Standard Operating Procedure

– Flammable/Combustible Liquids –

For chemical usage in the Keck Microfabrication Facility, B142

I. General Information

Commonly used flammable or combustible liquids in the Keck Microfabrication Facility include Acetone, isopropyl alcohol, and Ethanol for various processes.

II. Properties of flammable or combustible liquids

Flammable Liquids:

Flammable liquids are classified as Class I Liquids and are described as any liquid that has a flash point below 100°F (37.8°C). Class I liquids are further classified as follows:

(a) Class IA Liquids - those liquids that have flash points below 73°F (22.8°C) and boiling points below 100°F (37.8°C).
(b) Class IB Liquids - those liquids that have flash points below 73°F (22.8°C) and boiling points at or above 100°F (37.8°C).
(c) Class IC Liquids - those liquids that have flash points at or above 73°F (22.8°C), but below 100°F (37.8°C).

Combustible Liquids:

Combustible liquids are classified as Class II or III Liquids and are described as any liquid that has a flash point at or above 100°F (37.8°C). Combustible liquids are classified as Class II or Class III as follows:

(a) Class II Liquid - any liquid that has a flash point at or above 100°F (37.8°C) and below 140°F (60°C).
(b) Class IIIA - any liquid that has a flash point at or above 140°F (60°C), but below 200°F (93°C).
(b) Class IIIB - any liquid that has a flash point at or above 200°F (93°C).

III. POTENTIAL HAZARDS

Flammable and combustible liquids can evaporate and create a potentially explosive environment. These explosions can cause burns and flying debris injuries. The liquids themselves may be toxic, such as methanol or create irritation of the skin such as acetone. Flammable and combustible may ignite readily in

Quick Points

- Keep heat source and oxidizing materials away from these flammable/combustible liquids.
- Use proper protection equipment - splash goggle, apron, and safety gloves.
- Handle these chemicals inside fume hood to reduce exposure.
oxygen rich environments and soak into other materials creating the potential for fire or explosion. See individual MSDS for working with these liquids.

IV. Protection equipment

The purpose for personal protective equipment (PPE) is to shield the individual in the event of a release of vapor, a spill or other incident. PPE is not a substitute for safe work practices. Safety goggles, nitrile, PVC, or neoprene gloves can provide effective skin protection. Wear safety glasses or chemical splash goggles with face shield when using large quantities, or chemical safety goggles when using small quantities. Wear rubber, neoprene, or PVC apron when using large quantities and splash potential exists.

V. Handling Procedures and Storage Requirements

Keep flammable and combustible liquids away from heat, open flame, or other sources of ignition. Prevent vapors from accumulating. Use approved ventilation when working with these liquids. Store flammable and combustible liquids in the flammable liquid storage area when not in immediate use.

VI. Waste Disposal

Collect and store used flammable and combustible liquids according to MSU's hazardous waste policy.

VII. Emergency procedure

**Skin exposure:** Rinse affected skin with plenty of water while removing contaminated clothing and shoes. Rinse for at least 15 minutes. Seek medical attention.

**Eye exposure:** Splashes may cause tissue destruction. Wash eyes for at least 15 minutes, lifting the upper and lower eyelids. Seek medical attention immediately.

**Small spills:** Do not attempt cleanup if you feel unsure of your ability to do so or if you perceive the risk to be greater than normal laboratory operations. Cover spill with broad spectrum absorbent. When absorbent is removed, wash contaminated area with water.

**Large spills:** Notify others in area of spill. Turn off ignition sources in area. Evacuate area immediately. Call the ORCBS for spill response. Call 911 in case of emergency.

VIII. DECONTAMINATION PROCEDURES

Flush area with sufficient amount of water.

VIII. MSDS Location

A list of MSDSs for flammable and combustible liquids used in the Keck Microfabrication Facility is archived at http://kmf.pa.msu.edu/msds