

MATERIAL SAFETY DATA SHEET

SECTION 1 — PRODUCT INFORMATION

Product Identifier:	Mandelin Reagent
Product Use:	Colorimetric testing
Supplier:	Syntharise Chemical Inc.
Emergency Contact:	3E Company
Emergency Telephone:	1-(800)360-3220

SECTION 2 — HAZARDOUS INGREDIENTS

Hazardous Ingredients	%	CAS Number	LD50 of Ingredient	LC50 of Ingredient
Sulfuric Acid (Concentrated, ACS Grade)	99%	7664-93-9	350 mg/kg (ORAL, RAT)	320 mg/m ³ / 2 Hours (INHALATION, MOUSE)
Ammonium metavanadate	1%	7803-55-6	58.1 mg/kg (ORAL, RAT)	7.8 mg/m ³ / 4 Hours (INHALATION, RAT)

SECTION 3 — PHYSICAL DATA

Physical State :	Liquid
Odour & Appearance :	Yellow, clear liquid with acrid odour
Odour Threshold (ppm):	Not Available
Specific Gravity:	~1.8
Vapour Density (air = 1) :	3.4
Vapour Pressure (mmHg) :	Low
Evaporation Rate:	Not Available
Boiling Point (°C) :	Not Available
Freezing Point (°C):	Not Available
pH	<1.0

SECTION 4 — FIRE AND EXPLOSION DATA

Means of Extinction:	N/A - product is non-flammable.
Flashpoint (°C) and Method :	N/A
Upper Flammable Limit (% by volume) :	N/A
Lower Flammable Limit (% by volume):	N/A
Autoignition Temperature (°C):	N/A
Explosion Data — Sensitivity to Impact:	No
Explosion Data — Sensitivity to Static Discharge:	No
Hazardous Combustion Products:	Toxic vanadium and corrosive sulfur oxides fumes and/or vapors may form. Self-contained breathing apparatus is required for fire-fighting purposes.

SECTION 5 — REACTIVITY DATA

Chemically Stable	Yes
Incompatibility:	Alkalis, metals, halogenated salts (fluorides, chlorides, bromides, iodides, chlorates, perchlorates, etc.), organic compounds, water (will generate heat).
Thermal Decomposition/Conditions to be avoided:	Extreme Heat (above 120°F), Moisture
Hazardous Decomposition Products:	Sulfur compounds. Vanadium compounds.

SECTION 6 — TOXICOLOGICAL PROPERTIES

Routes of Exposure:	Inhalation, ingestion, skin & eyes
Acute Exposure:	Eye, nose, and throat irritation. Both liquid and vapors can cause serious damage to tissues. Vanadium dust, mists, and fumes are highly toxic. Edema/pneumonia may result; this can be potentially fatal. Ingestion of vanadium may be life-threatening, due to enzyme inhibition. Weakness, tinnitus, headache, nausea, and vomiting may occur.
Chronic Exposure:	Prolonged or repeat exposure to sulfuric acid can cause respiratory damage, erosion of teeth, chronic irritation of the eyes, or chronic inflammation of the nose, throat, and bronchial tubes.
Exposure Limits: (value, source, date)	Ammonium Metavanadate: OSHA PEL as V ₂ O ₅ – 0.5mg/m ³ (dust), 0.1mg/m ³ (fumes), ACGIH 0.05mg/m ³ dust or fumes ACGIH TWA (mg/m ³); 0.05 OSHA STEL (mg/m ³); 0.5/0.1

	Sulfuric Acid, Concentrated ACS Grade: NIOSH TWA (mg/m3); 1.0 ACGIH TLV/TWA (ppm); 0.2 OSHA STEL (mg/m3); 1.0
Irritancy:	May cause eye, nose, and throat irritation.
Sensitization:	Not Available
Carcinogenicity:	Sulfuric Acid: ACGIH-A2: Suspected human carcinogen OSHA-Select carcinogen IARC-Group 1: Carcinogenic to humans
Reproductive Toxicity:	Not Available
Teratogenicity:	Not Available
Mutagenicity :	Not Available
Synergistic Products:	Not Available

SECTION 7 — PREVENTIVE MEASURES

Personal Protective Equipment:	Respiratory protection, Chemical resistant gloves, chemical safety goggles and lab coat.
Handling:	Avoid inhalation and contact with skin, eyes and clothing. Use approved NIOSH respirator if TLV levels are exceeded. Always wear protective gloves while working with product. Safety glasses are required to prevent potential eye contact, irritation or injury. Wear appropriate protective clothing and boots as required to prevent skin contact. For field use, a rubber apron may be worn as additional protection. Use good industrial hygiene. Work carefully with the reagent and always wear protective equipment.
Leak and Spill Procedure:	Avoid breathing vapours. Sequester leak or spill. Use sodium bicarbonate to absorb spill. Do not discharge into waterways or sewer systems. Treat absorbed material as a hazardous waste. DO NOT ADD WATER TO SPILL!
Waste Disposal:	Dispose of according to local and regional authority requirements. Prevent from entering sewers or waterways. Toxic to some aquatic life.
Engineering Controls:	If user operations generate vapour or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.
Storage Requirements:	Store in cool, dry, place. Do not store with metals or combustible materials.
Special Shipping Information:	UN#3316 - Chemical Kit, Class 9, Packing Group II

SECTION 8 — FIRST AID MEASURES

Inhalation:	Place victim in well-ventilated area. If victim is not breathing, perform artificial respiration. Seek immediate medical attention.
Ingestion:	Product is highly corrosive; ingestion can lead to severe injury, including death. If victim is able to swallow, give water, then seek immediate medical help.
Skin Contact:	Product is corrosive and will damage skin and tissues. Use of appropriate gloves and thorough hand-washing with hand cleanser is required. Remove contaminated clothing and rinse thoroughly. If skin is damaged or severely irritated, seek medical help. Safety Showers are highly recommended for use of this product.
Eye Contact:	Material can cause severe eye irritation and burns. Flush eyes with a large quantity of water for a minimum of 15 minutes, then seek immediate medical attention. Do not medicate with "over-the-counter" eye products.

SECTION 9 — PREPARATION INFORMATION

Prepared by:	Syntharise Chemical Inc.
Telephone Number:	1(647)766-1657
Preparation Date:	Feb 27 th , 2015

The above information is believed to be correct but does not purport to be complete and should be used only as a guide. The burden of safe use of this material rests entirely with the user.