Product Name **COAL (LIDDELL COAL)**

1. IDENTIFICATION OF THE MATERIAL AND SUPPLIER

Supplier Name	**LIDDELL COAL OPERATIONS PTY LTD**
Address	Old New England Highway, Ravensworth, NSW, AUSTRALIA, 2330
Telephone	+61 2 6372 5009
Emergency	+61 2 6570 919
Synonym(s)	ANTHRACITIC COAL · BITUMINOUS COAL · CLEAN OR PRODUCT COAL · FUEL COAL · HARD COAL · SOFT COAL · SUB-BITUMINOUS COAL · THERMAL COAL
Use(s)	COKE PRODUCTION · COKING COAL · ELECTRICITY GENERATION · FUEL · FUEL - COAL
SDS Date	28 August 2012

2. HAZARDS IDENTIFICATION

CLASSIFIED AS HAZARDOUS ACCORDING TO SAFE WORK AUSTRALIA CRITERIA

RISK PHRASES

R48/20 Harmful: danger of serious damage to health by prolonged exposure through inhalation.

SAFETY PHRASES

S22 Do not breathe dust.

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

UN Number	None Allocated	**DG Class**	None Allocated
Packing Group	None Allocated	**Subsidiary Risk(s)**	None Allocated
Hazchem Code	None Allocated		

3. COMPOSITION/ INFORMATION ON INGREDIENTS

Ingredient	Identification	Classification	Content
QUARTZ (SILICA CRYSTALLINE)	CAS: 14808-60-7 EC: 238-878-4	Not Available	<3%
SULPHUR	CAS: 7704-34-9 EC: 231-722-6	Xi;R38	<0.6%
CARBON	CAS: 7440-44-0 EC: 231-153-3	Not Available	<90%
VOLATILES	Not Available	Not Available	19 - 23%
ASH	Not Available	Not Available	8 - 22%
MOISTURE	Not Available	Not Available	<10%

4. FIRST AID MEASURES

Eye If in eyes, hold eyelids apart and flush continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre, a doctor, or for at least 15 minutes.

Inhalation If irritation or discomfort exists, remove the exposed individual to fresh air. Blow nose to clear breathing passages and rinse mouth with water. Recovery should be rapid after removal from exposure. If other than minor symptoms are displayed, seek immediate medical attention. May aggravate pre-existing respiratory conditions such as bronchitis or asthma due to nuisance dust nature. Due to the potential to cause coal worker's pneumonconiosis, medical surveillance involving

spirometry and/or chest x-ray is often mandated where exposures are likely to exceed the respirable crystalline silica occupational exposure limit.

Skin Wash exposed skin for hygienic purposes. Seek medical attention if irritation develops. May aggravate pre-existing skin conditions.

Ingestion Not a normal route of exposure due to product form. Ingestion may cause irritability of the digestive system. Give a drink of water. Do not make a semi-conscious or unconscious person vomit. If signs or symptoms develop, get medical attention.

Advice to Doctor Treat symptomatically.

First Aid Facilities Eye wash facilities should be available.

5. FIRE FIGHTING MEASURES

Flammability Combustible. Contact with strong oxidising agents (ozone, chlorine, liquid oxygen) may result in fire. May evolve toxic gases (carbon/ nitrogen/ sulphur oxides, hydrocarbons) when heated to decomposition. Dust may form explosive mixtures with air.

Fire and Explosion Evacuate area and contact emergency services. Toxic gases may be evolved in a fire situation. Remain upwind and notify those downwind of hazard. Wear full protective equipment including Self Contained Breathing Apparatus (SCBA) when combating fire. Difficult to extinguish once burning.

Extinguishing For small fires, use dry chemical, sand, earth, water spray or regular foam. For large fires involving coal dust, use water spray, fog, regular foam or CO2. Water is effective on shallow layers, but may intensify deep-seated fire in large storage areas. Exposed fire fighters should wear approved pressure demand and self-contained breathing apparatus (SCBA), with full-face mask and full protective equipment. Evacuate area and contact emergency services. Remain upwind and notify those downwind of hazard. Use water fog to cool intact pressure containers and nearby storage areas.

Hazchem Code None Allocated

6. ACCIDENTAL RELEASE MEASURES

Spillage If spilt (bulk), keep damp with water spray to avoid generating dust. For large spills, remove spilled material with mechanical equipment (eg. front end loader, etc).

7. STORAGE AND HANDLING

Storage Prevent dust generation with water if necessary. Store in a dry, well ventilated area, removed from incompatible materials/conditions and foodstuffs. Spontaneous combustion may occur under storage conditions of elevated temperatures and a continuous supply of oxygen. Avoid accumulation around wooden posts, near water/steam sources or organic refuse. Large storage areas should have appropriate ventilation and fire protection systems. Minimise size segregation during stacking in large stockpiles.

Handling Before use carefully read the product label. Use of safe work practices are recommended to avoid eye or skin contact and inhalation. Observe good personal hygiene, including washing hands before eating. Prohibit eating, drinking and smoking in contaminated areas.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Standards

Ingredient	Reference	TWA		STEL	
		ppm	mg/m³	ppm	mg/m³
Coal dust (containing < 5% quartz)	SWA (AUS)	--	3	--	--
Silica, Crystalline Quartz	SWA (AUS)	--	0.1	--	--

Biological Limits No biological limit allocated.

Engineering Controls	Avoid inhalation. Use in well ventilated areas. Where an inhalation risk exists, mechanical extraction ventilation is recommended. Wet where possible. Maintain dust levels below the recommended exposure standard.

PPE

Eye / Face	Not required under normal conditions of use.
Hands	Not required under normal conditions of use.
Body	Not required under normal conditions of use.
Respiratory	Not required under normal conditions of use.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	BLACK SOLID
Odour	SLIGHT ODOUR
Flammability	COMBUSTIBLE
Flash point	NOT AVAILABLE
Boiling point	NOT AVAILABLE
Melting point	398°C
Evaporation rate	NOT AVAILABLE
pH	7
Vapour density	NOT AVAILABLE
Specific gravity	1.3 (Approximately)
Solubility (water)	INSOLUBLE
Vapour pressure	< 0.1 mm Hg
Upper explosion limit	NOT AVAILABLE
Lower explosion limit	NOT AVAILABLE
Autoignition temperature	NOT AVAILABLE
Decomposition temperature	NOT AVAILABLE
Viscosity	NOT AVAILABLE
Partition coefficient	NOT AVAILABLE
% Volatiles	NOT AVAILABLE

10. STABILITY AND REACTIVITY

Chemical Stability	Stable under recommended conditions of storage.
Conditions to Avoid	Avoid heat, sparks, open flames and other ignition sources.
Material to Avoid	Contact with oxidising agents (eg. ozone, chlorine, liquid oxygen), acids and metals may cause a fire.
Hazardous Decomposition Products	May evolve toxic gases (carbon/ nitrogen/ sulphur oxides, hydrocarbons) when heated to decomposition.
Hazardous Reactions	Polymerization will not occur.

11. TOXICOLOGICAL INFORMATION

Health Hazard Summary	Low to moderate toxicity. Over exposure may result in irritation of the nose and throat with coughing, due to inhalation of high dust levels well above the 8-hour occupational exposure limits. Coal contains a small amount of silica (quartz). Crystalline silica is classified as carcinogenic to humans (IARC Group 1). However, IARC have also concluded that there was inadequate evidence in humans and in experimental animals for the carcinogenicity of coal dust and that coal dust cannot be classified as to its carcinogenicity to humans (Group 3).
Eye	Where dusts are generated, irritation and lacrimation (watering of the eyes) may occur, or in more severe cases, abrasive action may cause damage to the outer surface of the eye.
Inhalation	Where dust is generated, may result in irritation of the nose and throat, with coughing, due to inhalation of high dust levels well above the 8-hour occupational exposure limits. Chronic exposure to coal dust has the potential to cause Coal Workers Pneumoconiosis (CWP) (a respiratory disorder) and may progress to progressive fibrosis (ie scarring of the lungs). This condition results in the production of a black sputum, bronchitis and emphysema. CWP is a benign condition that is a precursor for a more complicated disease, Progressive Massive Fibrosis (PMF) (ie scarring of the lungs). The potential for respiratory disease increases with concentration of respirable crystalline silica dust and duration of exposure.
Skin	Where dusts are generated, prolonged or repeated contact may cause irritation, and possibly rash, due to the abrasiveness of coal.

Ingestion Ingestion is considered unlikely due to product form. However, ingestion via hand-mouth transfer may result in gastrointestinal irritation, nausea and vomiting.

Toxicity Data

QUARTZ (SILICA CRYSTALLINE) (14808-60-7)

LCLo (inhalation)	300 ug/m³/10 years (human)
TCLo (inhalation)	16 000 000 particles/ft3/8 hours/17.9 years (human-fibrosis)

SULPHUR (7704-34-9)

LC50 (inhalation)	1660 mg/m³ (mammal)
LDLo (ingestion)	175 mg/kg (rabbit)

CARBON (7440-44-0)

LDLo (intravenous)	440 mg/kg (mouse)

12. ECOLOGICAL INFORMATION

Environment Coal itself is persistent in the environment. being of low degradability, but is of very low ecotoxicity and mobility. When burnt (eg. in coal-fired power stations) coal has a number of ecological impacts such as; contribution to green house gases, stored fly ash and bottom ash produced can contribute to elevated levels of selenium in natural waters, acidic sulphur and nitrogen oxides derived from a range of sources included coal-fired power stations and industrial plants fuelled by fossil fuels contribute to acid deposition and depending on the exact composition of the coal, it may also evolve coal ash decomposition products such as mercury, arsenic, selenium, cadmium and lead.

Ecotoxicity Not available, but considered very low in natural form - there are no water quality criteria for coal or coal dust.

Persistence/Degradability Not available, but considered of high persistence and low degradability.

Mobility Not available, but considered very low.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Reuse where possible. Ensure product sprayed with water to prevent dust generation. Dispose of to an approved landfill site. Contact the manufacturer for further advice. Coal is not classified as a hazardous waste. Dispose of in an approved landfill or incinerate according to national and local standards.

Legislation Dispose of in accordance with relevant local legislation.

14. TRANSPORT INFORMATION

NOT CLASSIFIED AS A DANGEROUS GOOD BY THE CRITERIA OF THE ADG CODE

	LAND TRANSPORT (ADG)	SEA TRANSPORT (IMDG / IMO)	AIR TRANSPORT (IATA / ICAO)
UN Number	None Allocated	None Allocated	None Allocated
Proper Shipping Name	None Allocated	None Allocated	None Allocated
DG Class/ Division	None Allocated	None Allocated	None Allocated
Subsidiary Risk(s)	None Allocated	None Allocated	None Allocated
Packing Group	None Allocated	None Allocated	None Allocated
Hazchem Code	None Allocated		

15. REGULATORY INFORMATION

Poison Schedule A poison schedule number has not been allocated to this product using the criteria in the Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)

Inventory Listing(s) **AUSTRALIA: AICS (Australian Inventory of Chemical Substances)**
All components are listed on AICS, or are exempt.

16. OTHER INFORMATION

Additional Information

Always wash hands with soap and water before smoking, eating or drinking. Showering at the end of the working day is recommended. Launder contaminated clothing before reuse. Encourage no eating, drinking or smoking when handling this material.

RESPIRATORS: In general the use of respirators should be limited and engineering controls employed to avoid exposure. If respiratory equipment must be worn ensure correct respirator selection and training is undertaken. Remember that some respirators may be extremely uncomfortable when used for long periods. The use of air powered or air supplied respirators should be considered where prolonged or repeated use is necessary.

EXPOSURE STANDARDS - TIME WEIGHTED AVERAGES: Exposure standards are established on the premise of an 8 hour work period of normal intensity, under normal climatic conditions and where a 16 hour break between shifts exists to enable the body to eliminate absorbed contaminants. In the following circumstances, exposure standards must be reduced: strenuous work conditions; hot, humid climates; high altitude conditions; extended shifts (which increase the exposure period and shorten the period of recuperation).

PERSONAL PROTECTIVE EQUIPMENT GUIDELINES:
The recommendation for protective equipment contained within this ChemAlert report is provided as a guide only. Factors such as method of application, working environment, quantity used, product concentration and the availability of engineering controls should be considered before final selection of personal protective equipment is made.

HEALTH EFFECTS FROM EXPOSURE:
It should be noted that the effects from exposure to this product will depend on several factors including: frequency and duration of use; quantity used; effectiveness of control measures; protective equipment used and method of application. Given that it is impractical to prepare a ChemAlert report which would encompass all possible scenarios, it is anticipated that users will assess the risks and apply control methods where appropriate.

Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
CAS #	Chemical Abstract Service number - used to uniquely identify chemical compounds
CNS	Central Nervous System
EC No.	EC No - European Community Number
GHS	Globally Harmonized System
IARC	International Agency for Research on Cancer
LD50	Lethal Dose, 50% / Median Lethal Dose
mg/m^3	Milligrams per Cubic Metre
PEL	Permissible Exposure Limit
pH	relates to hydrogen ion concentration using a scale of 0 (high acidic) to 14 (highly alkaline).
ppm	Parts Per Million
REACH	Regulation on Registration, Evaluation, Authorisation and Restriction of Chemicals
STOT-RE	Specific target organ toxicity (repeated exposure)
STOT-SE	Specific target organ toxicity (single exposure)
SUSMP	Standard for the Uniform Scheduling of Medicines and Poisons
TLV	Threshold Limit Value
TWA/OEL	Time Weighted Average or Occupational Exposure Limit

Revision History

Revision	Description
1.0	Initial SDS Creation.

Report Status

This document has been compiled by RMT on behalf of the manufacturer of the product and serves as the manufacturer's Safety Data Sheet ('SDS').

It is based on information concerning the product which has been provided to RMT by the manufacturer or obtained from third party sources and is believed to represent the current state of knowledge as to the appropriate safety and handling precautions for the product at the time of issue. Further clarification regarding any aspect of the product should be obtained directly from the manufacturer.

While RMT has taken all due care to include accurate and up-to-date information in this SDS, it does not provide any warranty as to accuracy or completeness. As far as lawfully possible, RMT accepts no liability for any loss, injury or damage (including consequential loss) which may be suffered or incurred by any person as a consequence of their reliance on the information contained in this SDS.

Product Name **COAL (LIDDELL COAL)**

Prepared By

Risk Management Technologies
5 Ventnor Ave, West Perth
Western Australia 6005
Phone: +61 8 9322 1711
Fax: +61 8 9322 1794
Email: info@rmt.com.au
Web: www.rmt.com.au

Revision: 1
SDS Date: 28 August 2012

End of SDS