SAFETY DATA SHEET

Potassium Amyl Xanthate (PAX) Solution

SECTION 01 - IDENTIFICATION

Product identifier	Potassium Amyl Xanthate Solution
Other means of identification	Potassium amyl xanthate; PAX; carbonodithioic acid, 0-pentyl ester, potassium salt; dithiocarbonic acid, 0-pentyl ester, potassium salt, potassium pentyl xanthate.
Recommended use of chemical	Flotation agent in mineral processing.
Supplier name	Ixom Operations Pty Limited trading as LogiChem Pty Ltd
Supplier address	Lot 33 Bulong Road Parkeston-Kalgoorlie, Australia PO Box 878 Kalgoorlie WA 6433 Australia
Supplier phone	1800 033 111 / Int. +61 (0) 3 9663 2130
24 Hour emergency phone	1800 033 111

SECTION 02 – HAZARD(S) IDENTIFICATION

Classification	Skin Corrosion – Subcategory 1C Corrosive to Metals – Category 1
Signal word	Warning
Hazard statements	EUH031 – Contact with acid liberates toxic gas. H302 – Harmful if swallowed. H312 – Harmful in contact with skin. H315 / H320 – Causes skin and eye irritation. H373 – May cause damage to organs through prolonged or repeated exposure.
Precautionary statements	*General* P102 – Keep out of reach of children. *Precaution* P210 – Keep away from heat / sparks / open flames / hot surfaces. – No smoking. P243 – Take precautionary measures against static discharge. P281 – Use personal protective equipment as required. P312 – Call a Poison Centre or doctor / physician if you feel unwell. *Storage* P405 – Store locked up.

EMERGENCY OVERVIEW

Caution: Liquid solution is strongly alkaline. Eye contact will result in mild to severe eye irritation. Contact with the skin will result in mild to severe burns of the skin. Ingestion of product will irritate mouth, throat and gastrointestinal tract. Inhalation of product vapours, mist may cause irritation of respiratory airways.

IMPORTANT NOTE REGARDING POSSIBLE PRESENCE OF CARBON DISULPHIDE (CS_2)

The freshly prepared xanthate solution will contain low levels of carbon disulphide. This is formed by decomposition of some xanthate molecules during dissolution of dry PAX.

During storage of xanthate solution there will be further decomposition of xanthate molecules producing yielding increasing levels of carbon disulphide in the solution. The rate of decomposition depends on factors such as the temperature of the solution and the presence of other elements and molecules.

Because it is a highly volatile liquid, carbon disulphide present in xanthate solution will produce carbon disulphide vapour which is toxic and extremely flammable (Flash Point -30°C).

If the freshly supplied xanthate solution is to be stored for more than 5 days the presence of carbon disulphide becomes an important consideration in the safe storage and handling of the solution and the MSDS for carbon disulphide should be consulted for guidance.

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SECTION 03 – COMPOSITION / INFORMATION ON INGREDIENTS

Chemical Components	Cas No:	Proportion % w/w
Potassium amyl xanthate	2720-73-2	20.0-30.0%
Water	7732-18-5	80.0%

SECTION 04 – FIRST AID MEASURES

Description of necessary first aid measures	*Eye* – Immediately flush with large quantities of water for 15 minutes. Hold eyelids apart during irrigation to insure thorough flushing of the entire area of the eye. Obtain immediate medical attention. *Ingestion* - If victim is conscious, have victim rinse mouth thoroughly with water. DO NOT INDUCE VOMITING. Have victim drink a glass of water. If vomiting occurs naturally, have victim lean forward to avoid aspiration. Repeat administration of water. Obtain immediate medical attention. *Inhalation* – Remove victim from contaminated atmosphere. If breathing is laboured, administer oxygen. If breathing has ceased, clear airway and start mouth to mouth resuscitation. If heart has stopped beating, external heart massage should be applied. Obtain medical attention. *Skin* – Immediately flush with large quantities of water. Remove contaminated clothing under a safety shower. Obtain medical attention if any irritation occurs.
Medical attention / special treatment	Not available
Symptoms caused by exposure	Not available

SECTION 05 – FIRE FIGHTING MEASURES

Suitable extinguishing media	Use water to extinguish flames.
Specific hazards arising from the chemical	Xanthate solution upon aging, heating or exposure to acids will generate carbon disulfide (CS2) vapours. Storage containers should be equipped with a forced exhaust to prevent build-up of these vapours. Storage containers should be carefully grounded.
Special protective equipment & precautions for fire fighters	As in any fire, wear self-contained breathing apparatus, positive pressure, full protective gear & apparatus which supplies a positive air pressure within a full face-piece mask. Xanthate solutions are **not** flammable substances. They do decompose to form flammable compounds such as highly flammable carbon disulphide and alcohol.

SECTION 06 – ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	Confine area to qualified personnel. Extinguish or remove all ignition sources. Shut off release if safe to do so. Dike spill area to prevent runoff into sewers, drains or surface waterways (potential aquatic toxicity). Recover as much of the solution as possible. Treat remaining material as a small release.
Environmental precautions	to prevent runoff into sewers, drains or surface waterways.
Methods and materials for containment and cleaning up.	Ground drums and bond transfer containers (grounding clips must contact bare metal). (See Section 05, for fire dangers). Use caution opening containers with xanthates of unknown age (CS2 vapour accumulation).

SECTION 07 – HANDLING AND STORAGE

Precautions for safe handling	Avoid contact with eyes. Wash thoroughly after handling. Avoid prolonged or repeated breathing of vapours. Avoid prolonged or repeated contact with the skin.
Conditions for Safe Storage (Including Any Incompatibles)	Store in cool, dry, well ventilated areas. Do not store combustibles in the area of storage vessels. Keep away from any sources of heat or flame. Store tote and smaller containers out of direct sunlight at moderate temperatures. Storage containers should be properly grounded. (See Section 10 for materials of construction)

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SECTION 08 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters – exposure standards, biological monitoring	Exposure Guidelines: Carbon disulfide (evolved) TWA: 10 ppm **IDLH(Inhalation):** 500ppm **TCLo (inhalation):** 40 mg/m3 (man) **LCLo (inhalation):** 2000ppm / 5 minutes (human)
Appropriate engineering controls	Do not inhale. Use in well ventilated areas. In poorly ventilated areas, mechanical explosion proof extraction ventilation is recommended. Flammable/explosive vapours may accumulate in poorly ventilated areas. Vapours are heavier than air and may travel some distance to an ignition source and flash back. Maintain vapour levels below the recommended exposure standard.
Personal protective equipment (PPE)	***Clothing*** – Wear impervious protective clothing to prevent skin contact (AS3765/2210). ***Eyes*** – Wear chemical goggles and face shield. (AS1336/1337). ***Footwear*** – Wear safety footwear (AS3765/2210). ***Gloves*** – Wear neoprene or nitrile rubber gloves (AS2161). ***Other*** - If CS2 vapours are present wear a Type A (Organic Vapour) Respirator

SECTION 09 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Yellow liquid
Odour	Strong organic odour
Odour threshold	Not available
pH	10.5 -12.5
Melting point/freezing point	Not available
Specific gravity (water = 1)	1.08 -1.11 (200 – 300g/Litre)
Boiling point and boiling range	>100° C

SECTION 10 – STABILITY AND REACTIVITY

Reactivity	Not available
Chemical stability	PAX solutions are relatively stable if they are kept cool and the pH is maintained within an acceptable range. Under certain conditions, potassium amyl xanthate decomposes to very toxic and extremely flammable carbon disulfide. The rate of carbon disulfide generation from solution increases with temperature, pH below 8 (becoming rapid below pH 7; acidic conditions) or pH greater than 13, as well as with time (aging of the solution). Maximum stability of solutions is attained at a pH of approximately 10.
Conditions to avoid	Not available
Incompatible materials	**Acids or Acidic solutions** – the hydrolysis of xanthate solutions, which produces carbon disulfide, is accelerated by acidic pH (less than 8 **Alkaline solutions** (pH greater than 13) – reacts to produce carbon disulfide, hydrogen sulphide, n-pentanol, trithiocarbonate and potassium carbonate. **Strong oxidizing Agents** (e.g. peroxides, nitrates and perchlorates) – risk of fire and explosion. **Metal Salts** (e.g. copper, iron, lead or zinc salts) – accelerate the decomposition to carbon disulfide.
Hazardous decomposition products	Decomposition products in water include carbon disulfide, trithiocarbonate, pentanol, potassium carbonate.

SECTION 11– TOXICOLOGICAL INFORMATION

Information on routes of exposure	Liquid solution is strongly alkaline ***Eyes*** – Eye contact will result in mild to severe eye irritation. ***Ingestion*** - Ingestion of product will irritate mouth, throat and gastrointestinal tract.

	Inhalation – Inhalation of product vapours, mist may cause irritation of respiratory airways. *Skin* - Contact with the skin will result in mild to severe burns of the skin
Symptoms related to exposure	Not available
Numerical measures of toxicity	Oral-Rat LD50: 1,000 – 2,000 mg/kg Intravenous-Mouse LD50: 99 mg/kg
Immediate, delayed and chronic health effects from exposure	Not available

SECTION 12– ECOLOGICAL INFORMATION

Ecotoxicity	If discharged to waterways, xanthates may persist for several days, hydrolysing slowly in the neutral environment. Highly toxic to aquatic life. May form complexes with heavy metals, increasing their uptake, i.e. fish may accumulate heavy metals more readily.
Bioaccumulative potential	Bioaccumulation is unlikely.

SECTION 13 – DISPOSAL CONSIDERATIONS

Safe handling and disposal methods	For small amounts, absorb with sand, vermiculite or similar and dispose of to an approved landfill site. For larger amounts, contact the manufacturer for additional information.
Disposal of contaminated packaging	Not available
Environmental regulations	Prevent contamination of drains or waterways as aquatic life may be threatened and environment damage may result. Dispose of in accordance with relevant local legislation.

SECTION 14 – TRANSPORT INFORMATION

UN number	2922
Proper shipping name	Corrosive Liquid Toxic N.O.S.
Transport hazard class(es)	8
Subsidiary risk	6.1
Packaging group	III
Hazchem code	2X

SECTION 15 – REGULATORY INFORMATION

AICS name	Not available
Poisons Schedule number	6

SECTION 16 – OTHER INFORMATION

SDS creations date	15 January 2009
Most recent revision date	01 February 2018
Revision number	011 THIS ISSUE NUMBER REPLACES ALL ISSUES
Reason for revision	Annual Update
Contact person	Ixom 1800 033 111

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.

END OF SDS