Sparton®

SECTION 1. IDENTIFICATION

Product Identifier	Sparton®
Other Means of Identification	None
Other Identification	None
Product Family	Mineral
Recommended Use	Drilling Fluid Additive.
Restrictions on Use	None known.
Supplier Identifier	Secure Energy Services Suite 3600, 205 - 5 Avenue SW, Calgary, Alberta, T2P 2V7, www.secure-energy.com
Emergency Phone No.	CANUTEC, (613) 996-6666, 24/7
Date of Preparation	April 12, 2016

SECTION 2. HAZARD IDENTIFICATION

Classified according to Canada's Hazardous Products Regulations (WHMIS 2015) and the US Hazard Communication Standard (HCS 2012).

Classification

Carcinogenicity - Category 1A; Specific target organ toxicity (repeated exposure) - Category 1

Label Elements

Signal Word:
Danger
Hazard Statement(s):

H350	May cause cancer.
H372	Causes damage to organs (lungs) through prolonged or repeated exposure if inhaled.

Precautionary Statement(s):
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, spray.
P264	Wash hands and skin thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection.

Response:

P308 + P313	IF exposed or concerned: Get medical advice/attention.
P314	Get medical advice/attention if you feel unwell.

Storage:

P405	Store locked up.

Disposal:

P501	Dispose of contents and container in accordance with local, regional, national and international

regulations.

Other Hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	%	Other Identifiers
Barium sulfate	7727-43-7	87 - 100	None
Silica, quartz	14808-60-7	1 - 13	None

Notes

Silica/quartz concentration given represents the total amount of this ingredient in the product, includng the respirable fraction.
Concentrations are expressed in % weight/weight.

SECTION 4. FIRST-AID MEASURES

First-aid Measures

Inhalation

Remove source of exposure or move to fresh air. Get medical advice or attention if you feel unwell or are concerned.

Skin Contact

Take off contaminated clothing, shoes and leather goods (e.g. watchbands, belts). Quickly and gently blot or brush away excess chemical. Wash gently and thoroughly with lukewarm, gently flowing water and mild soap for 5 minutes. If skin irritation occurs, get medical advice or attention. Clean clothing, shoes and leather goods.

Eye Contact

Quickly and gently blot or brush chemical off the face. Rinse the contaminated eye(s) with lukewarm, gently flowing water for 5 minutes, while holding the eyelid(s) open. Remove contact lenses, if present and easy to do. Take care not to rinse contaminated water into the unaffected eye or onto the face. If eye irritation persists, get medical advice or attention.

Ingestion

Rinse mouth with water. Never give anything by mouth if person is rapidly losing consciousness, or is unconscious or convulsing. Do not induce vomiting. Get medical advice or attention if you feel unwell or are concerned.

First-aid Comments

Get medical advice or attention if you feel unwell or are concerned.

Most Important Symptoms and Effects, Acute and Delayed

Mild irritation to the eyes and skin. Can irritate the nose and throat. May cause coughing.

Immediate Medical Attention and Special Treatment

Target Organs

Eyes, respiratory system.

Special Instructions

Not applicable.

Medical Conditions Aggravated by Exposure

Respiratory conditions.

SECTION 5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media

Not combustible. Use extinguishing agent suitable for surrounding fire.

Unsuitable Extinguishing Media

Not applicable.

Specific Hazards Arising from the Product

This product presents no unusual hazards in a fire situation. Not sensitive to static discharge.
Sulphur oxides, Barium oxide.

Special Protective Equipment and Precautions for Fire-fighters

No special precautions are necessary.
No special equipment is required. Wear equipment suitable for surrounding fire.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal Precautions, Protective Equipment, and Emergency Procedures

Use the personal protective equipment recommended in Section 8 of this safety data sheet. Increase ventilation to area or move leaking container to a well-ventilated and secure area. Remove or isolate incompatible materials as well as other hazardous materials.

Environmental Precautions

Do not allow into any sewer, on the ground or into any waterway. If the spill is inside a building, prevent product from entering drains, ventilation systems and confined areas.

Methods and Materials for Containment and Cleaning Up

Avoid generating dust. Avoid dry sweeping. If necessary, use a dust suppressant such as water. Do not use compressed air for clean-up. Collect using shovel/scoop or approved HEPA vacuum and place in a suitable container for disposal. Store recovered product in suitable containers that are: tightly-covered.

Other Information

Report spills to local health, safety and environmental authorities, as required.

SECTION 7. HANDLING AND STORAGE

Precautions for Safe Handling

Do not breathe in this product. Do not get in eyes, on skin or on clothing. Only use where there is adequate ventilation. Avoid generating dusts. Prevent uncontrolled release of product. Immediately report leaks, spills or failures of the safety equipment (e.g. ventilation system). Prevent accidental contact with incompatible chemicals. Keep containers tightly closed when not in use or empty. General hygiene considerations: do NOT smoke in work areas. Do NOT eat, drink or store food in work areas. Remove contaminated clothing and protective equipment before entering eating areas or leaving work area. Wash hands thoroughly after handling this product and before eating, using the washroom or leaving work area. Immediately remove contaminated clothing using the method that minimizes exposure. Thoroughly clean clothing, shoes and leather goods before reuse or dispose of safely. Do not take contaminated clothing home.

Conditions for Safe Storage

Store in an area that is: dry, ventilated, separate from incompatible materials (see Section 10: Stability and Reactivity). Keep amount in storage to a minimum. Avoid bulk storage indoors. Empty containers may contain hazardous residue. Store separately. Keep closed. Follow all precautions given on this safety data sheet. Comply with all applicable health and safety regulations, fire and building codes.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

	ACGIH TLV®		OSHA PEL		AIHA WEEL	
Chemical Name	**TWA**	**STEL**	**TWA**	**Ceiling**	**8-hr TWA**	**TWA**
Barium sulfate	5 mg/m3	Not established	10 mg/m3	Not established	Not established	Not established
Silica, quartz	0.025 mg/m3 (R) A2	Not established	0.1 mg/m3 (R)	Not established	Not established	Not established

OSHA value for barite is for total dust.
A2 = Suspected human carcinogen. R = Respirable fraction.

Appropriate Engineering Controls

Do not allow product to accumulate in the air in work or storage areas, or in confined spaces. Use local exhaust ventilation, if general ventilation is not adequate to control amount in the air. Use stringent control measures such as process enclosure to prevent product release into the workplace. Provide eyewash and safety shower if contact or splash hazard exists.

Individual Protection Measures

Eye/Face Protection

Chemical safety glasses with side shields.

Skin Protection

Wear chemical protective clothing e.g. gloves, aprons, boots.
Suitable materials are: nitrile rubber.

Respiratory Protection

Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Basic Physical and Chemical Properties

Appearance	Grey - white fine powder. Particle Size: Varies
Odour	Odourless
Odour Threshold	Not applicable
pH	Neutral
Melting Point/Freezing Point	1580 ºC (2876 ºF) (melting); 1580 ºC (2876 ºF) (freezing)
Initial Boiling Point/Range	1600 ºC (2912 ºF)
Flash Point	Not applicable
Evaporation Rate	Not applicable
Flammability (solid, gas)	Will not burn.
Upper/Lower Flammability or Explosive Limit	Not applicable (upper); Not applicable (lower)
Vapour Pressure	Does not form a vapour.
Vapour Density (air = 1)	Not applicable
Relative Density (water = 1)	4.1
Solubility	0.00031 g/100 mL (Insoluble) in water; Insoluble in common organic solvents.
Partition Coefficient, n-Octanol/Water (Log Kow)	Not applicable
Auto-ignition Temperature	Not applicable
Decomposition Temperature	Not available
Viscosity	Not applicable (kinematic); Not applicable (dynamic)

Other Information

Physical State	Solid
Molecular Formula	Ba-S-O4
Molecular Weight	233.39
Bulk Density	Not available
Surface Tension	Not applicable
Critical Temperature	Not available
Electrical Conductivity	Not available
Vapour Pressure at 50 deg C	Not applicable
Saturated Vapour Concentration	Not applicable

SECTION 10. STABILITY AND REACTIVITY

Reactivity

Not reactive under normal conditions of use.

Chemical Stability

Normally stable.

Possibility of Hazardous Reactions

None expected under normal conditions of storage and use.

Conditions to Avoid

Incompatible materials.

Incompatible Materials

Phosphorus, aluminum, potassium.

Hazardous Decomposition Products

When heated to decomposition it emits toxic fumes of sulfur oxides.

SECTION 11. TOXICOLOGICAL INFORMATION

Likely Routes of Exposure

Inhalation; skin contact; eye contact; ingestion.

Acute Toxicity

Chemical Name	LC50	LD50 (oral)	LD50 (dermal)
Barium sulfate	Not available	Not available	Not available
Silica, quartz	Not available	500 mg/kg (rat)	Not available

Skin Corrosion/Irritation

May cause mild irritation.

Serious Eye Damage/Irritation

May cause mild mechanical irritation. May cause slight irritation and/or redness.

STOT (Specific Target Organ Toxicity) - Single Exposure

Inhalation

Product is considered a nuisance dust. In general, high concentrations of dust may cause coughing and mild, temporary irritation following a short-term exposure.

Ingestion

If ingested, the presence of soluble barium salts as impurities may cause toxic reactions due to bioaccumulation.

Aspiration Hazard

No information was located.

STOT (Specific Target Organ Toxicity) - Repeated Exposure

Prolonged or repeated exposure to fine airborne crystalline silica dust, like quartz dust, is known to be harmful to the respiratory system. The most important respiratory disease associated with crystalline silica exposure is silicosis, which can be complicated by the development of bacterial disease such as tuberculosis. Other respiratory effects include chronic obstructive pulmonary disease, and a rare condition known as pulmonary alveolar proteinosis. Several human population studies suggest that inhalation exposure to airborne crystalline silica may be associated with the development of kidney diseases. Case reports and human population studies also suggest a possible link with the development of autoimmune disorders.

Foreign-body reactions (granulomas) have been observed after crystalline silica has accidentally gotten lodged under the skin, as the result of a physical injury. Often this effect is delayed for weeks to years.

Several human population studies have found significant associations between the inhalation exposure to airborne crystalline silica and kidney diseases. However, there is not enough evidence to conclude a causal link.

There have been many published case reports that describe various autoimmune disorders in workers exposed to crystalline silica. These disorders include scleroderma (a disease involving thickening of the skin), lupus, rheumatoid arthritis, autoimmune hemolytic anemia, and connective tissues disorders. There have also been case reports of

conditions that may be related to immunological abnormalities, including chronic kidney disease, and problems with the thyroid, nervous system and blood vessels. Some human population studies have reported a significant increase in deaths from autoimmune diseases in workers exposed to airborne crystalline silica.
Long term inhalation of particulate can cause irritation, inflammation and/or permanent injury to the lungs. Illnesses such as pneumoconiosis ("dusty lung"), pulmonary fibrosis, chronic bronchitis, emphysema and bronchial asthma may develop. Prolonged inhalation of dust may cause baritosis, a benign pneumoconiosis. If ingested, the presence of soluble barium salts as impurities may cause toxic reactions due to bioaccumulation. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Respiratory and/or Skin Sensitization

Not known to be a respiratory sensitizer. Not a skin sensitizer.

Carcinogenicity

Chemical Name	IARC	ACGIH®	NTP	OSHA
Barium sulfate	Not Listed	Not designated	Not Listed	Not Listed
Silica, quartz	Group 1	A2	Known carcinogen	Not Listed

The International Agency for Research on Cancer (IARC) has concluded that crystalline silica in the form of quartz or cristobalite dust is carcinogenic to humans. Crystalline silica in the form of quartz or cristobalite dust causes cancer of the lung. The strongest evidence supporting the carcinogenicity of crystalline silica in the lung comes from the pooled and meta-analyses. The pooled analysis demonstrated clear exposure-response, while all of the meta-analyses strongly confirmed an overall effect of crystalline silica dust exposure.

Key to Abbreviations

Group 1 = Carcinogenic to humans. A2 = Suspected human carcinogen.

Reproductive Toxicity

Development of Offspring

Not known to harm the unborn child.

Sexual Function and Fertility

Not known to cause effects on sexual function or fertility.

Effects on or via Lactation

No information was located.

Germ Cell Mutagenicity

The available evidence is not adequate to conclude that quartz is a mutagen.

Interactive Effects

No information was located.

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

No information was located.

Acute Aquatic Toxicity

Chemical Name	LC50 Fish	EC50 Crustacea	ErC50 Aquatic Plants	ErC50 Algae
Barium sulfate	Not available	32 mg/L (Daphnia magna (water flea); 48-hour)	Not available	Not available
Silica, quartz	Not available	Not available	Not available	Not available

Persistence and Degradability

The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative Potential

No information was located.

Mobility in Soil

No information was located.

Other Adverse Effects

There is no information available.

SECTION 13. DISPOSAL CONSIDERATIONS

Disposal Methods

Dispose of contents and container in accordance with local, regional, national and international regulations. Contact local environmental authorities for approved disposal or recycling methods in your jurisdiction. The required hazard evaluation of the waste and compliance with the applicable hazardous waste laws are the responsibility of the user. Store product for disposal as described under Storage in Section 7 of this safety data sheet. Empty containers retain product residue. Follow label warnings even if container appears to be empty. Dispose of or recycle empty containers through an approved waste management facility.

SECTION 14. TRANSPORT INFORMATION

Not regulated under Canadian TDG regulations. Not regulated under US DOT Regulations.

Environmental Hazards	Not applicable
Special Precautions	Not applicable

Transport in Bulk According to Annex II of MARPOL 73/78 and the IBC Code

Not applicable

SECTION 15. REGULATORY INFORMATION

Safety, Health and Environmental Regulations

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all of the information required by the Controlled Products Regulations.

Domestic Substances List (DSL) / Non-Domestic Substances List (NDSL)

All ingredients are listed on the DSL/NDSL.

USA

Toxic Substances Control Act (TSCA) Section 8(b)

All ingredients are listed on the TSCA Inventory.

Additional USA Regulatory Lists

SARA Title III - Section 311/312: chronic toxicity. SARA Title III - Section 313: Not listed. SARA Title III - Section 302: Not listed. Massachusetts Right To Know: Listed. (Silica, quartz) Pennsylvania Right To Know: Listed. (Silica, quartz) New Jersey Right To Know: Listed. (Silica, quartz) California Proposition 65: WARNING! This product contains a chemical known to the State of California to cause cancer. (Silica, quartz)

SECTION 16. OTHER INFORMATION

SDS Prepared By	Safety Committee
Phone No.	403-264-1588
Date of Preparation	April 12, 2016
Date of Last Revision	December 06, 2016
Revision Indicators	The following SDS content was changed on December 06, 2016: Product Family. SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS; Notes.
Key to Abbreviations	ACGIH® = American Conference of Governmental Industrial Hygienists AIHA® = AIHA® Guideline Foundation. DSL = Domestic Substances List HSDB® = Hazardous Substances Data Bank IARC = International Agency for Research on Cancer IDLH = Immediately Dangerous to Life and Health

NDSL = Non-Domestic Substances List
NFPA = National Fire Prevention Association
NIOSH = National Institute for Occupational Safety and Health
NTP = National Toxicology Program
OSHA = US Occupational Safety and Health Administration
PEL = Permissible Exposure Limit
REL = Recommended Exposure Limit
RTECS® = Registry of Toxic Effects of Chemical Substances
STEL = Short Term Exposure Limit
TSCA = Toxic Substances Control Act
TWA = Time Weighted Average

References

CHEMINFO database. Canadian Centre for Occupational Health and Safety (CCOHS).
HSDB® database. US National Library of Medicine. Available from Canadian Centre for Occupational Health and Safety (CCOHS).

Disclaimer

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