

SAFETY DATA SHEET (SDS)

Dakota Gold Biochar

Construction Material Grade

SECTION 1: Identification

Product identifier	Dakota Gold Biochar - Construction Material Grade
Other means of identification	Dakota Gold; wood-derived biochar; construction-grade biochar
Recommended use	Carbonaceous material/additive for manufacturing cement, concrete, asphalt, fence posts, and other construction materials.
Uses advised against	No specific uses are prohibited. Contact Dakota Biochar for questions regarding applications outside the intended uses.
Manufacturer / responsible party	Dakota Biochar LLC
Address	1118 W Main St., Rapid City, SD 57701, USA
Business contact	Brad Walton - (612) 269-4161
Website	www.dakota-biochar.com
Emergency telephone - interim	Dakota Biochar: (612) 269-4161. For medical exposure in the U.S.: Poison Help 1-800-222-1222. A third-party 24-hour emergency-response service (e.g., CHEMTREC, 3E, or INFOTRAC) is planned; insert the contracted service number before final issue.

SECTION 2: Hazard(s) identification

OSHA HCS classification: Combustible Dust (OSHA-defined hazard).

Signal word: WARNING

Hazard statement: May form combustible dust concentrations in air.

Other hazards: Carbonaceous solid is combustible. Dust may cause mechanical irritation of the eyes, skin, nose, and throat. Product-specific flammable-solid classification, dust explosibility parameters, self-heating behavior, and auto-ignition temperature have not been determined.

Precautionary information: Minimize dust generation and accumulation. Keep away from heat, sparks, open flame, hot surfaces, and strong oxidizers. Use local exhaust where dust is generated. Ground/bond material-transfer equipment where static accumulation is possible. Do not package, store, or ship material while hot, smoking, or suspected of smoldering.

SECTION 3: Composition/information on ingredients

Component	CAS / identifier	Nominal as shipped	Notes
Wood-derived biochar / charcoal (UVCB-type carbonaceous material)	16291-96-6 (commonly used for charcoal/biochar)	~75 wt%	Includes fixed carbon, residual volatile carbonaceous matter, and naturally occurring mineral ash.
Water	7732-18-5	~25 wt%	Moisture is intentionally/operationally variable; historical laboratory results span approximately 1-56 wt%.

Historical analytical characterization (informational, not a product specification): dry solids have averaged approximately 40 wt% volatile matter, 33 wt% mineral ash, and 27 wt% fixed carbon across production testing, with substantial lot-to-lot variation. The ash is composed principally of naturally occurring calcium-, potassium-, iron-, magnesium-, and phosphorus-bearing minerals. Available Lot 3 and Lot 4 analyses showed trace metals at ppm-level concentrations. No intentionally added hazardous ingredient has been identified above applicable SDS disclosure thresholds in the available analyses.

Data gap: crystalline silica content has not been specifically determined. Contact Dakota Biochar if application-specific mineralogical or respirable-dust testing is required.

SECTION 4: First-aid measures

Inhalation	Move person to fresh air. Keep at rest. If coughing, wheezing, shortness of breath, or irritation persists, obtain medical attention.
Skin contact	Wash exposed skin with soap and water. Remove contaminated clothing. Obtain medical advice if persistent irritation develops.
Eye contact	Rinse cautiously with clean water for at least 15 minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek medical attention if irritation persists.
Ingestion	Rinse mouth. Give a small amount of water if conscious and able to swallow. Do not induce vomiting. Contact Poison Help or a physician if symptoms occur or a significant quantity is swallowed.
Most important symptoms/effects	Dust may cause temporary mechanical irritation of eyes, skin, nose, or throat. Product-specific acute toxicity data are not available.
Immediate medical attention	Treat symptomatically. Call 911 for severe breathing difficulty, collapse, seizure, or loss of consciousness.

SECTION 5: Fire-fighting measures

Suitable extinguishing media: Water spray or fog, foam, dry chemical, or carbon dioxide, selected for the surrounding fire and conditions.

Unsuitable extinguishing media: Avoid high-pressure water streams where they could disperse burning material or create airborne dust.

Specific hazards: Carbonaceous material can burn or smolder. Fine dust dispersed in air in sufficient concentration and exposed to an ignition source may create a flash-fire or dust-explosion hazard. Combustion may produce carbon monoxide, carbon dioxide, smoke, and irritating decomposition products. Product-specific Kst, Pmax, MEC, MIE, flammable-solid, self-heating, and auto-ignition data are not available.

Fire-fighter protection: Wear full protective equipment and positive-pressure self-contained breathing apparatus (SCBA). Approach smoldering bulk material cautiously. Avoid actions that disperse dust. Cool adjacent material/containers where safe. Check for concealed hot spots and re-ignition.

SECTION 6: Accidental release measures

Eliminate ignition sources and provide adequate ventilation.

Avoid generating dust clouds. Prevent dust deposits from accumulating on floors, ledges, equipment, and overhead surfaces.

Collect by careful sweeping/shoveling or HEPA-filtered industrial vacuum. Wet cleanup may be used where compatible with the facility and end use. Do not use compressed air to disperse settled dust.

Use grounded/bonded and suitably rated equipment when handling significant quantities of dry fines.

Uncontaminated spilled product may be recovered for reuse if quality requirements are maintained. Prevent contaminated material from entering drains or surface waters.

SECTION 7: Handling and storage

Safe handling: Use methods that minimize dust formation during unloading, conveying, grinding, milling, mixing, and transfer. Keep ignition sources away from dusty operations. Do not smoke in handling areas. Provide local exhaust where practical. Avoid skin and eye contact with dust.

Static electricity: Dry carbonaceous fines can accumulate electrostatic charge during transfer. Use appropriate grounding/bonding and electrically classified equipment where the facility hazard assessment indicates a combustible-dust risk.

Cooling before packaging/storage: Do not load supersacks, bulk trailers, bins, or enclosed storage with material that is visibly smoking, unusually hot, or suspected of smoldering. Allow product to cool adequately before confinement. Product-specific self-heating characteristics have not been determined.

Storage conditions: Store in a cool, dry, well-ventilated area away from heat, sparks, open flame, and strong oxidizers. Protect supersacks from damage and excessive heat. Maintain access for inspection of bulk storage. If unexpected heating, smoke, or unusual odor is observed, isolate the material and follow site emergency procedures.

Packaging: Typically supplied in approximately 1-2 cubic yard supersacks/FIBCs or by bulk trailer.

SECTION 8: Exposure controls/personal protection

Parameter	Limit / guidance
Particulates Not Otherwise Regulated (PNOR) - OSHA PEL	15 mg/m3 total dust, 8-hour TWA; 5 mg/m3 respirable fraction, 8-hour TWA.
Crystalline silica	Content not determined. If jobsite processes generate respirable mineral dust, the employer should evaluate whether the OSHA respirable crystalline silica standard applies.

Engineering controls: Use enclosed handling where practicable, local exhaust at transfer/mixing points, and effective dust collection. Maintain dust collectors, ducts, conveyors, and process equipment to prevent leakage. Use housekeeping practices that prevent accumulations. Avoid compressed-air cleaning.

Eye/face protection: Safety glasses with side shields. Use sealed goggles where high dust concentrations or overhead dust exposure are possible.

Hand/skin protection: Work gloves and normal industrial work clothing are recommended to reduce mechanical irritation and soiling.

Respiratory protection: Where engineering controls cannot maintain airborne dust below applicable limits, use a NIOSH-approved particulate respirator selected based on the exposure assessment and used within an OSHA-compliant respiratory protection program (29 CFR 1910.134).

Hygiene: Wash hands and exposed skin after handling and before eating, drinking, or smoking. Keep food and beverages out of dusty work areas.

SECTION 9: Physical and chemical properties

Physical state	Solid; porous carbonaceous granules and fines.
Color	Black to dark gray.
Odor	Mild charred/burnt wood odor; may be weak or absent depending on lot.
Odor threshold	Not determined.
pH	Alkaline; historical biochar testing approximately pH 9.5-12.6 using biochar-specific laboratory methods. Results are method- and lot-dependent.
Melting/freezing point	Not determined / not applicable as a complex solid.
Boiling point/range	Not applicable to solid product.
Flammability	Combustible carbonaceous solid. Product-specific flammable-solid classification not determined.
Flash point	Not applicable / not determined for solid product.
Auto-ignition temperature	Not determined.
Self-heating properties	Not determined.
Dust explosion parameters	Kst, Pmax, MEC, and MIE not determined.
Vapor pressure / vapor density	Not applicable to solid product.
Relative density	Not determined.
Loose bulk density	Approximately 0.3-0.4 g/cm3 based on available Lot 3 and Lot 4 measurements; lot-dependent.
Solubility	Insoluble in water; porous material may absorb/retain water.
Moisture content	Variable. Historical laboratory results approximately 1-56 wt% as received; historical mean approximately 25 wt%.
Particle characteristics	Variable granular material with fines. Historical PSD testing includes particles from <0.063 mm to >8 mm. Construction-grade post-processing may alter particle-size distribution.

SECTION 10: Stability and reactivity

Reactivity	Combustible carbonaceous material. May react strongly with strong oxidizing agents.
Chemical stability	Expected to be stable when stored cool, dry, and away from ignition sources and incompatible materials.
Hazardous reactions	Dust-air mixtures may ignite in the presence of sufficient ignition energy. Product-specific dust-explosion and self-heating testing has not been performed.
Conditions to avoid	Heat, sparks, open flame, hot surfaces, static discharge, uncontrolled dust clouds, and confinement of hot/smoldering material.
Incompatible materials	Strong oxidizing agents. Avoid contact with highly reactive oxidizers.
Hazardous decomposition products	Carbon monoxide, carbon dioxide, smoke, and other products of incomplete combustion.

SECTION 11: Toxicological information

Likely routes of exposure: Inhalation of dust; eye and skin contact. Ingestion is not an intended route of exposure.

Acute toxicity: Product-specific acute toxicity studies are not available. Available composition analyses have not identified intentionally added toxic ingredients requiring disclosure at applicable concentrations.

Skin corrosion/irritation: No product-specific classification data. Dust may cause mechanical irritation, dryness, or soiling.

Serious eye damage/irritation: No product-specific classification data. Airborne particles may cause mechanical eye irritation.

Respiratory effects: Dust may irritate the nose and throat, particularly at elevated airborne concentrations. Persons with pre-existing respiratory conditions may be more susceptible to nuisance dust.

Sensitization / mutagenicity / reproductive toxicity / STOT / aspiration: No product-specific data available.

Carcinogenicity: No product-specific carcinogenicity classification has been established. Crystalline silica content has not been specifically determined; evaluate workplace-generated respirable mineral dust where relevant.

SECTION 12: Ecological information

Ecotoxicity: No product-specific aquatic toxicity data are available.

Persistence/degradability: Biochar is a carbon-rich, environmentally persistent solid by design. No standardized degradability data are available for this grade.

Bioaccumulation: No data available.

Mobility in soil: Particulate material may remain in soil and can be transported by wind or runoff if not incorporated or contained.

Other adverse effects: Avoid uncontrolled release of large quantities to storm drains, surface waters, or locations where dust migration could create a nuisance or safety hazard.

SECTION 13: Disposal considerations

Uncontaminated product: Where permitted, recover for intended beneficial use or incorporate into soil/other approved beneficial applications. Confirm the receiving application and local requirements.

Contaminated product: Dispose according to the nature of the contaminant and applicable federal, state, and local requirements. The waste generator is responsible for waste characterization.

Packaging: Empty supersacks/containers should be managed in accordance with local requirements and facility procedures. Control residual dust during handling.

SECTION 14: Transport information

U.S. DOT status	Product-specific transportation classification has not been established by self-heating or other UN/DOT physical-hazard testing.
UN number / proper shipping name / hazard class / packing group	Not determined in this draft.

Special precautions	Do not transport product that is hot, smoking, or suspected of smoldering. Minimize dust during loading/unloading and secure loads against loss of fines.
Shipper responsibility	The shipper must determine the applicable 49 CFR classification for the actual material, packaging, and shipment conditions. Contact Dakota Biochar for shipment-specific questions or additional characterization needs.

SECTION 15: Regulatory information

OSHA Hazard Communication: This draft communicates the OSHA-defined combustible dust hazard for the product. The SDS format follows the 16-section structure used under 29 CFR 1910.1200 Appendix D.

Other U.S. regulatory information: No additional product-specific federal or state regulatory conclusions are established in this draft. Regulatory status may depend on the intended downstream use, particle size generated during processing, and shipment conditions.

SECTION 16: Other information

Prepared by	Dakota Biochar LLC
Responsible party	Samuel Papendick, Chief Technology Officer
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Primary data basis	Dakota Biochar production laboratory testing by South Dakota Mines / CNAM-Bio Center (2025-2026); Ward Laboratories Lot 3 and Lot 4 testing; Dakota Biochar handling information; OSHA Hazard Communication and combustible-dust guidance.

Revision / issue note: pending shipment-specific transport classification review. Product-specific combustible-dust and self-heating test values are unavailable; contact Dakota Biochar if a downstream application requires additional testing.

Disclaimer: The information is based on data currently available to Dakota Biochar and is intended for health, safety, and environmental purposes. It is not a warranty of product properties or fitness for a particular use. Users are responsible for evaluating workplace conditions, downstream processing hazards, and applicable legal requirements.