

Revision: ----	Document Code: WI- ML-2607	Standard Operating Procedure (SOP) for -70°C Ultra-Low Temperature (ULT) Freezer	 دانشگاه گجرات و خدا بندگان را در راه راست و اسلام و برکت
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Standard Operating Procedure (SOP): -70°C Ultra-Low Temperature (ULT) Freezer

1. Objective:

To outline the procedures for the proper operation and maintenance of the -70°C freezer, ensuring the long-term preservation of temperature-sensitive laboratory samples.

2. Responsibility:

The responsibility for implementing this procedure lies with the designated laboratory experts. Coordination with these experts is mandatory before opening the freezer door.

3. Safety Guidelines:

- **PPE:** Always wear thermal-insulated gloves and safety goggles when operating the freezer.
- **Skin Protection:** Avoid direct contact with the interior surfaces of the freezer to prevent cold burns.
- **Sample Management:** Never store unlabeled samples or use glass containers/materials incompatible with cryogenic temperatures.
- **Door Protocol:** Minimize the time the door remains open. Ensure the door is fully sealed after each use.

4. Maintenance and Operational Protocols:

- **Power Stability:** Ensure the freezer is connected to an emergency power supply and a functional UPS system.
- **Installation:** Place the unit in a well-ventilated area, away from direct sunlight, heat sources, and humidity.
- **Seal Integrity:** Regularly inspect door gaskets and latches; ensure they are free of ice and frost build-up. Replace gaskets immediately if damaged.
- **Emergency Response:** In the event of a power outage, **do not** open the freezer door to maintain internal temperature stability for as long as possible.
- **Airflow:** Do not overfill the freezer, as this impedes necessary air circulation.
- **Cleaning:**
 - Clean accumulated water on the floor of the unit using a diluted sodium bicarbonate solution.
 - In case of biological spills, disinfect using a 10% sodium hypochlorite (bleach) solution.
 - Periodically clean dust and debris from the cooling coils located at the back of the unit.
- **Monitoring and Records:**
 - Regularly verify the internal temperature using a calibrated thermometer.
 - Utilize internal temperature alarm systems.
 - Maintain a log of all maintenance, repairs, and calibration dates directly on the unit.
- **Prohibitions:** Any error alerts must be reported to the lab experts immediately. **Do not** attempt to modify any settings without explicit authorization from the responsible staff.
- **Handling:** If moving the freezer is necessary, it must be transported carefully and gradually.

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