



SAFETY DATA SHEET BENTONITE (VARIOUS GRADES) REVISION 6, DATE 25 MAR 22

1. IDENTIFICATION

Product Name	Bentonite (Various Grades)
Other Names	Aktiv bentonite; Bleaching Earth (Decolorizing Earth); Calcium Bentonite; CaNa 50:50; Krystal Klear; Montmorillonite; Smectite; Sodium Bentonite Granular; Sodium-activated Bentonite; WATERSTOPPAGE
Uses	Bentonite has a variety of uses. It can be used as a rheology modifier, binding agent, adsorbent, hydraulic-barrier and filler.
Chemical Family	No Data Available
Chemical Formula	UVCB
Chemical Name	Bentonite
Product Description	Bentonite is a UVCB substance sub-type 4. The purity of the product is 100 % w/w. Bentonite is composed mainly of smectite group minerals but the composition is varied, as expected for a UVCB substance, and other mineral constituents will be present in small and varying amounts. These minor constituents are not relevant for classification and labelling. *This product contains less than 1% w/w RCS (respirable crystalline silica) as determined by the SWERF method.

Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

Emergency Contact Details

For emergencies only; DO NOT contact these companies for general product advice.

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887



2. HAZARD IDENTIFICATION

Poisons Schedule (Aust) Not Scheduled

Globally Harmonised System

Hazard Classification NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

Signal Word None

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

3. COMPOSITION/INFORMATION ON INGREDIENTS*Ingredients*

Chemical Entity	Formula	CAS Number	Proportion
Bentonite	UVCB	1302-78-9	100 %
Constituent: Crystalline silica, quartz	SiO ₂	14808-60-7	<=8 %
Constituent: Cristobalite	SiO ₂	14464-46-1	<=2 %
Constituent: Calcium carbonate	CaCO ₃	471-34-1	Unspecified %
Constituent: Smectite Group Minerals	Unspecified	1318-93-0	Unspecified %

4. FIRST AID MEASURES*Description of necessary measures according to routes of exposure*

Swallowed IF SWALLOWED: No specific first aid measures noted. Rinse mouth thoroughly. Get medical attention if any discomfort occurs.

Eye IF IN EYES: No specific first aid measures noted. Flush thoroughly with water. If irritation occurs, get medical assistance.

Skin IF ON SKIN: No specific first aid measures noted. Wash skin with soap and water. Get medical attention if irritation develops and persists.

Inhaled IF INHALED: No specific first aid measures noted. If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.

Advice to Doctor No hazards which require special first aid measures. Provide general supportive measures and treat symptomatically. If medical advice is needed, have product container or label at hand.
*Symptoms caused by exposure: Dust in the eyes will cause irritation.

Medical Conditions Aggravated by Exposure No information available.

5. FIRE FIGHTING MEASURES

General Measures	If safe to do so, move undamaged containers from fire area. Cool containers exposed to flames with water until well after the fire is out.
Flammability Conditions	Non-combustible. The product itself does not burn.
Extinguishing Media	If material is involved in a fire, use dry chemical powder, Carbon dioxide (CO ₂), foam or water fog. Use any media suitable for the surrounding fires.
Fire and Explosion Hazard	No unusual fire or explosion hazards noted. Material can be slippery when wet.
Hazardous Products of Combustion	Fire or heat may produce irritating and or toxic gases.
Special Fire Fighting Instructions	Contain runoff from fire control or dilution water - Runoff may cause pollution.
Personal Protective Equipment	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
Flash Point	No Data Available
Lower Explosion Limit	No Data Available
Upper Explosion Limit	No Data Available
Auto Ignition Temperature	No Data Available
Hazchem Code	No Data Available

6. ACCIDENTAL RELEASE MEASURES

General Response Procedure	Ensure adequate ventilation. Do not touch or walk through spilled material - Material can be slippery when wet! Avoid generation and spreading of dust. Avoid inhalation of dust and contact with eyes, skin and clothing.
Clean Up Procedures	Collect and reclaim or dispose in sealed containers at licensed waste disposal site (see SECTION 13). *Collect dust using a vacuum cleaner equipped with HEPA filter. Avoid the generation of dusts during clean-up.
Containment	Stop leak if you can do it without risk. Avoid discharge into drains, water courses or onto the ground.
Decontamination	Following product recovery, flush area with water.
Environmental Precautionary Measures	Avoid release to the environment. Local authorities should be advised if significant spillages cannot be contained.
Evacuation Criteria	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak.
Personal Precautionary Measures	Wear appropriate personal protective equipment (see SECTION 8). *Wear a dust mask if dust is generated above exposure limits.

7. HANDLING AND STORAGE

Handling	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Read label before use. Minimise dust generation and accumulation. Avoid breathing dust. Avoid contact with skin and eyes. Do not ingest. Wear appropriate personal protective equipment (see SECTION 8). In case of insufficient ventilation, wear suitable respiratory equipment.
Storage	Store in a dry and well-ventilated area, out of direct sunlight. Keep the container tightly closed and dry. Protect from moisture. No special restrictions on storage with other products. Keep out of reach of children.
Container	Keep in the original container.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

General	No specific exposure standards are available for this product. For dusts from solid substances without specific
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occupational exposure standards:

- Safe Work Australia Exposure Standard (Nuisance dusts): 8 hr TWA = 10 mg/m³ (measured as inhalable dust).

- New Zealand WES (Particulates not otherwise classified): TWA = 10 mg/m³; TWA = 3 mg/m³ (respirable dust).

Constituent: Silica - Crystalline (Quartz/Cristobalite):

- Safe Work Australia Exposure Standard (respirable dust): TWA = 0.05 mg/m³; Known to have carcinogenic potential for humans (Carc. 1A).

- New Zealand Workplace Exposure Standard [Adopted 2019]: TWA = 0.05 mg/m³ (respirable dust); a-quartz and cristobalite are confirmed carcinogens (6.7A).

Constituent: Calcium carbonate (CAS No. 471-34-1):

- Safe Work Australia Exposure Standard: TWA = 10 mg/m³; This value is for inhalable dust containing no asbestos and < 1% crystalline silica (a).

- New Zealand Workplace Exposure Standard: TWA = 10 mg/m³.

Exposure Limits

No Data Available

Biological Limits

No biological exposure limits noted for the ingredient(s).

Engineering Measures

Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. Provide appropriate exhaust ventilation at places where dust is formed.

Personal Protection Equipment

- Respiratory protection: If engineering controls are not sufficient to maintain concentrations of particulates below the OEL, suitable respiratory protection must be worn. Wear respirator with dust filter (refer to AS/NZS 1715 & 1716).
- Eye/face protection: Wear appropriate eye protection to avoid eye contact. Use tight fitting goggles if dust is generated.
- Hand protection: No protection is ordinarily required under normal conditions of use.
- Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Normal work clothing (long sleeved shirts and long pants) is recommended.

Special Hazards Precautions

Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled. According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits.

Work Hygienic Practices

Do not eat, drink or smoke when using this product. Always wash after handling the material and before eating, drinking and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Practice good housekeeping.

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State	Solid
Appearance	Lump, granular or fine powder
Odour	None
Colour	Various
pH	8.5 - 11
Vapour Pressure	No Data Available
Relative Vapour Density	No Data Available
Boiling Point	No Data Available
Melting Point	>450 °C
Freezing Point	No Data Available
Solubility	<0.9 mg/l in water
Specific Gravity	No Data Available
Flash Point	No Data Available
Auto Ignition Temp	No Data Available
Evaporation Rate	No Data Available
Bulk Density	0.9 - 1.4 g/cm ³
Corrosion Rate	No Data Available
Decomposition Temperature	>500 °C
Density	2.6 g/cm ³
Specific Heat	No Data Available

Molecular Weight	No Data Available
Net Propellant Weight	No Data Available
Octanol Water Coefficient	No Data Available
Particle Size	No Data Available
Partition Coefficient	No Data Available
Saturated Vapour Concentration	No Data Available
Vapour Temperature	No Data Available
Viscosity	No Data Available
Volatile Percent	0 %
VOC Volume	0 %
Additional Characteristics	No information available.
Potential for Dust Explosion	No information available.
Fast or Intensely Burning Characteristics	No information available.
Flame Propagation or Burning Rate of Solid Materials	No information available.
Non-Flammables That Could Contribute Unusual Hazards to a Fire	Material can be slippery when wet!
Properties That May Initiate or Contribute to Fire Intensity	Non-combustible. The product itself does not burn.
Reactions That Release Gases or Vapours	Fire or heat may produce irritating and or toxic gases.
Release of Invisible Flammable Vapours and Gases	No information available.

10. STABILITY AND REACTIVITY

General Information	No information available.
Chemical Stability	The product is stable and non-reactive under normal conditions of use, storage and transport.
Conditions to Avoid	Avoid dispersal of dust in the air. Protect from moisture.
Materials to Avoid	None known.
Hazardous Decomposition Products	Fire or heat may produce irritating and or toxic gases.
Hazardous Polymerisation	Will not occur.

11. TOXICOLOGICAL INFORMATION

General Information	<p>Toxicological information:</p> <ul style="list-style-type: none">- Acute toxicity: Not classified.- Skin corrosion/irritation: Not classified.- Eye damage/irritation: Not classified. Mild irritant to eyes.- Respiratory/skin sensitisation: Not classified.- Germ cell mutagenicity: Not classified.- Carcinogenicity: Not classified. The main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk...". No carcinogenicity data available for this product. Sepiolite was evaluated by IARC as Class 3 ("Cannot be classified as to carcinogenicity to humans"). Based on read-
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across with sepiolite, bentonite was assessed as non-carcinogenic. Therefore classification of bentonite for carcinogenicity is not warranted.

- Reproductive toxicity: Not classified.
- STOT (single exposure): Not classified.
- STOT (repeated exposure): Not classified.
- Aspiration toxicity: Not classified.

Information on possible routes of exposure:

- Ingestion: Not classified.
- Eye contact: Dust in the eyes will cause irritation.
- Skin contact: Not classified.
- Inhalation: Inhalation of dusts may cause respiratory irritation.

Acute

Ingestion	Acute toxicity (Oral): - LD50, Rat: >2,000 mg/kg [OECD 425].
Inhalation	Acute toxicity (Inhalation): - LC50, Rat: >5.27 mg/l (4 h) Dust [OECD 436].
Carcinogen Category	None

12. ECOLOGICAL INFORMATION

Ecotoxicity	Aquatic toxicity: - LC50, Fish (Freshwater): 16,000 mg/l (96 h). - LC50, Fish (Marine water): 2,800 - 3,200 mg/l (24 h). - EC50, Crustacea (Daphnia): >100 mg/l (48 h). - EC50, Crustacea (Pandalus danae): 24.8 mg/l (96 h). - EC50, Crustacea (Cancer magister): 81.6 mg/l (96 h). - EC50, Algae (Freshwater): >100 mg/l (72 h).
Persistence/Degradability	Not relevant for inorganic substances.
Mobility	The product has poor water-solubility; expected to sink and migrate into the sediment. Expected to partition to sediment and wastewater solids.
Environmental Fate	May cause long lasting harmful effects to aquatic life. Avoid release to the environment.
Bioaccumulation Potential	Will not bio-accumulate.
Environmental Impact	No Data Available

13. DISPOSAL CONSIDERATIONS

General Information	This material and its container must be disposed of in a safe manner and in accordance with local/regional/national/international regulations. Do not allow this material to drain into sewers/water supplies. Do not contaminate ponds, waterways or ditches with chemical or used container.
Special Precautions for Land Fill	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied. Store containers and offer for recycling of material when in accordance with the local regulations.

14. TRANSPORT INFORMATION

Land Transport (Australia)

ADG Code

Proper Shipping Name	Bentonite (Various Grades)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (Malaysia)

ADR Code

Proper Shipping Name	Bentonite (Various Grades)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (New Zealand)

NZS5433

Proper Shipping Name	Bentonite (Various Grades)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Land Transport (United States of America)

US DOT

Proper Shipping Name	Bentonite (Various Grades)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for LAND transport.

Sea Transport

IMDG Code

Proper Shipping Name	Bentonite (Various Grades)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
EMS	No Data Available
Marine Pollutant	No
Comments	NON-DANGEROUS GOODS: Not regulated for SEA transport.

Air Transport

IATA DGR

Proper Shipping Name	Bentonite (Various Grades)
Class	No Data Available
Subsidiary Risk(s)	No Data Available
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	No Data Available
Comments	NON-DANGEROUS GOODS: Not regulated for AIR transport.

National Transport Commission (Australia)

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

Dangerous Goods Classification	NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)
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15. REGULATORY INFORMATION

General Information	No Data Available
Poisons Schedule (Aust)	Not Scheduled

Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code	Not Hazardous
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National/Regional Inventories

Australia (AIC)	Listed
Canada (DSL)	Not Determined

Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	Not Determined
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

16. OTHER INFORMATION

Related Product Codes	ACBLEA8900, ACBLEA9140, BENTON0325, BENTON1080, BENTON1082, BENTON1100, BENTON1200, BENTON1325, BENTON1400, BENTON1421, BENTON1700, BENTON1800, BENTON1900, BENTON2600, BENTON2800, BENTON2900, BENTON6000, BENTON6025, BENTON7100, BENTON7110, BENTON7111, BENTON7112, BENTON7150, BENTON7212, BENTON7225, BENTON7312, BENTON7320, BENTON7325, BENTON7400, BENTON7401, BENTON7414, BENTON7415, BENTON7418, BENTON8000, BENTON8200, BENTON8300, SOBENT1100, SOBENT1200, SOBENT1500, SOBENT1501, SOBENT1800, SOBENT1900, SOBENT1915, SOBENT2000, SOBENT2005, SOBENT2010, SOBENT2100, SOBENT2120, SOBENT2140, SOBENT2200, SOBENT2300, SOBENT2320, SOBENT2324, SOBENT2400, SOBENT2500, SOBENT2700, SOBENT2800, SOBENT2900, SOBENT3000, SOBENT3001, SOBENT3120, SOBENT3140, SOBENT3500, SOBENT3600, SOBENT3700, SOBENT4000, SOBENT4025, SOBENT4200, SOBENT4400, SOBENT5560, SOBENT5570, SOBENT6000, SOBENT7000, SOBENT8000, SOBENT9020
Revision	6
Revision Date	25 Mar 2022
Reason for Issue	SDS updated
Key/Legend	<p>< Less Than</p> <p>> Greater Than</p> <p>AICS Australian Inventory of Chemical Substances</p> <p>atm Atmosphere</p> <p>CAS Chemical Abstracts Service (Registry Number)</p> <p>cm² Square Centimetres</p> <p>CO₂ Carbon Dioxide</p> <p>COD Chemical Oxygen Demand</p> <p>deg C (°C) Degrees Celcius</p> <p>EPA (New Zealand) Environmental Protection Authority of New Zealand</p> <p>deg F (°F) Degrees Farenheit</p> <p>g Grams</p> <p>g/cm³ Grams per Cubic Centimetre</p> <p>g/l Grams per Litre</p> <p>HSNO Hazardous Substance and New Organism</p> <p>IDLH Immediately Dangerous to Life and Health</p> <p>immiscible Liquids are insoluable in each other.</p>

inHg Inch of Mercury

inH₂O Inch of Water

K Kelvin

kg Kilogram

kg/m³ Kilograms per Cubic Metre

lb Pound

LC₅₀ LC stands for lethal concentration. LC₅₀ is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

LD₅₀ LD stands for Lethal Dose. LD₅₀ is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

ltr or **L** Litre

m³ Cubic Metre

mbar Millibar

mg Milligram

mg/24H Milligrams per 24 Hours

mg/kg Milligrams per Kilogram

mg/m³ Milligrams per Cubic Metre

Misc or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.

mm Millimetre

mmH₂O Millimetres of Water

mPa.s Millipascals per Second

N/A Not Applicable

NIOSH National Institute for Occupational Safety and Health

NOHSC National Occupational Health and Safety Commission

OECD Organisation for Economic Co-operation and Development

Oz Ounce

PEL Permissible Exposure Limit

Pa Pascal

ppb Parts per Billion

ppm Parts per Million

ppm/2h Parts per Million per 2 Hours

ppm/6h Parts per Million per 6 Hours

psi Pounds per Square Inch

R Rankine

RCP Reciprocal Calculation Procedure

STEL Short Term Exposure Limit

TLV Threshold Limit Value

tne Tonne

TWA Time Weighted Average

ug/24H Micrograms per 24 Hours

UN United Nations

wt Weight