



MONTANA SULPHUR & CHEMICAL COMPANY

Section 1: Product Information

Product Identifier: Yellowstone 85 Disintegrating Sulfur Granules
Synonyms: Yellowstone 85, Sulfur, Sulphur, Yellowstone Brand Disintegrating Sulfur (Pastilles or Prills), Disintegrating Sulfur, Solid Sulfur, Brimstone, Sulfur-Bentonite, Bentonite-Sulfur, Elemental Sulfur

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Recommended use:

For dry application to soil for soil amendment or plant nutrient purposes. (Not intended for burning or for use in sulfur burning equipment.) Also used for blending with compatible dry plant nutrients.

Section 2: Hazard Identification

Hazard Classification: Skin Irritation Category 2
Eye Irritation-Category 2B

Other Hazards: May form combustible dust concentrations in enclosed spaces during handling. Combustion produces sulfur dioxide. May release hydrogen sulfide, a toxic gas under some conditions.

Label Elements:



Warning: may cause eye irritation. May cause skin irritation with prolonged exposure. May form combustible dust concentrations if crushed, abraded or impacted and suspended in air. Wear protective gloves and eye protection. Wash hands and face and exposed skin thoroughly after handling. If on skin, wash with plenty of water. If in eyes, rinse cautiously with clean water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. If other than minor skin irritation occurs or if eye irritation persists, get medical advice/attention.

Section 3: Composition / Information on Ingredients

Chemical Name	Common Name/Synonyms	CAS Number	Percent (%)
Sulfur	Sulphur, sulfur, brimstone, soil-sulfur	7704-34-9	≥85
Sodium Montmorillonite*	Wyoming Bentonite, Bentonite Clay,	1302-78-0	≤15

*Wyoming Bentonite typically contains 1-6% Crystalline Silica as quartz (per vendor SDS). Therefore, the typical silica range in Yellowstone 85 Disintegrating Sulfur may be approximately 0.15%-0.9%. Please review Sections 8 and 11 of this SDS for further information. However, OSHA did not include exposure to crystalline silica arising due to the processing of sorptive clays, such as bentonite, in its standard 1910.1053-respirable crystalline silica. OSHA further determined “the occluded quartz found in sorptive clays is considerably less toxic than unoccluded quartz, and there is insufficient evidence for its inclusion in the standard.” -Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for General Industry and Maritime-2017.

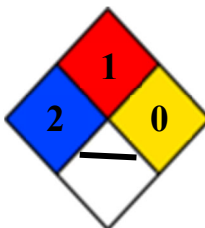
Section 4: First Aid Measures

Eye Contact:	Immediately flush eyes with large amounts of water for at least 15 minutes. Hold eyelids open during flushing. If irritation persists, repeat flushing. Obtain medical attention if irritation persists.
Skin Contact:	Wash affected area with soap and water. Prolonged contact with skin may cause dryness. Contact with molten sulfur can cause thermal burns: immediately flood with cool water.
Inhalation:	If respiratory irritation or symptoms occur, move the victim to fresh air. If symptoms persist, seek medical advice or attention. If the victim is not breathing, administer artificial respiration. Keep victim at rest. Give Cardiopulmonary Resuscitation (CPR) only if there is no pulse and no breathing, and immediately obtain medical attention.
Ingestion:	If ingested and symptoms develop, consult a physician. Sulfur is not considered toxic and has been used medically in the past in laxatives, alteratives, antiseptics, anti-parasitics and is a common component of animal feeds.

Section 5: Fire Fighting Measures

National Fire Protection Association:

Health: 2 Flammability: 1 Instability: 0



0 (Minimal)
1 (Slight)
2 (Moderate)
3 (Serious)
4 (Severe)

Extinguishing media: Use water, water mist, water fog, dirt, sand, or a carbon dioxide blanket to extinguish a fire. Hi-velocity jets of water or gas should be avoided as these will tend to spread and splash burning material over a larger area. Gentle water sprays or flooding work best. Damage can be minimized by smothering (closing off all air) or using inert gas (e.g. carbon dioxide) flooding.

Specific Hazards Arising from the Chemical:

The principal combustion product is sulfur dioxide, an irritating, toxic gas that smells like burning match heads, and produces eye and throat irritation and severe coughing if present in sufficient concentrations.

Protect skin from thermal burns caused by contact with molten sulfur. After a fire is extinguished, post a fire watch for at least 4 hours as small fires are easy to miss and can linger for hours. Re-ignition may occur in some conditions. Sulfur burns with a short blue flame that is almost invisible by daylight except by smoke and heat. Burning sulfur turns a deep red-black color.

Special Precautions for Fire-Fighters:

Appropriate personal protective equipment should be worn. Stay upwind, do not inhale combustion products. When the chemical hazard of a fire is unknown, or the fire is in an enclosed or confined space, self-contained, full-face breathing apparatus should be worn. Wear all other personal protective equipment as normal or as conditions warrant. Avoid raising dust or scattering the burning sulfur material. Avoid skin contact with hot molten sulfur. For nearby fires, keep exterior of adjacent sulfur tanks and bins cool with water spray to help prevent ignition. Water fog can be used to suppress sulfur dioxide arising from combustion.

Section 6: Accidental Release Measures

Avoid creating sparks and setting fire to spilled material. Have proper extinguishing media present. Utilize proper eye, face and respiratory protection. Small spills may be cleaned up with a non-sparking scoop, dustpan and broom. Use of common vacuum cleaners is not recommended. Large spills may be cleaned up with equipment such as skid loaders, front end loaders, etc. However, avoid creating dust and avoid dragging the blade on concrete or rocks as this may cause sparks that could ignite dust or dust-air mixtures. Moistening with water may help suppress dust. Post a fire watch until danger of fire has passed.

Section 7: Handling and Storage

Handle loose product with electrically grounded non-sparking process/storage equipment. Dry sulfur materials may generate static electricity and sparking during conveying or grinding. Avoid handling sulfur at high velocity in air, such as pneumatic conveying. Inert gas blanketing is useful in preventing fires and explosions in processing and grinding equipment. Do not use near sparking equipment, smoking materials, or open flames. When handling loose, bulk sulfur use special care to prevent steel forks, loader buckets, tools, etc. from dragging on concrete or rock (spark potential) and to prevent crushing the product with equipment which will create dust. Exclude rocks, sand, loose iron, and other tramp material from entering augers, elevator legs, or other mechanical handling systems. (Tramp material will cause sparking). Use good housekeeping practice; do not allow large amounts of waste to accumulate. Use of common vacuum cleaners is **not** recommended. Enclosed equipment containing dust suspended in air should be adequately explosion vented or strong enough to withstand the pressures developed in a dust explosion. Do not store near strong oxidizing materials, or near hot equipment. Handle product gently and keep product dry prior to use to prevent unintended premature product degradation. In the presence of liquid water, product disintegrates into smaller pieces or mud; as with Bentonite, mixtures of product with water can become slippery on floors. In the presence of moisture and air over long periods of time, sulfur will slowly convert to a weak sulfuric acid which is corrosive to some metals and degrades paper, concrete, wood products, etc. See also Section 10.

Section 8: Exposure Control / Personal Protection

Respiratory Protection: Recommend dust masks suitable for use with nuisance dust. Indoor areas should have sufficient local exhaust to remove dust that is released into the air

Eye Protection: Recommended around dust for personal comfort

Skin & General: Work gloves, long sleeved shirts, etc. help keep material off of skin of persons prone to skin irritation and dermatitis. Use of a good skin moisturizer before and after exposure may help to avert dry skin problems and discomfort. Be sure to select a skin care product which you are not allergic to.

Work & Hygienic Practices: When working with sulfur, wash exposed skin with soap and water after work periods and before breaks. Use clean work clothing each day. Avoid rubbing your eyes which can transfer sulfur to your eyes.

Engineering Controls: In areas where airborne concentrations may exceed allowable limits, it is recommended that ventilation systems be used. This could include, but is not limited to, exhaust fans. Where dust handling systems are used, ensure they are non-sparking and do not discharge into enclosed spaces. Where feasible, the use of an oxygen-deficient environment (e.g. inert gas) is recommended for handling product in dust-producing activities in enclosed spaces in order to prevent combustible dust-air mixtures.

Exposure Limits:

Component	ACGIH	OSHA PEL-TWA ¹
Sulfur	TWA 10 mg/m ³ - 8 hr. total as nuisance dust	15 mg/m ³ (Total Dust) 5 mg/m ³ (respirable fraction)
Bentonite		15 mg/m ³ (Total Dust) 5 mg/m ³ (respirable fraction)
Crystalline Silica, Quartz (respirable) ²	TLV: .025 mg/m ³	Mmppcf-250 / (%SiO ₂ +5) Mg/m ³ -10 mg/m ³ / (%SiO ₂ + 2)

1 – 29CFR1910.1000 Table Z-3

2 - Although Yellowstone Brand Disintegrating Sulfur may contain Crystalline Silica in the form of quartz as a contaminant of Wyoming Bentonite, this is not necessarily of respirable size. OSHA has determined there is insufficient evidence of risk arising due to handling of sorptive clays, such as bentonite. The sulfur pastillation process dilutes and agglomerates small mineral particles together into cohesive larger masses with lower respirable silica dust than bentonite itself.

Possible Byproduct	ACGIH	OSHA PEL
Sulfur Dioxide (will form in combustion event)	TLV: 2 ppm STEL: 5ppm	TWA 5 ppm,
Hydrogen Sulfide (trace, may form in some reaction conditions)	STEL: 5 ppm TWA: 1 ppm	Max: 20 ppm

ACGIH-American Conference of Governmental Industrial Hygienists; TWA-8-hour time weighted average; TLV-Threshold Limit Value;

Section 9: Physical and Chemical Properties

Appearance: Pale, greenish-yellow pastilles, prills, powders or granules.

Odor: very slight, sweet to mercaptan-like, possible ammonia-like odor.

Odor Threshold: No data available

pH: Not applicable

Melting Point: 231-246°F/ 110 C

Boiling Point: 832.3° F/ 444 C

Flash Point: 405°F/ 207 C

Evaporation Rate: Not applicable

Flammability: Combustible dust

Lower Level Flammability Limit: 35 g/m³

Upper Level Flammability Limit: 1400 g/m³

Vapor Pressure: 1.15 X 10^[E-4] (mm.Hg) @ 140° F.;

Vapor Density at boiling point: 0.2278 lbs./ft³

Relative Density: No data available. See specific gravity.

Solubility: Insoluble (water)

Partition Coefficient (n-octanol/water): No data available

Auto-ignition temperature: ~450°F/ 232 C

Decomposition temperature: No data available

Viscosity: Not applicable (solid)

Specific Gravity: ~2.07 @ 77° F.;

Section 10: Stability and Reactivity

Reactivity: Stable

Chemical Stability: Stable

Conditions to Avoid: Unintentional ignition. Mixtures of air and sulfur dust; sparks or open flames; mixtures of sulfur and strong oxidizing agents in general: large accumulations of sulfur dust which could become airborne in an explosion or process disruption caused by other materials. Examples of common strong oxidizing agents are perchlorates, nitrates, chlorates, permanganates, peroxides, oxygen, and halogens. At very high temperatures, sulfur can combine with hydrogen donors (e.g. hydrocarbons) to form hydrogen sulfide, a toxic, flammable gas, which also burns in air to form sulfur dioxide.

General Information: Solid sulfur is satisfactorily compatible with common materials of construction including steel and aluminum. Molten sulfur may degrade rubber and some plastics. Sulfur can form sulfides with most metals, including iron under some low-oxygen conditions, and reacts vigorously with metals in the Sodium and Magnesium groups on the periodic table. Sulfides of iron will oxidize fairly rapidly in moist air, liberating heat. In the presence of other readily oxidized combustibles (such as some oily materials) under certain conditions, the heat liberated may be sufficient to result in spontaneous ignition. This phenomenon has not been observed with Disintegrating Sulfur in contact with unprotected steel at ordinary ambient temperatures, however. Users are cautioned against allowing inadvertent mixtures/piles of sulfur, iron, and miscellaneous oils to remain. Oxidation is accelerated by higher temperatures. Heat buildup and ignition can be prevented by keeping sulfides wet until oxidation is complete. The literature on sulfur is extensive. Consult a chemist before compounding.

Section 11: Toxicological Information

Inhalation: Unlikely to be harmful, but may cause irritation

Skin Contact: Unlikely to be harmful, but may cause irritation

Eye Contact: Unlikely to be harmful, but may cause irritation

Carcinogenic effects: Sulfur is NOT listed as Carcinogen or Potential Carcinogen under the National Toxicology Program of IARC or by OSHA. Bentonite/ Sodium Montmorillonite is NOT listed as a carcinogen or potential carcinogen by ACGIH, IARC, NTP, or OSHA. The American Conference of Governmental Industrial Hygienists (ACGIH) has classified Crystalline Silica Quartz* as a suspected human carcinogen and the National Toxicology Program (NTP) lists respirable Crystalline Silica Quartz as "known to be a human carcinogen." However, the handling

of sorptive clays, such as bentonite is not covered under OSHA standard 1910.1053-Respirable Crystalline Silica. OSHA has determined “*the occluded quartz found in sorptive clays is considerably less toxic than unoccluded quartz, and there is insufficient evidence for its inclusion in the standard.*” -Small Entity Compliance Guide for the Respirable Crystalline Silica Standard for General Industry and Maritime-2017. “*Crystalline silica is a basic component of soil, sand, granite, and many other minerals. Quartz is the most common form of crystalline silica. [Silica] may become respirable size particles when workers chip, cut, drill, or grind objects that contain crystalline silica.*” (OSHA Fact Sheet, 2002).

Section 12: Ecological Information

The product and its products of natural aerobic degradation are not deemed toxic in normal usages. Soil bacteria metabolize sulfur to sulfates (a plant nutrient) in the presence of oxygen and moisture. High accumulations in soil may become acidic if natural soil alkalinity is depleted, hence sulfur’s use as a soil amendment. Bentonite (clay) is a common constituent of soil.

Section 13: Disposal Considerations

Waste disposal: The generation of waste should be avoided or minimized. Disposal of this product and any by-products must comply with all local, state, and federal requirements. Disposal is usually in covered landfill. Incineration will produce sulfur dioxide. Consult your local and/or regional authorities.

Section 14: Transport Information

Solid sulfur is not considered Hazardous Material if transported in a non-bulk packaging or if formed to a specific shape (for example, prills, granules, pellets, pastilles, or flakes) per U.S. DOT 49CFR172.102(c)(1)(Provision 30).

For Domestic Shipments:

Shipping Description: Sulfur

Shipping Description: NA1350, SULFUR, 9, PG III

For International Shipments:

Commodity Name: Sulfur

Shipping Description: UN1350, SULFUR, 4.1, PG III

Section 15: Regulatory Information

U.S. Federal regulations:

Clean Air Act (CAA) 112 accidental release prevention: Sulfur Dioxide (e.g. fire); Hydrogen Sulfide

Clean Air Act (CAA) 112 regulated toxic substances: Sulfur Dioxide (e.g. fire); Hydrogen Sulfide

Section 16: Other Information

Hazardous Material Information System (HMIS)

Health	2
Fire hazard	1
Physical Hazard	0
Personal protection	G

This product is warranted to be of a sulfur analysis (percentage) not lower than described. NO OTHER WARRANTY IS EXPRESSED OR IMPLIED and ANY SUCH OTHER WARRANTIES ARE DISCLAIMED by Montana Sulphur & Chemical Company. Upon evidence satisfactory to the Company that the sulfur content of this product is not as warranted, Montana Sulphur & Chemical Company will, at its sole option, cure the defect, replace the product, or refund the price paid Montana Sulphur & Chemical Company by the original purchaser.

Because conditions and methods of handling, use and disposal of these products vary and are beyond the control of the manufacturer, Montana Sulphur & Chemical Company is not liable for any injury or damage, direct, indirect, or consequential, to purchasers, users, or any other person. Read the Safety Data Sheet for this product before handling. Seek competent advice as to particular uses and application rates. Misuse of this product, like any product, may result in personal injury or property damage. User assumes responsibility for the handling, use and disposal of the product and packaging.

The information provided in this document is believed to be accurate; however, it is offered without warranty and is subject to change without notice.

Last Revised:11/19/2019