

## 1. IDENTIFICATION

<b>Product Name</b>	<b>Bentonite (Various Grades)</b>
<b>Other Names</b>	Aktivite bentonite; Calcium Bentonite; CaNa 50:50; Krystal Klear; Montmorillonite; Smectite; Sodium Bentonite Granular; Sodium-activated Bentonite
<b>Uses</b>	Bentonite has a variety of uses. It can be used as a rheology modifier, binding agent, adsorbent, hydraulic-barrier, and filler.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	UVCB Substance
<b>Chemical Name</b>	Bentonite
<b>Product Description</b>	Composition comments: 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.

### Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Pty Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Pty 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

<b>Hazard Classification</b>	NOT hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)
<b>Signal Word</b>	None

## National Transport Commission (Australia)

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

<b>Dangerous Goods Classification</b>	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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## 3. COMPOSITION/INFORMATION ON INGREDIENTS

### Ingredients

Chemical Entity	Formula	CAS Number	Proportion
Bentonite	No Data Available	1302-78-9	100.0 %
Constituent: Quartz	No Data Available	14808-60-7	<=8.0 %
Constituent: Cristobalite	No Data Available	14464-46-1	<=2.0 %
Constituent: Calcium carbonate	No Data Available	471-34-1	No Data Available
Constituent: Smectite Group Minerals	No Data Available	1318-93-0	No Data Available

## 4. FIRST AID MEASURES

### Description of necessary measures according to routes of exposure

<b>Swallowed</b>	No specific first aid measures noted. Rinse mouth thoroughly. Get medical attention if any discomfort occurs
<b>Eye</b>	No specific first aid measures noted. Flush thoroughly with water. If irritation occurs, get medical assistance.
<b>Skin</b>	Get medical attention if irritation develops and persists. No specific first aid measures noted. Wash skin with soap and water.
<b>Inhaled</b>	If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist. No specific first aid measures noted.
<b>Advice to Doctor</b>	No hazards which require special first aid measures. Provide general supportive measures and treat symptomatically.
<b>Medical Conditions Aggravated by Exposure</b>	No information available on medical conditions aggravated by exposure to this product.

## 5. FIRE FIGHTING MEASURES

<b>General Measures</b>	Clear fire area of all non-emergency personnel. Stay upwind. Keep out of low areas. Eliminate ignition sources. Move fire exposed containers from fire area if it can be done without risk.
<b>Flammability Conditions</b>	The product itself does not burn.
<b>Extinguishing Media</b>	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO <sub>2</sub> ). Use any media suitable for the surrounding fires.
<b>Fire and Explosion Hazard</b>	No unusual fire or explosion hazards noted. The product is not flammable.
<b>Hazardous Products of Combustion</b>	None.  Do NOT allow fire fighting water to reach waterways, drains or sewers. Store fire fighting water for treatment.

## Special Fire Fighting Instructions

<b>Personal Protective Equipment</b>	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves).
<b>Flash Point</b>	No Data Available
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	No Data Available
<b>Hazchem Code</b>	No Data Available

## 6. ACCIDENTAL RELEASE MEASURES

<b>General Response Procedure</b>	Avoid accidents, clean up immediately. Slippery when spilt. Eliminate all sources of ignition. Increase ventilation. Avoid generating dust. Stop leak if safe to do so. Isolate the danger area. Use clean, non-sparking tools and equipment. Avoid inhalation of dust from the spilled material. Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. In case of insufficient ventilation, wear suitable respiratory equipment.
<b>Clean Up Procedures</b>	Contain and sweep/shovel up spills with dust binding material or use an industrial vacuum cleaner. Transfer to a suitable, labelled container and dispose of promptly.
<b>Containment</b>	Stop leak if safe to do so. Isolate the danger area.
<b>Environmental Precautionary Measures</b>	Do NOT let product reach drains or waterways. If product does enter a waterway, advise the Environmental Protection Authority or your local Waste Management.
<b>Evacuation Criteria</b>	Evacuate all unnecessary personnel.
<b>Personal Precautionary Measures</b>	No special precautions are necessary beyond normal good hygiene practices. See Section 8 for additional personal protection advice when handling this product.

## 7. HANDLING AND STORAGE

<b>Handling</b>	Ensure an eye bath and safety shower are available and ready for use. Observe good personal hygiene practices and recommended procedures. Wash thoroughly after handling. Avoid dust formation. Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. Do not breathe dust from this material. Guard against dust accumulation of this material. Avoid contact with skin and eyes. In case of insufficient ventilation, wear suitable respiratory equipment. Practice good housekeeping. Keep formation of airborne dusts to a minimum. Provide appropriate exhaust ventilation at places where dust is formed. In case of insufficient ventilation, wear suitable respiratory equipment.
<b>Storage</b>	Store in a cool, dry, well-ventilated area. Keep containers tightly closed when not in use. Inspect regularly for deficiencies such as damage or leaks. Protect against physical damage. Store away from incompatible materials as listed in section 10. No special restrictions on storage with other products. This product is not classified dangerous for transport according to The Australian Code for the Transport of Dangerous Goods By Road and Rail.
<b>Container</b>	Store in original packaging as approved by manufacturer.

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

<b>General</b>	US. ACGIH Threshold Limit Values: INERT OR NUISANCE DUST (SEQ250) TWA = 10 mg/m <sup>3</sup> (Inhalable particles); 3 mg/m <sup>3</sup> (Respirable particles) Quartz (14808-60-7) TWA = 0.0250 mg/m <sup>3</sup> (Respirable fraction)  Australia: Quartz (14808-60-7) TWA = 0.1000 mg/m <sup>3</sup>
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NOTE: The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.  
These exposure standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.

<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available on biological limit values for this product.
<b>Engineering Measures</b>	Use process enclosures, local exhaust ventilation, or other engineering controls to control airborne levels below recommended exposure limits. If these are not sufficient to maintain concentrations of particulates and solvent vapour below the OEL, suitable respiratory protection must be worn.
<b>Personal Protection Equipment</b>	RESPIRATOR: Use a particulate filter respirator for particulate concentrations exceeding the Occupational Exposure Limit (AS1715/1716). EYES: Wear dust-resistant safety goggles where there is danger of eye contact (AS1336/1337). HANDS: Wear protective gloves. No protection is ordinarily required under normal conditions of use (AS2161). CLOTHING: Normal work clothing (long sleeved shirts and long pants) is recommended and safety footwear (AS3765/2210).
<b>Special Hazards Precautions</b>	Applicable for industrial settings only:  Environmental exposure controls: Contain spills and prevent releases and observe national regulations on emissions.  Hygiene measures: Use good industrial hygiene practices in handling this material.
<b>Work Hygienic Practices</b>	Do not breathe dust. Avoid contact with eyes. Handle in accordance with good industrial hygiene and safety practices. Eye wash fountain is recommended. Use good industrial hygiene practices in handling this material.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Solid
<b>Appearance</b>	Lump, granular or fine powder (various)
<b>Odour</b>	None
<b>Colour</b>	Various
<b>pH</b>	8.5 - 11
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	No Data Available
<b>Melting Point</b>	>450 °C
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	<0.9 mg/l
<b>Specific Gravity</b>	No Data Available
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	No Data Available
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	0.9 - 1.4 g/cm <sup>3</sup>
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	>500 °C
<b>Density</b>	2.6 g/cm <sup>3</sup> Relative
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	No Data Available
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	No Data Available
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	No Data Available
<b>Volatile Percent</b>	0%
<b>VOC Volume</b>	0%
<b>Additional Characteristics</b>	No Data Available

<b>Potential for Dust Explosion</b>	No Data Available
<b>Fast or Intensely Burning Characteristics</b>	No Data Available
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No Data Available
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No Data Available
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	No Data Available
<b>Reactions That Release Gases or Vapours</b>	No Data Available
<b>Release of Invisible Flammable Vapours and Gases</b>	No Data Available

## 10. STABILITY AND REACTIVITY

<b>Chemical Stability</b>	The product is stable and non-reactive under normal conditions of use, storage and transport.
<b>Conditions to Avoid</b>	Moisture. Contact with incompatible materials. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
<b>Materials to Avoid</b>	None known.
<b>Hazardous Decomposition Products</b>	None.
<b>Hazardous Polymerisation</b>	Hazardous Polymerisation will not occur.

## 11. TOXICOLOGICAL INFORMATION

<b>General Information</b>	Inhalation LC50 Rat: > 5.27 mg/l, 4 hr, OECD 436 Oral LD50 Rat: >2000 mg/Kg, OECD 425  In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that 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..." (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled. 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-across with sepiolite, bentonite was assessed as non-carcinogenic. Therefore classification of bentonite for carcinogenicity is not warranted.
<b>Eyelrritant</b>	Dust in the eyes will cause irritation. Mild irritant to eyes.
<b>Carcinogen Category</b>	No Data Available

## 12. ECOLOGICAL INFORMATION

<b>Ecotoxicity</b>	Accumulation in aquatic organisms is expected. May cause long lasting harmful effects to aquatic life.  Algae EC50 Freshwater algae > 100 mg/l, 72 hours Crustacea EC50 Coon stripe shrimp ( <i>Pandalus danae</i> ) 24.8 mg/l, 96 hours Daphnia > 100 mg/l, 48 hours Dungeness or edible crab ( <i>Cancer magister</i> ) 81.6 mg/l, 96 hours Fish LC50 Freshwater fish 16000 mg/l, 96 hours Marine water fish 2800 - 3200 mg/l, 24 hours
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<b>Persistence/Degradability</b>	Not relevant for inorganic substances
<b>Mobility</b>	Low water solubility, expected to sink and migrate into the sediment. Expected to partition to sediment and wastewater solids. The product has poor water-solubility.
<b>Environmental Fate</b>	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component. Avoid contaminating waterways, drains and sewers.
<b>Bioaccumulation Potential</b>	Will not bio-accumulate.
<b>Environmental Impact</b>	No Data Available

### 13. DISPOSAL CONSIDERATIONS

<b>General Information</b>	Dispose of in accordance with all local, state and federal regulations. All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.
<b>Special Precautions for Land Fill</b>	Contact a specialist disposal company or the local waste regulator for advice. Material should be recycled if possible. Empty containers should be taken to an approved waste handling site for recycling or disposal.

### 14. TRANSPORT INFORMATION

#### Land Transport (Australia)

ADG Code

<b>Proper Shipping Name</b>	BENTONITE
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>Comments</b>	NON-DANGEROUS GOODS: Not regulated for LAND transport.

#### Land Transport (Malaysia)

ADR Code

<b>Proper Shipping Name</b>	BENTONITE
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>Comments</b>	NON-DANGEROUS GOODS: Not regulated for LAND transport.

#### Land Transport (New Zealand)

NZS5433

<b>Proper Shipping Name</b>	BENTONITE
<b>Class</b>	No Data Available

<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>Comments</b>	NON-DANGEROUS GOODS: Not regulated for LAND transport.

### Land Transport (United States of America)

US DOT

<b>Proper Shipping Name</b>	BENTONITE
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>Comments</b>	NON-DANGEROUS GOODS: Not regulated for LAND transport.

### Sea Transport

IMDG Code

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

### Air Transport

IATA DGR

<b>Proper Shipping Name</b>	BENTONITE
<b>Class</b>	No Data Available
<b>Subsidiary Risk(s)</b>	No Data Available
<b>UN Number</b>	No Data Available
<b>Hazchem</b>	No Data Available
<b>Pack Group</b>	No Data Available
<b>Special Provision</b>	No Data Available
<b>Comments</b>	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)

<b>Dangerous Goods Classification</b>	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

<b>General Information</b>	No Data Available
<b>Poisons Schedule (Aust)</b>	Not scheduled

### Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

<b>Approval Code</b>	Not Hazardous
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### National/Regional Inventories

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

## 16. OTHER INFORMATION

<b>Related Product Codes</b>	BENTON0325, BENTON1080, BENTON1082, BENTON1335, BENTON2112, BENTON7212, BENTON7225, BENTON7312, BENTON7320, BENTON7325, BENTON7414, BENTON7415, BENTON7418, SOBENT1100, SOBENT1500, SOBENT1501, SOBENT1800, SOBENT1900, SOBENT1915, SOBENT2000, SOBENT2100, SOBENT2120, SOBENT2140, SOBENT2300, SOBENT2320, SOBENT2324, SOBENT2700, SOBENT2800, SOBENT2900, SOBENT3000, SOBENT3001, SOBENT3120, SOBENT3140, SOBENT3500, SOBENT3600, SOBENT3700, SOBENT4000, SOBENT4025, SOBENT4200, SOBENT4400, SOBENT5560, SOBENT5570, SOBENT9020
<b>Revision</b>	4
<b>Revision Date</b>	20 Nov 2015
<b>Reason for Issue</b>	SDS updated < Less Than



## Key/Legend

> Greater Than  
**AICS** Australian Inventory of Chemical Substances  
**atm** Atmosphere  
**CAS** Chemical Abstracts Service (Registry Number)  
**cm<sup>2</sup>** Square Centimetres  
**CO<sub>2</sub>** Carbon Dioxide  
**COD** Chemical Oxygen Demand  
**deg C (°C)** Degrees Celcius  
**EPA (New Zealand)** Environmental Protection Authority of New Zealand  
**deg F (°F)** Degrees Farenheit  
**g** Grams  
**g/cm<sup>3</sup>** Grams per Cubic Centimetre  
**g/l** Grams per Litre  
**HSNO** Hazardous Substance and New Organism  
**IDLH** Immediately Dangerous to Life and Health  
**immiscible** Liquids are insoluable in each other.  
**inHg** Inch of Mercury  
**inH<sub>2</sub>O** Inch of Water  
**K** Kelvin  
**kg** Kilogram  
**kg/m<sup>3</sup>** Kilograms per Cubic Metre  
**lb** Pound  
**LC<sub>50</sub>** LC stands for lethal concentration. LC<sub>50</sub> 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.  
**LD<sub>50</sub>** LD stands for Lethal Dose. LD<sub>50</sub> 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  
**m<sup>3</sup>** Cubic Metre  
**mbar** Millibar  
**mg** Milligram  
**mg/24H** Milligrams per 24 Hours  
**mg/kg** Milligrams per Kilogram  
**mg/m<sup>3</sup>** Milligrams per Cubic Metre  
**Misc** or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.  
**mm** Millimetre  
**mmH<sub>2</sub>O** Millimetres of Water  
**mPa.s** Millipascals per Second  
**N/A** Not Applicable  
**NIOSH** National Institute for Occupational Safety and Health  
**NOHSC** National Occupational Heath 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