SAFETY DATA SHEET

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SECTION 1: Identification of the substance/mixture and of the company / undertaking

1.1 Product identifier: CRM Au OXIDE 0.80 – 1.10 ppm

1.2. Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses: Certified Reference Material for analysis of gold.
Uses advised against: none.
Product Code: M1541
Chemical Family: Mineral Mixture – not applicable

1.3. Details of the Supplier of the Safety Data Sheet

Manufacturer: Klen International (74) Pty Ltd;
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Neerabup WA 6031
Email: info@klen.com.au
ABN: 25 008 776 681
Tel: (+61) 8 9306 8900
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SECTION 2: Hazards identification

2.1 Classification of the substance or mixture

This mixture is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

2.1.1 Classification according to Regulation (EC) No. 1272/2008 [CLP]

Hazard Classes and Hazard Categories	*Hazard Statements*
Carcinogen Category 1A	H350
STOT RE Category 1	H370

2.2 Classification according to HPR (WHMIS 2015)

Physical	*Health*
Not hazardous	Carcinogen Category 1A Specific Target Organ Toxicity - Repeated Exposure Category 1

Hazard pictograms

Signal word: Danger

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Hazard statements:

Number	*Statement*
H350	May cause cancer by inhalation.
H370	Causes damage to lungs through prolonged or repeated exposure.

Precautionary statements

P260	Do not breathe dust
P280	Wear protective gloves/protective clothing/eye protection/face protection
P304+340	IF INHALED, remove victim to fresh air and keep at rest in a position comfortable for breathing
P305 + P351 + P338	IF IN EYES, rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P501	Dispose of contents/container in accordance with local/regional/national/international regulations

Supplemental Hazard Information: na

SECTION 3: Composition/Information on Ingredients

3.1 Substances: not relevant (Product Identifier)
3.2 Mixtures
Hazardous ingredients Classification according to Regulation (EC) No. 1272/2008 [CLP]

Substance Name	*Concentration, %*	*Product Identifier*	*Hazard Classes and Hazard Categories*
Quartz (SiO_2)	<5	CAS No. 14808-60-7 EC No. 238-878-4	Carcinogen Category 1A STOT RE Category 1

Ingredients either below cut off levels or not classified in Annex VI

Substance Name	*Concentration, %*	*Product Identifier*	*Hazard Classes and Hazard Categories*
Amorphous content	<15		Not classified
Augite	<15	$(Ca,Na)(Mg,Fe,Al,Ti)(Si,Al)_2O_6$	Not classified
Ilmenite	<5	$FeTiO_3$	Not classified
Magnetite	<5	Fe_3O_4	Not classified
Sodium calcium plagioclase	<20	$(Na,Ca)(Al,Si)_2Si_2O_8$	Not classified
Sodium plagioclase	<40	$NaAlSi_3O_8$	Not classified
Potassium Feldspar	<30	$KAlSi_3O_8$	Not classified
Gold Chloride	<0.1	13453-07-1	Not listed

Particle Size: Less than 49 microns
General: This is a commercial product and may contain small amounts of water (<0.5%), and other trace elements.

SECTION 4 : FIRST AID MEASURES

4.1 Description of first aid measures

General Advice
If inhaled
If there is a gross inhalation of crystalline silica (quartz), remove the person immediately to fresh air, give artificial respiration as needed, seek medical assistance as needed.

In case of skin contact
Rinse skin with soap and water after manually handling, and wash contaminated clothing if there is potential for direct skin contact. Seek medical assistance if irritation persists or develops later

In case of eye contact
Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids. Seek medical assistance if irritation persists.

If swallowed
If gastrointestinal discomfort occurs, persists or develops later seek medical assistance.

4.2 Most important symptoms and effects, both acute and delayed

No specific first-aid is necessary since the adverse health effects associated with exposure to crystalline silica (quartz) result from chronic exposures.

4.3 Indication of any immediate attention and special treatment need

There are generally no signs or symptoms of exposure to respirable crystalline silica. Often chronic silicosis has no symptoms. The symptoms of chronic silicosis if present, are shortness of breath, wheezing cough and sputum production. The symptoms of acute silicosis which can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as 6 months, are the same as those associated with chronic silicosis; additionally weight loss and fever may also occur.

SECTION 5: FIRE FIGHTING MEASURES

5.1 Extinguishing media

Product is not flammable, combustible or explosive. Use extinguishing media appropriate for surrounding fire

5.2 Special Hazards arising from the substance or mixture

Fire: Not a fire hazard. .
Explosion: Not an explosion hazard.
Autoignition Temperature: Not applicable.
Explosion Limits, Lower: N/A, Upper: N/A
Hazchem Code: not applicable
Special protective equipment and precautions for fire fighters
Advice for firefighters: Use self-contained breathing apparatus with full face mask

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SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal precautions: Use protective equipment and emergency procedures: Avoid dust formation. In case of dust exposure, wear protective equipment specified in Section 8 of this Safety Data Sheet.

Environmental precautions: No specific precautions. Discard any product, residue, disposable container or liner in compliance with regulatory requirements.
Methods and materials for containment and cleaning up
Avoid dry sweeping. Use water spraying / flushing or ventilated vacuum cleaning system. Use closed containers.

SECTION 7: HANDLING AND STORAGE

Precautions for safe handling: Avoid dust formation. Do not breathe dust. Use adequate exhaust ventilation and dust collection. Keep airborne dust concentrations below permissible national exposure limits. Do not rely on your sight to determine if dust is in the air. Respirable crystalline silica dust may be in the air without a visible dust cloud. In case of insufficient ventilation , wear a respirator approved for silica dust when using, handling, storing or disposing of this product or bag. Practice good housekeeping. Do not permit dust to collect on walls, floors, sills, ledges, machinery, or equipment. Maintain, clean, and fit test respirators in accordance with EN standards. Maintain and test ventilation and dust collection equipment. Wash or vacuum clothing that has become dusty.

Conditions for safe storage, including any incompatibilities: Ensure trapping of dust produced during loading and unloading. Keep containers closed and store bags as to avoid accidental bursting.

SECTION 8: EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters – exposure standards, biological monitoring
HSIS Airborne Exposure Limits: NOHSC Airborne Exposure Limits: Silica, Crystalline (Quartz) (CAS 14808-60-7): TWA 0.1 mg/m^3; STEL: Not assigned. The exposure standards for the three forms of crystalline silica (quartz, cristobalite and tridymite) are 0.1 mg/m^3 (time weighted average, 8 hours
Appropriate engineering controls: Ventilation must be adequate to maintain the ambient workplace atmosphere below the exposure limit(s) outlined in Section 8.1 of this Safety Data Sheet.

Personal protective equipment (PPE)

Eyes: If eye contact while using product may be anticipated, wear appropriate safety glasses with side shields or chemical goggles as described by European Standard EN 166

Skin: Wear chemical resistant gloves (such as latex or neoprene) and protective clothing to minimize skin contact. Substance may have drying effect on skin. Maintain good industrial hygiene. Protection recommended for workers suffering from dermatitis or sensitive skin.

Clothing: Wear appropriate protective clothing to prevent skin exposure.
Respiratory Protection (AS/NZS 1715/1716 Approved): In case of exposure to dust, and in any case if such exposure is above regulatory limits (see above), wear a personal respirator

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Form and Appearance: Colourless to light grey fine powder
Odour: Odourless

Solubility: Insoluble in water. Insoluble in acid except hydrogen fluoride; only slightly attacked by solutions of caustic alkali.
SG: 2.65 approx.
Bulk Density: 1.0-1.3 approx
Melting Point: 1710°C approx
Boiling Point: 2230°C approx
Vapour Pressure: N/A
Solubility: Insoluble in water. Silica will dissolve in hydrofluoric acid and produce a corrosive gas, silicon tetrafluoride
% Volatile: N/A
pH (1%): 6-8
Formula: Complex mineral
Molecular Weight: na
Mohs hardness: na

SECTION 10: STABILITY AND REACTIVITY

Reactivity: Will not polymerise.
Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, metals, excess heat.
Incompatible materials and possible hazardous reactions: Contact with powerful oxidizing agents, such as fluorine, chlorine trifluoride and oxygen difluoride, may cause fires.
Hazardous Decomposition Products: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on routes of exposure: Inhalation and Oral.Symptoms related to exposure to Crystalline Silica

A. SILICOSIS

The major concern is silicosis, caused by the inhalation and retention of respirable crystalline silica dust. Silicosis can exist in several forms, chronic (or ordinary), accelerated, or acute. Chronic or Ordinary Silicosis (often referred to as Simple Silicosis) is the most common form of silicosis, and can occur after many years of exposure to relatively low levels of airborne respirable crystalline silica dust. It is further defined as either simple or complicated silicosis. Simple silicosis is characterized by lung lesions (shown as radiographic opacities) less than 1 centimeter in diameter, primarily in the upper lung zones. Often, simple silicosis is not associated with symptoms, detectable changes in lung function or disability. Simple silicosis may be progressive and may develop into complicated silicosis or progressive massive fibrosis (PMF). Complicated silicosis or PMF is characterized by lung lesions (shown as radiographic opacities) greater than 1 centimeter in diameter. Although there may be no symptoms associated with complicated silicosis or PMF, the symptoms, if present, are shortness of breath, wheezing, cough and sputum production. Complicated silicosis or PMF may be associated with decreased lung function and may be disabling. Advanced complicated silicosis or PMF may lead to death. Advanced complicated silicosis or PMF can result in heart disease secondary to the lung disease (cor pumonale). Accelerated Silicosis can occur with exposure to high concentrations of respirable crystalline silica over a relatively short period; the lung lesions can appear within five (5) years of initial exposure. Progression can be rapid. Accelerated silicosis is similar to chronic or ordinary silicosis, except that lung lesions appear earlier and progression is more rapid.
Acute Silicosis can occur with exposures to very high concentrations of respirable crystalline silica over a very short time period, sometimes as short as a few months. The symptoms of acute silicosis include progressive shortness of breath, fever, cough and weight loss. Acute silicosis is fatal.

B. CANCER

IARC - The International Agency for Research on Cancer ("IARC") concluded that there was "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources", and that there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz and cristobalite." The overall IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans* (*Group 1*)." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 68,"Silica, Some Silicates..." (1997).
The EU Scientific Committee for Occupational Exposure Limits (SCOEL) concluded in June 2002 (SCOEL Sum Doc. 94-final): “The main effect in humans of inhalation of respirable 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.”
Numerical measures of toxicity
Silica: Inhalation LCLo (human): 300 ug/m^3/10Y-I. Signs and Symptoms of Exposure: Shortness of breath, reduced pulmonary function, coughing, wheezing and possible chest illness.
Immediate, delayed and chronic health effects from exposure
Skin corrosion/irritation:
Serious eye damage/irritation:
Respiratory or skin sensitisation: Not sensitising.
Germ cell mutagenicity: no data
Reproductive toxicity: no data
Aspiration hazard: Not an aspiration hazard
Carcinogenicity: Crystalline silica (quartz) inhaled from occupational sources is classified by the International Agency for Research on Cancer (IARC) as class I: carcinogenic to humans (see reference 4); ACGIH (2006): A2 (suspected human carcinogen); MAK: Carcinogen category: I. NTP – silica is known to be human carcinogen
Mutagenicity: No data
Specific target organ toxicity (stot) – single exposure: STOT RE1: Specific Target Organ Toxicant,
Exposure Levels: no data
Interactive effects: none known
Data limitations: none known

SECTION 12: ECOLOGICAL INFORMATION

Crystalline Silica

Ecotoxicity: Crystalline silica (quartz) is not known to be ecotoxic; i.e., there are no data that suggests that crystalline silica (quartz) is toxic to birds, fish, invertebrates, microorganisms or plants.
Persistence and degradability: The relative inertness of this material indicates that it is be highly persistent in the environment
Bioaccumulative potential: No data
Mobility in soil: Not mobile
Other adverse effects: None known

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SECTION 13: DISPOSAL CONSIDERATIONS

Safe handling and disposal methods: Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to an approved waste facility. State and local disposal regulations may differ from federal disposal regulations.

Disposal of any contaminated packaging: Dispose of container and unused contents in accordance with federal, state and local requirements. Neutralise to pH 6-9 before disposal.

Environmental regulations: No data

SECTION 14: TRANSPORT INFORMATION

Australian DG Classification for Road and Rail: Not regulated
Environmental hazards: Not a marine pollutant
Special precautions during transport: nil
Hazchem Code: none

15. REGULATORY INFORMATION

15.1. Safety, health and environmental regulations/legislation specific for the substance

This product is safe under conditions of normal handling and use.

Clean Air Act (Montreal Protocol)

This product was not manufactured with and does not contain any Class I or Class II ozone depleting substances.

Silica has no harmonized classification & labelling under Directives 67/548/EEC and 1999/45/EC. Under EC Number 1272/2008 (CLP) regulations, mixtures containing more than 10% crystalline silica,must be classified.
Because the respirable fraction in this product is high (> 10%) it is self-classified as Specific Target Organ Toxicity – Repeated Exposure Category 1 and Carcinogen Category 1A

SECTION 16: OTHER INFORMATION

16.1. Changes made to the previous version of this Safety Data Sheet (SDS):

April 2018	Amended to satisfy requirements of 29 CFR 1910.1200 and HPR (WHMIS 2015)
December 2016 :	Completed in accordance with Regulation (EU) No. 453/2010 (CLP)

16.2 References

OSHA 29 CFR 1910.1200 Hazard Communication Standard (HCS)
“Hazard Classification Guidance for Manufacturers, Importers and Employers”, Occupational Safety and Health Administration, US Department of Labor. OSHA 3844-02 2016
CCOHS WHMIS 2015 – Safety Data Sheet (SDS)

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