotated Table Z-1, www.osha.gov

8.2 Appropriate engineering controls
Emergency eye wash fountains/bottles should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation or air purification, especially in confined areas. Ensure all national/local regulations are observed.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Pictograms

Eye/face protection
Chemical safety goggles.

Skin protection
Wear suitable protective clothing.

Body protection
Wear suitable protective clothing.

Respiratory protection

Always use approved respiratory protection when working with this material. If exposure limits are exceeded or irritation is experienced, approved respiratory protection should be worn. Wherever dust is created from use of this product, or in case of inadequate ventilation, oxygen deficient atmosphere, or where exposure levels are not known wear approved respiratory protection.

SECTION 9: Physical and chemical properties

Information on basic physical and chemical properties

Appearance/form (physical state, color, etc.)	Light grey powder
Odor	None
Odor threshold	Not applicable
pH	6-8
Melting point/freezing point	Not applicable
Initial boiling point and boiling range	Not applicable
Flash point	Not applicable
Evaporation rate	Not applicable
Flammability (solid, gas)	None
Upper/lower flammability limits	Not applicable
Upper/lower explosive limits	Not applicable
Vapor pressure	Not applicable
Vapor density	Not applicable
Relative density	2.1
Solubility(ies)	Not available
Partition coefficient: n-octanol/water	Not applicable
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not applicable
Explosive properties	None. Non-combustible
Oxidizing properties	None

SECTION 10: Stability and reactivity

10.1 Reactivity
Reacts with acids. Reacts with water.

10.2 Chemical stability
Stable with normal handling and use.

10.3 Possibility of hazardous reactions
May react with metals in the presence of moisture to form hydrogen.

10.4 Conditions to avoid
Avoid contact with water and incompatible materials.

10.5 Incompatible materials
Strong acids, strong bases, strong oxidizers. Dissolves in hydrofluoric acid, producing corrosive silicon tetrafluoride gas.
May react violently with:, phosphorous pentachloride, Strong acids
Chlorine Trifluoride reacts violently, producing flame
Water. May cause delayed hydration, creating heat.

10.6 Hazardous decomposition products
Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas – silicon tetrafluoride.
Phosphorus oxides (e.g. P2O5)

Various metal oxides can be produced if heated beyond 1500 degrees C.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Quartz (14808-60-7)
LD50 Oral Rat > 5000 mg/kg
LD50 Dermal Rat > 5000 mg/kg

Ashes, residues (68131-74-8)
LD50 Oral Rat > 2000 mg/kg

Quartz (14808-60-7)
IARC Group 1
National Toxicology Program (NTP) Status Known Human Carcinogens.
OSHA Hazard Communication Carcinogen List In OSHA Hazard Communication Carcinogen list.

Titanium Dioxide (TiO2)
LD50 (oral, rat) > 25 000 mg/kg (4)
LD50 (Dermal, Rabbit) > 10 000 mg/kg (4)
LC50 (inhalation, Rat, 4h) > 6820 mg/m3 (4)

Skin corrosion/irritation
Not classified. (Based on available data, the classification criteria are not met)

Serious eye damage/irritation
Causes serious eye irritation

Respiratory or skin sensitization
May cause mechanical skin irritation.

Germ cell mutagenicity
Not classified. (Based on available data, the classification criteria are not met)

Carcinogenicity
May cause cancer through chronic inhalation.
Titanium Dioxide: Possibly carcinogenic to humans. (IARC-2B)

Reproductive toxicity
Not classified. (Based on available data, the classification criteria are not met)

Summary of evaluation of the CMR properties
The International Agency for Research on Cancer (IARC) has determined that titanium dioxide is possibly carcinogenic to humans (Group 2B) based on inadequate evidence in humans and sufficient evidence in experimental animals. This conclusion relates to long-term inhalation exposure to high concentrations of pigmentary (powdered) or ultrafine titanium dioxide. Long-term inhalation of high concentrations of titanium dioxide dust has caused lung tumours in rats but not in hamsters or mice. The tumours are believed to be related to the inflammation resulting from dust
overloading of the lungs. Ultrafine titanium dioxide has increased the incidence of lung tumours at much lower exposure concentrations than are required with the larger sized pigment grade particles. The effects are more closely related to lung burden in terms of the surface area rather than the mass of the particles. (4) Female rats were exposed whole-body to filtered air or to an aerosol of ultrafine titanium dioxide (primary particle size, 15-40 nm; MMAD of aerosol particles: 0.80 micrometres) for up to 2 years (18 hr/d, 5 d/wk). The concentrations of titanium dioxide used were 7.2 mg/m3 for the first 4 months, 14.8 mg/m3 for the next four months and 9.4 mg/m3 for the

remaining 16 months. There was a significant decrease in survival, body weight and lung clearance and a significant increase in lung weight of exposed rats. The number of rats with lung tumours was 32/100 compared to 1/217 for unexposed controls. Female mice similarly exposed for 13.5 months had no increase in lung tumours. Tumours in the airways and lungs were observed in rats following inhalation of 250 mg/m3 titanium dioxide dust (MMAD of aerosol particles: 1.5-1.7 micrometres; 84% respirable) for 2 years (6 hr/d, 5 d/wk). (4)

STOT-single exposure
(Category 3) May cause respiratory irritation

STOT-repeated exposure
(Category 1) Causes damage to lungs through prolonged/repeated exposure (inhalation)

Aspiration hazard
Not classified

SECTION 12: Ecological information

Toxicity
No further relevant information available.

Persistence and degradability
No further relevant information available.

Bioaccumulative potential
No further relevant information available.

Mobility in soil
No further relevant information available.

Other adverse effects
Other Information: Avoid release to the environment.

SECTION 13: Disposal considerations

Disposal of the product
The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust.
Disposal must be made in accordance with local, state and federal regulations.

Disposal of contaminated packaging
Disposal must be made in accordance with local, state and federal regulations.

SECTION 14: Transport information

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Fly Ash: SARA Section 311/312 Hazard Classes
Health hazard - Specific target organ toxicity (single or repeated exposure) Health hazard - Carcinogenicity Health hazard - Serious eye damage or eye irritation

Quartz: U.S. - California - Proposition 65 - Carcinogens List
WARNING: This product contains chemicals known to the State of California to cause cancer.

U.S. - Massachusetts - Right To Know List U.S. - New Jersey - Right to Know Hazardous Substance List U.S. - Pennsylvania - RTK (Right to Know) List

California Prop. 65 Components
Titanium dioxide (airborne, unbound particles of respirable size)

WARNING! This product contains a chemical known to the State of California to cause cancer.
Titanium dioxide
CAS-No. 13463-67-7

New Jersey Right To Know Components
Chemical name: Titanium dioxide
CAS number: 13463-67-7

Pennsylvania Right To Know Components
Chemical name: Titanium dioxide
CAS number: 13463-67-7

SECTION 16: Other information

This is the first revision of this SDS, 3/27/2019
Updates were made to the components section regarding trade secret disclaimer

16.1 Further information/disclaimer

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to chemicals contained in our products.

16.2 Preparation information

Prepared by:
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www.terrafuse.ca
1-855-243-8080
3/27/2019