

SUMMIT BRIDGE LIMITED

Advanced Biological Water Treatment Solutions

COSHH RISK ASSESSMENT

WITH APPLICATION, DOSAGE & CONCENTRATION GUIDE

SUMMIT BIO SEED



Biological effluent treatment preparation containing non-pathogenic environmental bacterial isolates

Document Reference: SBG-COSHH-002

Date Issued: September 2026 | Revision 2.0

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Terminology Notice: All biological preparations described in this document are biological effluent treatment preparations containing non-pathogenic environmental bacterial isolates. Product descriptions comply with the Summit Bridge Terminology Guide (April 2026).

Revision 2.0 (September 2026): composition table restated under CLP (Regulation (EC) No 1272/2008) hazard and precautionary statements in place of the superseded R- and S-phrases system; viable count restated per the manufacturer's written confirmation; manufacturer's written positions on strain identity and safety confirmation, operating range, activation time and dissolved-oxygen tolerance incorporated. Summit Bridge recommended operating windows retained alongside the manufacturer's stated ranges.

1. DOCUMENT INFORMATION

Document Reference	SBG-COSHH-002 Revision 2.0
Product Name (Summit Bridge)	Summit Bio Seed
Description	Organic solids reduction bio-culture. Powder product containing activation nutrients for effluent treatment and odour control.
Assessment Prepared By	James Mulcair CertIOSH MIIRSM NVQ Level 6 Occupational Health & Safety
Date of Assessment	September 2026
Review Date	September 2027
Applicable Regulation	COSHH Regulations 2002 (as amended); EU REACH Regulation (EC) No 1907/2006; CLP Regulation (EC) No 1272/2008
Source Documents	Summit Bridge Safety Data Sheet — Summit Bio Seed (EN); manufacturer's written responses to the Summit Bridge technical questionnaire (August 2026)

2. PRODUCT IDENTIFICATION & COMPOSITION

Component	CAS No.	% m/m	CLP Classification (substance level)	Applicability to this mixture
Calcium carbonate	471-34-1	10–30%	No harmonised classification. Registrant majority position: not classified.	Not classified

Component	CAS No.	% m/m	CLP Classification (substance level)	Applicability to this mixture
Montmorillonite clay	1302-78-9	1–10%	Not classified.	Not classified
Magnesium sulphate	7487-88-9	0.5–1.5%	Not classified.	Not classified
Manganese sulphate	7785-87-7	0.01–0.10%	STOT RE 2 H373; Aquatic Chronic 2 H411 (harmonised, Annex VI).	Below generic concentration limits — does not contribute to mixture classification
Iron(II) sulphate	7782-63-0	0.01–0.1%	Acute Tox. 4 H302; Skin Irrit. 2 H315; Eye Irrit. 2 H319 (harmonised, Annex VI).	Below generic concentration limits — does not contribute to mixture classification
Bacterial consortium — non-pathogenic environmental isolates, non-GMO, food-grade activation nutrients	N/A	Balance	Not classified. Biosafety level 1 (BSL-1). All strains <i>Bacillus</i> spp., identified by 16S sequence homology, GRAS, confirmed negative for anthrax toxin and <i>Bacillus cereus</i> enterotoxin.	Not classified

Strain identity and safety confirmation. All strains in the consortium are *Bacillus* species, identified by 16S rRNA sequence homology and supporting techniques, and have Generally Recognised As Safe (GRAS) status. Each strain is confirmed negative for anthrax toxin and for the *Bacillus cereus* enterotoxin. Strains are produced individually under controlled monoseptic fermentation and supplied in spore form for shelf life, formulation stability and robustness. Strains are naturally occurring, non-genetically-modified environmental isolates; the product contains no animal-derived ingredients and no non-biodegradable ingredients.

Mixture-level note: All classified components are present below their generic concentration limits under CLP Annex I, so the mixture is NOT classified as hazardous. No hazard statements, precautionary statements, signal word or pictogram apply to the mixture. Dust-handling controls in Sections 5 and 8 are applied as good practice for a fine mineral powder, not as a consequence of classification.

3. PHYSICAL & CHEMICAL PROPERTIES

Property	Value	Property	Value
Appearance	Light brown powder	Explosive properties	Dust risk — standard precautions apply
Odour	Natural	Oxidising properties	None
pH (in dissolution)	7.0 ± 1.0	Vapour pressure	N/A
Density	0.906 kg/L	Solubility	Dissipates in water
Flash point	N/A	Flammability	N/A
Viscosity	N/A	Boiling point	N/A

4. HAZARD IDENTIFICATION (CLP / GHS)

Hazard Category	Assessment
Flammability	Non-flammable. Dust explosion risk in environments with high dust concentration — avoid ignition sources. In storage keep in containers.
Biological hazard	No known effect. Organisms are non-pathogenic environmental isolates (non-GMO), biosafety level 1. All strains <i>Bacillus</i> spp., identified by 16S sequence homology, GRAS, confirmed negative for anthrax toxin and <i>Bacillus cereus</i> enterotoxin. Supplied in spore form.

Hazard Category	Assessment
Eye irritation	Not classified. Powder/dust may be mechanically irritating to eyes. Wear safety goggles during dispensing.
Inhalation	Not classified. Dust inhalation nuisance during dispensing. Wear dust mask (minimum FFP2). No known systemic effect.
Skin irritation	Not classified. Trace mineral sulphates may cause mild irritation in sensitive individuals.
Carcinogenicity / Mutagenicity	No known effect.
Aquatic toxicity	Not classified. No known effect when used per instructions.
CLP Classification	NOT CLASSIFIED as hazardous under Regulation (EC) No 1272/2008. No signal word, no pictogram, no hazard statements. Assessed by the calculation (additivity) method.

5. EXPOSURE CONTROLS & PERSONAL PROTECTIVE EQUIPMENT

Control / PPE Category	Requirement
Respiratory protection	Dust mask (minimum FFP2) required during all dispensing and powder-handling operations.
Hand protection	Nitrile or rubber gloves recommended for extended handling.
Eye / face protection	Safety goggles required during dispensing; risk of powder dust entering eyes.
Skin / body protection	Lab coat or overalls; avoid contact with damp powder on skin.
Engineering controls	Handle in ventilated areas. Minimise dust generation. Use appropriate scoop or dispenser.
OEL	No specific OEL. Apply the ALARP principle and standard dust-handling controls.

6. FIRST AID MEASURES

Route of Exposure	First Aid Action
Eye contact	Irrigate immediately with clean water or saline solution for at least 15 minutes. Seek medical attention if irritation persists.
Skin contact	In the unlikely event of skin irritation wash affected area thoroughly with soap and water. Remove contaminated clothing. Seek medical attention if irritation develops.
Ingestion	Do not induce vomiting. Rinse mouth with water. Seek immediate medical attention. Show this document to the treating physician.
Inhalation	Remove to fresh air immediately. If symptoms persist seek medical attention.

7. RISK ASSESSMENT MATRIX

Activity / Task	Hazard	Who at Risk	Inherent Risk (L×S)	Residual Risk	RAG
Opening container / dispensing powder	Inhalation of dust; eye/skin contact	Operator	2×3=6	1×1=1	LOW
Dissolving powder in water for application	Dust during mixing; skin/eye contact	Operator	2×2=4	1×1=1	LOW

Activity / Task	Hazard	Who at Risk	Inherent Risk (L×S)	Residual Risk	RAG
Applying dissolved product to treatment system	Liquid contact; slip on wet floor	Operator	2×2=4	1×1=1	LOW
Accidental powder spill	Dust generation; slip if wet	All personnel	2×2=4	1×1=1	LOW
Storage in original sealed container	Moisture ingress degrading product	Storeman	1×1=1	1×1=1	LOW

L = Likelihood (1–5) | S = Severity (1–5) | Risk = L × S | LOW ≤8 | MEDIUM 9–15 | HIGH ≥16

8. CONTROL MEASURES & SAFE HANDLING

- Wear dust mask (FFP2 minimum) when opening containers or dispensing powder into water.
- Wear safety goggles when dispensing or pouring powder in open conditions.
- Always pre-dissolve powder in warm water (30–40°C) before adding to the treatment system.
- Use a dedicated scoop or dispenser. Avoid creating unnecessary dust clouds during handling.
- Store in original sealed containers in a cool, dry, dark location. Protect from moisture; moisture ingress will degrade product viability.
- Avoid ignition sources in environments where significant dust may accumulate.
- Avoid ingestion. Do not eat, drink, or smoke when handling product.
- Wash hands thoroughly with soap and water after handling.

9. STORAGE, SPILLAGE & DISPOSAL

Topic	Guidance
Storage conditions	Store in a cool, dark ambient environment. Keep away from direct sunlight and heat sources. Keep container sealed when not in use.
Incompatible materials	Do not store alongside strong oxidising agents, chlorine-based disinfectants, or heavy-metal-containing compounds. These will destroy the bacterial culture.
Spillage — small	Collect product. Mop or absorb with inert material. Wash down with water and dry.
Spillage — large	Avoid generating dust during clean-up. Collect dry powder using a scoop or suitable vacuum. Place in sealed bag and dispose of as normal solid waste to landfill. Wash area with water and dry.
Disposal — product	Dispose of as normal solid waste to landfill in accordance with applicable local regulations. All components are biodegradable or naturally occurring.
Disposal — packaging	Recycle plastic and paper-based packaging in accordance with local authority requirements.

10. TRANSPORT INFORMATION

UN Number	Not applicable — not classified as dangerous goods
ADR/RID Class	N/A
IMDG Class	N/A
IATA Class	N/A
Marine Pollutant	No
Special Provisions	None required. May be transported under standard commercial conditions.

11. REGULATORY FRAMEWORK

Regulation / Standard	Status
COSHH Regulations 2002 (as amended)	Assessment conducted in compliance.
REACH — Regulation (EC) No 1907/2006	All components registered or exempt. No SVHC above threshold concentrations.
CLP — Regulation (EC) No 1272/2008	Mixture assessed by the calculation (additivity) method. Not classified as hazardous — no H-statements, no pictogram, no signal word.
Biocidal Products Regulation (EU) 528/2012	Product is a biological wastewater treatment preparation and makes no biocidal claims. Not classified as a biocidal product under BPR.
Directive 2000/54/EC — Biological Agents	No biological hazard identified; organisms are non-pathogenic environmental isolates (BSL-1), confirmed negative for anthrax toxin and B. cereus enterotoxin.
ECHA Classification	Not classified as hazardous under CLP/GHS criteria.
Biodegradability (OECD 301)	All components readily biodegradable or naturally occurring.

12. ASSESSMENT SIGN-OFF

Field	Detail	Field	Detail
Assessed By	James Mulcair	Role	Health, Safety & Environmental Director
Qualifications	NVQ Level 6 Occupational Health & Safety, CertIOSH MIIRSM	Organisation	Summit Bridge Limited
Date of Assessment	September 2026	Review Date	September 2027
Authorised By	James Mulcair	Signature	Pending signature (Revision 2.0)

13. APPLICATION GUIDE — DOSAGE, CONCENTRATION & FREQUENCY

Important — Indicative Rates: The dosage figures below are indicative guidance derived from the manufacturer's written guidance, standard biological treatment practice and comparable product benchmarks. They have not yet been validated against site-specific conditions for each client engagement. Actual rates must be reviewed and confirmed by Summit Bridge Ltd prior to client recommendation. Adjust all rates based on effluent volume, organic load (BOD₅/COD), temperature, pH, and existing microbial community status.

13.1 Dosage Rates by Sector, System & Application Point

Sector / System	Application Point	Concentration	Start-up Dose	Maintenance Dose	Frequency
Wastewater / Municipal	Sewage treatment works — aeration tank	0.5–1.0 g per m ³ effluent/day	2–5 g per m ³ /day for Weeks 1–2	0.5–1.0 g per m ³ /day	Daily; pre-dissolve in 10× warm water before dosing
Wastewater / Municipal	Septic tank / small treatment plant	5–10 g per person per week (start-up)	10 g per person/week for first 6–8 weeks	5 g per person/week	Weekly; dissolve in warm water and pour down toilet or drain

Sector / System	Application Point	Concentration	Start-up Dose	Maintenance Dose	Frequency
Food & Beverage	High-strength effluent tank (abattoir, dairy, brewery)	2–5 g per m ³ /day	5–10 g per m ³ /day for Weeks 1–4	2–3 g per m ³ /day	Daily; pre-dissolve; dose during low-flow periods
Food & Beverage	Sludge digestion / solids reduction	5 g per m ³ sludge per day	10–15 g per m ³ sludge at commissioning	3–5 g per m ³ sludge/day	Daily dosing; monitor volatile solids (VS) reduction monthly
Hospitality	Septic tank (hotel / resort)	10 g per person per week (start-up)	10 g per person/week for 15 weeks	5 g per person/week	Weekly; via toilet or nearest drain; do not flush for 6 hrs post-dose
Oil & Gas / Industrial	Industrial effluent lagoon (organics reduction)	1–2 g per m ³ total lagoon volume	5 g per m ³ at commissioning	1–2 g per m ³ /week	Weekly broadcast; agitate lagoon if aeration is available
General Industrial	Portable toilet / site welfare (construction sites)	25–50 g per unit (initial charge)	25–50 g per unit per service cycle	25 g per unit weekly	Weekly; add with service water directly to holding tank
General Industrial	Cesspit / holding tank	50 g per m ³ tank volume (initial)	50 g per m ³ at each pump-out	25 g per m ³ /month	Monthly; dissolve and pour down toilet or access port

Manufacturer's written guidance on the general regime: start-up typically 5 kg per megalitre per day (five times the maintenance rate), tuned down on measured performance to no less than 1 kg per megalitre per day. The sector rates above sit inside that regime; the start-up period and rate for a specific asset are set by Summit Bridge from the findings report. Dissolve powders in 10× their weight in warm water (30–40°C) before application unless stated otherwise.

13.2 Concentration Guide

Product form	Light brown powder. Must be pre-dissolved before all applications.
Standard working solution	Dissolve 1 part powder in 10 parts warm water (30–40°C). Mix thoroughly for 2–5 minutes until fully dispersed.
Priming / shock solution	Dissolve at 1:5 ratio (1 part powder : 5 parts water) for concentrated start-up applications.
Maximum single-dose concentration	5 g per m ³ system volume in a single application. Exceeding this does not improve outcomes and wastes product.
Minimum effective concentration	0.5 g per m ³ /day in established, well-functioning systems.
Viable bacterial count (indicative)	Approximately 1×10^8 CFU/g (colony-forming units per gram) at point of manufacture, per the manufacturer's written confirmation for the powder formulation.
Activation time	Process-dependent; typically germination within 1 hour of dosing and active growth within 4 hours (manufacturer's written position).
Shelf life at recommended storage	24 months from date of manufacture in cool, dry, sealed conditions.

13.3 Operating Conditions for Optimal Biological Performance

Parameter	Optimum Range	Minimum	Maximum
Temperature — manufacturer stated operating range	28°C	10°C	80°C
Temperature — Summit Bridge recommended operating window	25–35°C	10°C	45°C
pH — manufacturer stated operating range	6.8	3.5	10
pH — Summit Bridge recommended operating window	6.5–7.5	5.5	8.5
Dissolved Oxygen (DO)	2–4 mg/L (aerobic zones)	Facultative to fully anaerobic — spores survive without growing	Saturation
BOD ₅ Influent Load	200–1,500 mg/L	100 mg/L	5,000 mg/L (shock protocol)
COD Influent Load	400–3,000 mg/L	200 mg/L	8,000 mg/L
Hydraulic Retention Time	8–48 hours	4 hours	120 hours
Moisture (storage)	<15% relative humidity	Ambient	30% RH maximum — moisture destroys viability
Chlorine residual in system	<0.1 mg/L free chlorine	0 mg/L	0.5 mg/L (marginal)

Manufacturer stated operating ranges are the ranges within which the manufacturer reports the consortium remains viable and active across its applications. Summit Bridge recommended operating windows are the conditions under which Summit Bridge specifies and supports a dosing regime without site-specific confirmation. Applications outside the recommended window are confirmed per asset.

13.4 Dose Escalation & Shock Recovery Protocol

Scenario	Recommended Action	Dose Multiplier	Notes
Normal start-up	Apply start-up dose rate for 6–8 weeks	1× start-up rate	For septic/domestic: 10 g/person/week. For industrial: 2–5 g/m ³ /day.
System recovery (heavy contamination)	Double start-up dose for first 2 weeks	2× start-up rate	Use when system has been non-operational or subject to chemical shock. Monitor VS and BOD weekly. The augmented population provides materially better robustness to deviations than a non-augmented system.
Odour complaint / H ₂ S generation	Increase dose immediately	1.5–2× maintenance rate	Apply to odour source point. Results typically evident within 5–10 days.
High solids / sludge accumulation	Increase dose and target sludge layer directly	2× maintenance rate	Pour dissolved product directly onto sludge surface where accessible. Maintain for 4–6 weeks.
Temperature drop (<15°C)	Increase dose to compensate for reduced activity	1.5× maintenance rate	Metabolic rates approximately halve per 10°C drop. Do not reduce dosing in winter.
Post-antibiotic / biocide event	Full re-inoculation as start-up	Full start-up dose	Antibiotic events destroy bacterial culture. Treat as new system. Allow 48–72 hrs before normal flow.

13.5 Step-by-Step Application Method

- Calculate system volume (m³ or litres) or number of users and select the appropriate dosage row from Section 13.1.
- Weigh the required quantity of powder using calibrated scales. Do not estimate by eye for commercial systems.
- Wear dust mask (FFP2) and safety goggles before opening the container.
- Add the weighed powder to a clean bucket or container. Pour in 10 parts warm water (30–40°C) per 1 part powder.
- Stir vigorously for 2–5 minutes until powder is fully dispersed. Do not use water above 50°C for dissolution.
- Apply the dissolved solution within 30 minutes of preparation for maximum bacterial viability.
- Pour the solution directly to the dosing point: septic tank inlet, treatment plant dosing port, or flush down toilet or drain for smaller systems.
- For large treatment plants: use a dosing pump connected to a prepared solution tank. Top up daily.
- For portable toilets and site welfare units: add powder directly with service water during weekly servicing.
- Record date, quantity applied, system conditions, and any observations in the site dosing log.
- Monitor BOD₅, COD, volatile solids, and odour weekly during start-up and monthly during maintenance phase.

13.6 Frequency Summary

Phase / Scenario	Recommended Frequency
Start-up / commissioning (Weeks 1–6)	Daily at full start-up dose; pre-dissolve before each application
Establishment phase (Weeks 7–12)	Daily or 3× weekly at 75% start-up dose
Routine maintenance (established system)	Weekly (septic/small systems); daily (large treatment plants)
Odour or performance event	Immediately increase to 2× maintenance; continue for 5–10 days
Post-chemical or antibiotic shock	Full restart protocol; daily for minimum 2 weeks
Winter / low-temperature operations	Increase frequency to daily; 1.5× normal dose throughout cold period
Periodic performance review	Monthly BOD ₅ /VS monitoring. Annual full assessment recommended.

13.7 Operating Notes & Incompatibilities

- Free chlorine at the dosing point should be below 0.5 mg/L; where residuals are higher, neutralise or reposition dosing before application.
- Allow 24 hours between antibiotic, biocide or chemical sterilisation treatment of the system and dosing.
- Dissolve in water below 50°C; dissolution temperature is a preparation control and is separate from the operating temperature range of the system.
- Store dry. Moisture ingress permanently degrades product viability.
- Not for application to potable water or food-contact water systems.
- Systems operating above the Summit Bridge recommended window (45°C): the manufacturer's stated range extends to 80°C; confirm the application with Summit Bridge before dosing.
- Heavy-metal-bearing effluents (copper, mercury, silver) above 5 mg/L inhibit bacterial activity; raise with Summit Bridge before dosing.
- Use within the 24-month shelf life; viable count declines beyond it.

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