

This Material Safety Data Sheet (MSDS) conforms to the Occupational Health and Safety properties of material produced by Costigan Gold Pty Ltd, identified as Min Plus. In accordance with the National Occupational Health and Safety commissions approved criteria for Classifying Hazardous Substances NOHSC: 1008 (2004) this material is classified as hazardous in accordance with the criteria of Worksafe Australia.

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PHYSICAL DESCRIPTION PROPERTIES

Appearance	Dark grey powder
Boiling & Melting Point	1100 degrees C
Vapour Pressure	None
Specific Gravity (t/m3)	2.8
Flash point	Non flammable
Flammability limits	Non flammable
Solubility in water	Insoluble

OTHER PROPERTIES

Odour	None
Shock sensitivity	Shock resistant
Corrosiveness	Noncorrosive
Oxidation properties	Resistant to oxidation
Reactivity with air	None
Reactivity with water	None
Auto ignition temperature	Not determined
Evaporation rate	Nil
Vapour density	Not applicable
pH	9.1 – 10
Solubility in organic compounds	Non soluble

INGREDIENTS

The material is made up of naturally occurring minerals consisting of clinopyroxene, olivine, plagioclase and small amounts of smectite clays.

ANALYSIS

Your reference Our reference Type of sample	Units	SP100
pH(1:5)	pH units	9.7
Calcium, Ca	%w/w	6.77
Iron, Fe	%w/w	9.10
Magnesium, Mg	%w/w	6.58
Sulphur, S	%w/w	0.009
Potassium, K	%w/w	1.53
Total Phosphorus, P	Mg/kg	2300
Cobalt, Co	Mg/kg	35
Copper, Cu	Mg/kg	43
Manganese, Mn	Mg/kg	790
Molybdenum, Mo	Mg/kg	<5
Zinc, Zn	Mg/kg	92
Silicon, Si	%w/w	21.6

HEALTH HAZARDS INFORMATION

The immediate health concerns in coming into contact with Min Plus materials, is the airborne dust generated during handling procedures. Prolonged exposure to appreciable concentrations of Min Plus may cause illness relating to irritation of respiratory tracts to the generation of carcinogenic cancers in extreme cases.

HEALTH EFFECTS

Eye	Particles or dust are a moderate eye irritant due to abrasive action
Inhalation	Regarded as a nuisance dust and can be irritating if inhaled at high concentrations. May cause symptoms such as coughing or sneezing.
Skin	Low hazard
Ingestion	Non-toxic, so there are no known hazards caused by accidental ingestion of small amounts as might occur during normal handling. Ingestion or larger quantities might cause irritation of the gas tro-intestinal systems as result of abrasive action.
Chronic	(Prolonged long-term exposure may create these possible health hazards). Inhaling dust; if high concentration of silica dust is inhaled, increased risk to development of mucus build up and coughing may occur. Prolonged exposure to dust may result in silicosis and an increase risk of lung cancer. The International Agency for Research on cancer (IARC) has identified crystalline silica as “probably carcinogenic to humans – Group 2A”.

Radiation	Elements contained within Min Plus are all naturally – occurring radioactive elements and indicate that trace quantities of both thorium and uranium series are present, along with potassium. This composition is a typical of that found in all soil and rock samples, and the concentrations of the radionuclides are at the low end of the range found for common Australian soils.
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FIRST AID PROCEDURES

Eye	Hold eyelids open and rinse the eye continuously with a gentle stream of clean running water for at least 15 minutes. Seek medical attention if any irritation or soreness of the eye persists.
Inhalation	Remove from exposure and seek fresh air, seek medical attention if any symptoms persists.
Skin	Remove clothing and wash off thoroughly with soap and water, but nothing more specific than that. Seek medical attention if any irritation or soreness persists.
Ingestion	First aid is unlikely to be required but if necessary, rinse mouth out with water ensuring that mouthwash is not swallowed. Seek medical attention as a precautionary measure if large quantities have been ingested.

PRECAUTIONS FOR USE

Flammability	Non combustible
Ventilation	Extraction or make-up air may be required to minimise dust levels.
Protective Equipment	Safety glasses or goggles. An approved P1 dust respirator may be required if ventilation is insufficient to minimise airborne dust.
Exposure standards	Worksafe Australia Standard: Crystalline Silica 0.05mg/m ³ time weighted average (TWA). Inspirable dust NOS (not otherwise specified) – 10mg/33 TWA for dust containing less then 1.0% or less crystalline silica. Recommended exposure limit should be below 0.05mg/m ³ .
Engineering controls	Keep exposure limits as low as practice. Work in ventilated areas, and clean work areas regularly using wet methods to dampen dust control mechanisms such as wetting of stockpiles.

SAFE HANDLING INFORMATION

Transport	This material is generally not considered to be a transport hazard. Trucks should be sheeted however, to prevent dispersal of dust when travelling. Washing rather than sweeping should be used to clean bulk transporters. Drivers/cleaners should wear respiratory protection when cleaning. Local exhaust ventilation or filtration plant will minimise dust hazards.
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Storage	No specific storage requirements, but storage should be dry to ensure quality. Stockpile storage shall not exceed the natural angle of repose in dry conditions, as stockpiles can fall or slip without notice, trapping people in debris.
Spillage	Protective equipment as per 'Precautions for Use' above. Clean up spillage by sweeping or vacuuming taking care to avoid generating dusts. Damping with water may be appropriate if spillage is to be disposed.
Waste disposal	Dispose to landfill
Fire explosion	Non-flammable to beyond melting point
Extinguishing	Use whatever protective equipment and extinguishing agents that are appropriate for primary cause of the fire.
Ecological	The material is unlikely to cause environmental damage if handled, used and disposed of in the approved manner. It is insoluble, and this unlikely to contaminate water or enter the food chains.

PERSONAL PROTECTION

Skin protection	Wear comfortable long trousers and long sleeve shirts work clothing (in accordance with AS/NZS 2161). Clean clothing regularly.
Eye protection	None required if controls are adequate, however, wear safety glasses in accordance with AS/NZS 1337.1 or D4 dust rated goggles.
Respiratory protections	None required if controls are adequate, otherwise, wear P1 or P2 particular respirator AS/NZS1715:2009.
Personnel hygiene	Wash skin and hands with soap after handling product
Flammability	Material is not toxic

Contact Point

For further information on this product, please contact the following:

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