



## 1. Product and Company Identification

Product Name	<b>STAR Fly Ash Refined Pozzolan</b>
Product Type	Refined Pozzolan (Class F Ash)
Product Use	Industrial
Manufacturer	The SEFA Group, Inc. 217 Cedar Road Lexington, SC 29017
Print Date	21-Nov-2014
Telephone	(803) 520-9000
Emergency Telephone	(803) 520-9000

## 2. Hazards Identification

### Classification of the mixture:

This mixture as produced has not been assessed and/or tested for its physical, health, and environmental hazards, but hazards are inferred through similarity to other alumino-silicates and mineralogical materials of similar composition. Analogous mixtures do not meet the criteria for classification as hazardous as defined in EU or GHS regulations.

### Hazard Summary

Physical hazards	Not classified for physical hazards.
Health hazards	Skin irritation, Category 3 Eye irritation, Category 2B Specific Target Organ Toxicant, Single Exposure, Category 3
Environmental hazards	Not classified for environmental hazards.
Specific hazards	STAR RP when used in normal applications of blending and or mixing does not present any known hazards other than nuisance dust. However, aggressive handling and processing procedures, e.g., dry grinding, could fracture the alumino-silicate matrix possibly generating free respirable crystalline silica.
Main symptoms	Upper respiratory tract irritation. Coughing. Irritation of eyes and mucous membranes. Skin irritation.

### Label Elements

Signal Word	Warning
Symbol	Exclamation
Hazard statements	Causes Mild Skin Irritation Causes Eye Irritation May Cause Respiratory Irritation



### Precautionary Statements

Prevention	Avoid breathing dust.
Response	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
Storage	Store in a well-ventilated place. Keep container tightly closed.
Disposal	Dispose of contents and containers in accordance with all local, state, and national regulations.



### 3. Composition / Information on Ingredients

<u>Ingredient name</u>	<u>Formula/CAS number</u>	<u>EC number</u>	<u>%</u>	<u>UN GHS (Rev 4) Classification</u>
<b>Alumino-silicate glass</b>	--	--	<b>100</b>	<b>None</b>
Total Silica	SiO <sub>2</sub> / 7631-86-9		41.0 - 58.0 %	
Aluminum Oxide	Al <sub>2</sub> O <sub>3</sub> / 1344-28-1		18.1 - 28.6 %	
Iron Oxide	Fe <sub>2</sub> O <sub>3</sub> / 1309-37-1		3.9 - 26.0 %	
Calcium Oxide	CaO / 1305-78-8		0.8 - 6.0 %	
Magnesium Oxide	MgO / 1309-48-4		0.7 - 1.4 %	
Titanium Oxide	TiO <sub>2</sub> / 13463-67-7		1.0 - 1.9 %	

### 4. First Aid Measures

<b>General Information</b>	If practicing good industrial hygiene practices, no special health hazards are anticipated.
<b>Inhalation</b>	Remove person to fresh air. Consult a physician if there is discomfort or difficulty breathing.
<b>Eye Contact</b>	Do not rub, flush eyes with water for at least 15 minutes. Consult a physician if there is persistent irritation.
<b>Skin Contact</b>	Brush away STAR RP particles, wash affected area preferably using soap & water. Consult a physician if there is persistent irritation.
<b>Ingestion</b>	Rinse mouth with water. Seek medical attention if necessary. If a large amount of material is ingested, contact poison control.
<b>Most important symptoms and effects, both acute and delayed</b>	Dusts may irritate the respiratory tract, eyes, and skin. Frequent inhalation of dust over a long period of time increases the risk of developing lung disease. Section 11 provides for more detailed information on health effects from individual components of the alumino-silicate structure.
<b>Protection of first aid personnel</b>	No action shall be taken involving any personal risk or with out suitable training in first aid and CPR.
<b>Notes to physician</b>	No specific treatment. Treat symptomatically.

### 5. Fire-Fighting Measures

<b>Suitable extinguishing media</b>	Product is noncombustible. Use extinguishing media for surrounding materials.
<b>Extinguishing media which should not be used</b>	None known. Consider surrounding materials.
<b>Special exposure hazards</b>	None known. No anticipated thermal decomposition products.
<b>Special protective equipment for firefighters.</b>	None known. Consider surrounding materials.

### 6. Accidental Release Measures

<b>Personal precautions</b>	No action shall be taken involving any personal risk or without suitable training. Don appropriate personal protective equipment (if ventilation is inadequate utilize appropriate respiratory protection). Avoid airborne dust generation.
<b>Environmental precautions</b>	Prevent further leaking or spillage if safe to do so. Avoid conditions which result in generating airborne dust.



### 6. Accidental Release Measures (Cont'd)

**Methods for clean up** Water spray or vacuum cleaner are preferable to dry sweeping for removing spilled material. Minimize generation of airborne dust during clean up activities. If necessary, wear personal protective equipment in accordance with regulatory standards.

### 7. Handling and Storage

#### Handling

**Advise on safe handling** Avoid airborne dust generation. Use ventilation controls if provided. In case of insufficient ventilation, wear suitable respiratory protective equipment.

**Technical measures** Minimize airborne dust generation. Provide appropriate exhaust ventilation at places where airborne dust is generated. Keep containers closed.

#### Storage

**Technical measures and storage conditions** Containers need to be protected from physical damage that will lead to spillage and airborne dust generation.

**Packaging materials** Use packaging that minimizes the generation of airborne dust when emptying, filling, transporting, or storing packaged STAR RP.

**Specific uses** STAR Fly Ash RP is intended to be incorporated into solid materials, or blended with other materials in preparation for incorporation into solid materials.

### 8. Exposure Controls/ Personal Protection

#### Occupational Exposure Limits

##### Air Limit Values

Ingredient name	ACGIH 8 hr TLV®	ACGIH STEL (15 min)	US OSHA 8 Hr PEL	Notes
	mg/m <sup>3</sup>	mg/m <sup>3</sup>	mg/m <sup>3</sup>	
Inert or nuisance dust				
total	10	-	15	US OSHA Table Z-3; ACGIH recommendation for particulate (Chemical substances Appendix B)
respirable	3	-	5	

Occupational exposure limits are as PNOR (Particulate Not Otherwise Regulated) [US OSHA] and Particulate (ACGIH). There are

Component name	ACGIH 8 hr TLV®	ACGIH STEL (15 min)	US OSHA 8 Hr PEL	Notes
	mg/m <sup>3</sup>	mg/m <sup>3</sup>	mg/m <sup>3</sup>	
Aluminum Oxide	1	-	-	Respirable
Calcium Oxide	2	-	5	
Iron Oxide	5	-	10	ACGIH as respirable, OSHA as fume
Magnesium Oxide	10	-	10	
Titanium Oxide	10	-	10	
Silicon Dioxide	10	-	-	



### 8. Exposure Controls/ Personal Protection (Cont'd)

<b>Special statement on crystalline silica</b>	When STAR RP airborne respirable dust is evaluated using NIOSH 7500, crystalline silica (quartz) may be indicated. However, using Scanning Electron Microscopy to evaluate the surface characteristics of crystalline structures, free respirable crystalline silica, if present, is in extremely low concentrations (less than 0.1%).
<b>Biological Limit Values</b>	There are no ACGIH Biological Exposure Indices (BEI®) for STAR RP or components of
<b>DNEL/DMEL Values</b>	Not available
<b>PNEC Values</b>	Not available
<b>Exposure controls</b>	
<b>General</b>	General room ventilation is normally adequate. Air monitoring is recommended. If necessary, use a local exhaust ventilation to keep exposure levels below Occupational Exposure Limits.
<b>Respiratory protection</b>	If there is inadequate ventilation or risk of inhalation of dust above Occupational Exposure Limits, use suitable respiratory protective equipment in accordance with regulations or professional recommendations.
<b>Eye protection</b>	Safety glasses with sideshields, face shield or goggles
<b>Skin protection</b>	Wear gloves and work clothing to minimize skin contact.
<b>Environmental Exposure Controls</b>	Contain spills, prevent wind dispersal, and observe appropriate regulations for disposal, water emissions, and air emissions.

### 9. Physical and Chemical Properties

<b>Appearance</b>	
<b>Physical state</b>	Solid (powder)
<b>Color</b>	Tan
<b>Odor</b>	None
<b>Properties</b>	
<b>Flash point</b>	Noncombustible
<b>Explosion limits</b>	
<b>Lower:</b>	Not available
<b>Upper:</b>	Not available
<b>pH</b>	Not available
<b>Melting point</b>	Not available
<b>Boiling point</b>	Not available
<b>Relative density</b>	2.3 -2.4
<b>Vapor pressure</b>	Not available
<b>Odor threshold</b>	Not available
<b>Viscosity</b>	Not available
<b>Solubility (water)</b>	Insoluble in water
<b>Partition coefficient n-octanol/water</b>	Not available
<b>Evaporation rate</b>	Not available
<b>Vapor density</b>	Not available
<b>Typical % solids</b>	100



### 10. Stability and Reactivity

Conditions to avoid	None known
Materials to avoid	Strong acids, strong oxidizers
Hazardous decomposition products	None known

### 11. Toxicological Information

<b>General information</b>	STAR RP as a mixture has not been evaluated for toxicological information. As an amorphous alumino-silicate solid formed during a high temperature process; exposure to isolated components is anticipated to be low.
<b>Special statement on crystalline silica</b>	In product form, no toxicological hazards exist due to all crystalline material being incased in alumino-silicate matrix. It is classified as a nuisance dust. If product is machined, respirable particles of free crystalline silica may be formed.
<b>Skin contact</b>	Dust may irritate skin.
<b>Inhalation</b>	Dust may irritate respiratory system. Chronic exposure above Occupational Exposure Limits increases the risk of developing lung disease.
<b>Eye contact</b>	Dust may irritate eyes.

#### Toxicological information for components (US NIOSH)

**Note:** Occupational exposure to discrete components is not anticipated during normal use of STAR RP.

	Symptoms	Target organs
Aluminum oxide	Irritation eyes, skin, respiratory system	Eyes, skin, respiratory system
Calcium oxide	Irritation eyes, skin, upper respiratory tract; ulcer, perforation nasal septum; pneumonitis; dermatitis.	Eyes, skin, respiratory system
Iron oxide	Benign pneumoconiosis with X-ray shadows indistinguishable for fibrotic pneumoconiosis (siderosis).	Respiratory system
Magnesium oxide	Irritation eyes, nose; metal fume fever: cough, chest pain, flu-like fever.	Eyes, respiratory system
Silicon dioxide	(Silica, amorphous) Irritation eyes, pneumoconiosis	Eyes, respiratory system
Silica, crystalline	(As free respirable crystalline silica) Cough, dyspnea (breathing difficulty), wheezing; decreased pulmonary function, progressive respiratory symptoms (silicosis); irritation eyes; [potential occupational carcinogen]	Eyes, respiratory system
Titanium oxide	Lung fibrosis; [potential occupational carcinogen]	Respiratory system

#### CMR effects (carcinogenicity, mutagenicity and toxicity for reproduction)

STAR RP has not been tested for carcinogenic, mutagenicity, or toxicity for reproduction. Two components of the alumino-silicate matrix are on the IARC list; Silica dust, crystalline, in the form of quartz or cristabolite (14808-60-7) as Class 1, Carcinogenic to humans (2012); and, Titanium dioxide (13463-67-7) as Class 2B, Possibly carcinogenic to humans (2010). Neither STAR RP nor components of the alumino-silicate matrix are listed for mutagenicity or toxicity for reproduction.



**11. Toxicological Information (Cont'd)**

When airborne dust exposures are evaluated with Scanning Electron Microscopy, crystalline structures observed using X-Ray Diffraction are found to be non-silica, or silica encased in the alumino-silicate matrix, similar to results seen for other alumino-silicate materials. For additional information, see:

- Bolsaitis, P. P. & Wallace, W. E. (1996). The structure of silica surfaces in relation to cytotoxicity. Silica and silica-induced lung diseases. CRC Press, Boca Raton, LA.
- Ferg, E. E., Loyson, P. & Gromer, G. (2008). The influence of particle size and composition on the quantification of airborne quartz analysis on filter paper. Industrial Health 2008, 46, 144 - 151.
- Nathan, Y., Metzger, A., Pardo, A. & Dvorachek, M. (2008). Occupational health aspects of quartz in pulverized coal fly ash in Israel. Geological Survey of Israel.
- Wallace, W. E. & Keane, M. J. (1988). Characterization of surface properties affecting the activity of "free silica" fraction of respirable dusts. Final Report for CAN 143, 1988.

**12. Ecological Information**

Ecotoxicity No data at this time.  
 Mobility No data at this time.

**13. Disposal Considerations**

Waste Disposal Cover material to prevent airborne dust and dispose of in a landfill according to federal, state and local regulations for non-hazardous waste.

**14. Transportation**

DOT Shipping Name: None  
 DOT Hazard Class: None  
 DOT Label(s): None  
 UN/NA Number: None  
 Placards: None  
 IATA: None  
 Marine pollutant No No ingredients or components of the alumino-silicate matrix are listed in 49 CFR Appendix B to 172.101

**15. Regulatory Information**

US Regulations

SARA 302 EHS Neither STAR RP nor components of the alumino-silicate matrix are on the EPCRA Extremely Hazardous Substances list (40 CFR 302).  
 SARA 311/312 Classification Chronic  
 SARA 313 Supplier Notification None  
 TSCA All components of the alumino-silicate matrix are on the TSCA list.  
 California Proposition 65 The following components of the alumino-silicate matrix are on the Proposition 65 list:  
 Titanium dioxide (Airborne, Unbound Particles of Respirable Size)  
 Massachusetts TURA Neither STAR RP nor components of the alumino-silicate matrix are on the TURA list:



### 15. Regulatory Information (Cont'd)

<b>New Jersey Right to Know</b>	The following components of the alumino-silicate matrix are on the Right to Know list: Aluminum oxide SHHSL - Special Health Hazard Substance List Calcium oxide (SHHSL) Iron oxide Magnesium oxide Titanium oxide
<b>Pennsylvania Right to Know</b>	The following components of the alumino-silicate matrix are on the Right to Know list: Aluminum oxide (E) E - Environmental hazard Calcium oxide Iron oxide Magnesium oxide Titanium oxide

#### International Regulations

<b>Canada DSL</b>	All components of the alumino-silicate matrix are listed on the Domestic Substances List.
<b>EINECS</b>	All components of the alumino-silicate matrix are listed on the European Inventory of Existing Commercial chemical Substances list.
<b>REACH</b>	Neither STAR RP nor components of the alumino-silicate matrix are on the European Chemicals Agency Candidate List of Substances of Very High Concern for Authorization.
<b>Ozone depleting substances</b>	Neither STAR RP nor components of the alumino-silicate matrix are on a regulatory list for ozone depleting substances.

### 16. Other Information

<b>R- or H- phrases</b>	There are no R- or H- phrases for STAR RP as provided.
<b>Training instructions</b>	There are no special training instructions for the use of STAR RP. Follow company training instructions, particularly for housekeeping and personal protective equipment use.
<b>Data sources</b>	ACGIH® -American Conference of Governmental Industrial Hygienists New Jersey Right to Know Hazardous Substance Fact Sheets US Centers for Disease Control and Prevention, NIOSH Pocket Guide US OSHA, 29 CFR 1910, Tables Z-1, Z-2, Z-3
<b>Prepared by</b>	The SEFA Group, Inc.
<b>Date of issue</b>	Sep-14
<b>Date of printing</b>	11/21/2014
<b>Version</b>	3
<b>Notice to reader</b>	

The information provided herein was believed by The SEFA Group, Inc. to be accurate at the time of preparation or prepared from sources believed to be reliable, but it is the responsibility of the user to investigate and understand other pertinent sources of information, to comply with all laws and procedures applicable to the safe handling and use of the product and to determine the suitability of the product for its intended use. All products supplied by The SEFA Group, Inc. are subject to The SEFA Group, Inc. terms and conditions of sale. THE SEFA GROUP, INC. MAKES NO WARRANTY, EXPRESS OR IMPLIED, CONCERNING THE PRODUCT OR THE MERCHANTABILITY OR FITNESS THEREOF FOR ANY PURPOSE OR CONCERNING THE ACCURACY OF ANY INFORMATION PROVIDED BY THE SEFA GROUP, INC., except that the product shall conform to The SEFA Group, Inc. specifications. Nothing contained herein constitutes an offer for the sale of any product.