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MSDS: LST

PHYSICAL CHARACTERISTICS:

LST solids contain lithium polytungstates in the form of extremely soluble, colorless hydrated crystals. Concentrated aqueous solutions of LST form colorless or pale yellow heavy liquids. LST heavy liquid is supplied and normally used with an aqueous base. However, the solid components of the LST heavy liquid are also highly soluble in acetone and alcohols. This provides a range of methods for the use and recycling of LST heavy liquids.

SAFETY:

The driving force behind the introduction of the LST heavy liquid has been the need for a safer dense liquid to replace the undesirable dense organohalides such as tetrabromoethane (TBE) and Bromoform. During the development of a suitable heavy liquid, safety was the prime consideration. Performance, i.e. high stability and low viscosity, was then optimized.

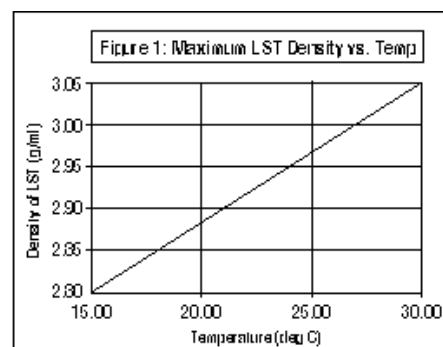
Detailed toxicity studies have been conducted on the components of LST heavy liquid in order to register the new substance for use in Australia. Worksafe approval for use in Australia was obtained in January 1996. LST heavy liquids are of low toxicity and do not require expensive fume extraction systems.

THERMAL STABILITY:

LST heavy liquid maintained at a temperature of 80°C for over two weeks showed no observable change. Under these conditions, SPT is not stable. The high thermal stability of LST heavy liquid allows it to be boiled to evaporate water and regain its original high density. The stability of LST heavy liquid means that recycling is rapid, simple and effective.

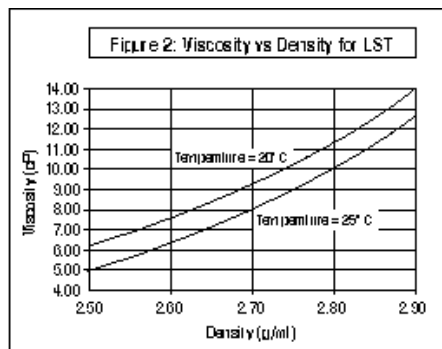
OPERATING DENSITY:

At 25°C heavy liquids can be used at any density up to 2.95 g/ml by diluting with water or by concentrating to remove water. The recommended operating density as a replacement for bromoform is 2.85 g/ml. At this density the viscosity is low, and the likelihood of crystallization is reduced. Densities up to 3.5 g/ml can be achieved at higher temperatures. The maximum density of LST heavy liquids is given for a range of temperatures in Figure 1.



VISCOSITY:

The viscosity of LST heavy liquid at SG 2.85 is 10.5 +1 cP at room temperature (25° C). Naturally it varies a little with density and temperature. Low viscosity is a feature of LST heavy liquids and allows fast, effective separations. Grain separations in LST heavy liquid occur at about the same speed as when using TBE, but without the occupational hygiene risk of organohalides. The exact viscosity of the LST heavy liquid will vary with its temperature and density (Figure 2), and is typically about 11 cP.



STORAGE AND USE:

LST heavy liquids can be stored indefinitely in closed plastic or glass containers. LST heavy liquids may cause corrosion of metals, so contact of LST with metals should be avoided during storage and heavy liquid separations. If subject to very cold conditions, crystals may appear in LST heavy liquids. These will redissolve upon warming the heavy liquid.

IDENTIFICATION:

Product Name: LST heavy liquid

Description: Solution of lithium heteropolytungstates in water

Manufacturers Code: Not applicable

UN Number: No UN Number allocated

Dangerous Goods Class & Subsidiary Risk: Not a dangerous good

Hazchem Code: None allocated

Poisons Schedule: Not scheduled

Use: Heavy liquid for density separation of minerals and ores

PHYSICAL DESCRIPTION/PROPERTIES:

Appearance: Clear to pale colored liquid

Melting Point: Not applicable

Vapor Pressure: Negligible vapor pressure of solids

Specific Gravity: 2.850 kg/m³

Flash Point: Not flammable

Flammability Limits: Not flammable

Solubility Limits: Miscible with water

INGREDIENTS:

NAME: Lithium heteropolytungstates

CAS NO: NA

Proportion: >80%

HEALTH HAZARD INFORMATION:**Health Effects***Acute Effects:*

Swallowed: Unlikely to cause significant effects. Not expected to be a route of exposure

Eye: Crystalline solids are a severe eye irritant. May cause irreversible damage.

Skin: Non-irritant

Inhaled: Not likely to be a route of exposure

Chronic Effects:

Repeated dose studies in animals suggest irritation to gastrointestinal tract may occur.

FIRST AID:

Swallowed: If swallowed and feeling unwell contact Doctor or Poisons Information Center

Eye: If in eye rinse out with running water for at least 15 minutes. Contact a doctor immediately.

Skin: If on skin wash off immediately with water.

Advice to Doctor: Treat Symptomatically

PRECAUTIONS FOR USE:

Exposure Limits: No exposure standards have been established for this substance.

Engineering Controls: The substance should be used in systems which recover and recycle LST

Personal Protection:

Skin: Impermeable rubber, vinyl or nitrile gloves should be worn when handling the material

Eyes: Safety glasses/goggles must be worn when handling LST or solutions containing LST.

Respiratory: Not likely to be a route of exposure. Immediately clean up spills to prevent accumulation of LST dust.

Ingestion: Do not allow eating, drinking or smoking in areas where LST heavy liquid is to be stored or used.

Flammability: Not flammable.

SAFE HANDLING INFORMATION:

Storage and Transport: The material is not a dangerous good. The chemical may have slight oxidizing characteristics. Store in plastic containers out of direct sunlight.

Spills and Disposal: If spilled do not allow substance to enter waterways. If liquid, dike area and absorb with inert material such as dirt/sawdust. Dispose of in accordance with Federal, State and Local requirements.

Fire/Explosion Hazard: Will not present fire/explosion hazard

OTHER INFORMATION ON CRYSTALLINE LST SOLIDS:

Acute Oral LD 50 (rat).2000 mg/kg
Acute dermal (rat).2000 mg/kg
Non-irritant to skin (Rabbit)
Irreversible damage to eye (Rabbit)
Non skin-sensitizer (Guinea Pig)
Non mutagenic in Salmonella typhimurium
Not clastogenic in Mouse Micronucleus Assay
LC50 (96 hr) in Fathead Minnow 94.7 mg/L
LC50 (48 hr) Daphnia magna 288.6 mg/L
LC50 (14 Day) Daphnia magna 2.47 mg/L

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