MATERIAL SAFETY DATA SHEET

I. MANUFACTURER INFORMATION:

Auric Enterprises, Inc.
d/b/a Thorn Smith Laboratories
7755 Narrow Gauge Road
Beulah, MI 49617-9792
Phone: 231-882-4672
Fax: 231-882-4804

MSDS# TSL-300

II. MATERIAL IDENTIFICATION – UNKNOWN NUMBERS 101-107:

Qualitative analysis unknowns are designed for individual student use in chemistry laboratory courses. Each package contains between 0.20 grams and 0.40 grams of solid chemical (pure or mixture) which is sealed in a small plastic vial bearing a code number. In typical use, the instructors of chemistry labs do not reveal the code number or the identity of the contents of any vial to students. Identity of each sample is known to the instructor or stockroom personnel by comparing the "Key" to the code numbers.

III. GROUP I CATIONS: INGREDIENTS, EXPOSURE LIMITS AND TOXICITY DATA

Please refer to the Key for the identification of cations for Unknown Numbers 101 – 107. The cations and corresponding raw materials are as follows:

Cation	Ingredient	CAS	TWA	LD50-Oral	LD50-Dermal	National Fire Protective Association		
				mg/m^3	mg/kg	H	F	R
$Ag^{=}$	$AgC_2H_3O_2$	563-63-3	0.01 (Ag)	N/A	N/A	2	0	0
Hg_2^{2+}	Hg_2Cl_2	10112-91-1	0.05 (Hg)	166 (rat)	1500 (rat)	2	0	0
Pb^{2+}	$PbCO_3$	598-63-0	0.15 (Pb)	N/A	N/A	1	0	0

$AgC_2H_3O_2$: Silver Acetate
Hg_2Cl_2 : Mercurous Chloride, Mercury (I) Chloride
$PbCO_3$: Lead Carbonate

IV. HEALTH HAZARDS:

Due to the small amount of material in each package, the hazard associated with each package is minimal. This information is obtained from the MSDS of the individual raw materials and other reliable sources and may or may not be directly applicable to the small amount of the individual material or mixtures. The unknown vials are to be used under supervision of a chemist or trained laboratory instructor.

POTENTIAL HAZARD FROM ACUTE EXPOSURE

Ingredient	Eye Contact	Ingestion	Inhalation	Skin	
				Absorption	Contact
Hg_2Cl_2	Irritation	Harmful: Very Dangerous	Harmful	Harmful	Irritation
$PbCO_3$	Irritation	Harmful: Very Dangerous	May be Harmful	May be Harmful	May cause Irritation
$AgC_2H_3O_2$	Irritation: Very Dangerous	May be Harmful	May be Harmful	May be Harmful	May cause Irritation

PUTTING THE HAZARD INTO PERSPECTIVE: Hg_2Cl_2 and $PbCO_3$ are considered very dangerous when ingested. However, due to the small sample size, the individual unknowns present little hazard. It is estimated that over 20 unknown vials of Hg_2Cl_2 weighing 0.40 grams each must be ingested for a 125 kg person to obtain the LD50 dose of 166 mg/kg. If Hg_2Cl_2 is retained in the body, then over 4 unknown envelopes must be ingested to obtain a fatal dose (estimated at 30-40 mg/kg of body weight). The amount of Hg_2Cl_2 in each vial is less than 0.40 grams.

CHRONIC HEALTH EFFECTS due to long term or repeated exposure:
Lead and lead compounds (IARC Grp-2B) are listed by IARC as probably carcinogenic to humans based on sufficient animal data but inadequate human evidence. Adverse effects of lead on human reproduction, embryonic and fetal development and post-natal development have been reported.
Long-term exposure to silver may cause argyria which is a slate-gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate of silver.

V. FIRST AID MEASURES

Skin: Wash hands thoroughly after contact using soap and warm water. If spilled on clothing, flush affected areas with water, remove contaminated clothing as soon as possible and wash before reuse.

Ingestion: Because of the small sample size (400 mg or less), most of the unknowns present little hazard. Rinse out the mouth with plenty of water. If ingested, drink 1-2 glasses of water and induce vomiting. Seek medical attention.

Eye Contact: Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Obtain medical attention.

Inhalation: Remove victim to a well ventilated area. Seek medical attention.

VI. PHYSICAL DATA, STABILITY AND REACTIVITY DATA

Cation	MW	MP $^oC/^oF$	Stability	Flammability	Solubility in Cold Water	Comments
Ag^+	166.92	Decomposes	Stable	Non-Flammable	Partially Soluble	Photosensitive Incompatible with strong oxidizing agents, strong acids.
Hg_2^{2+}	472.09	302^oC	Stable	Non-Flammable	Insoluble	Photosensitive Sublimes at 400^oC (752^oF) to 500^oC (932^oF) BP: 384^oC
Pb^{2+}	267.2	Decomposes	Stable	Non-Flammable	Insoluble	Incompatible with strong oxidizing agents, strong acids.

Additional Comments:

Hg_2^{2+} : Sunlight will slowly decompose Hg_2Cl_2 into Hg Cl_2 (mercuric chloride) and Hg (metallic mercury). Incompatible with strong bases. Protect from moisture.

VII. FIRE AND EXPLOSION HAZARDS

No fire or explosion hazards are known.

VIII. STORAGE AND DISPOSAL

Store in a well ventilated area and protect unknowns from light. Do not breathe dusts. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Keep vials closed when not in use. Wash thoroughly after handling. Dispose in accordance with Federal, State and Local regulations.

The information provided in the MSDS is based on available information which is believed to be accurate and reliable. It is the user's responsibility to determine the suitability of this information for the adoption of necessary safety precautions. We make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and assume no liability resulting from its use. We reserve the right to revise Material Safety Data Sheets periodically as new information becomes available.

The following sources were consulted:

1. Material Safety Data Sheets of the individual ingredients.
2. Sigma-Aldrich Library of Chemical Safety Date Ed. II; 1988

Practice good laboratory safety procedures when using chemicals.

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