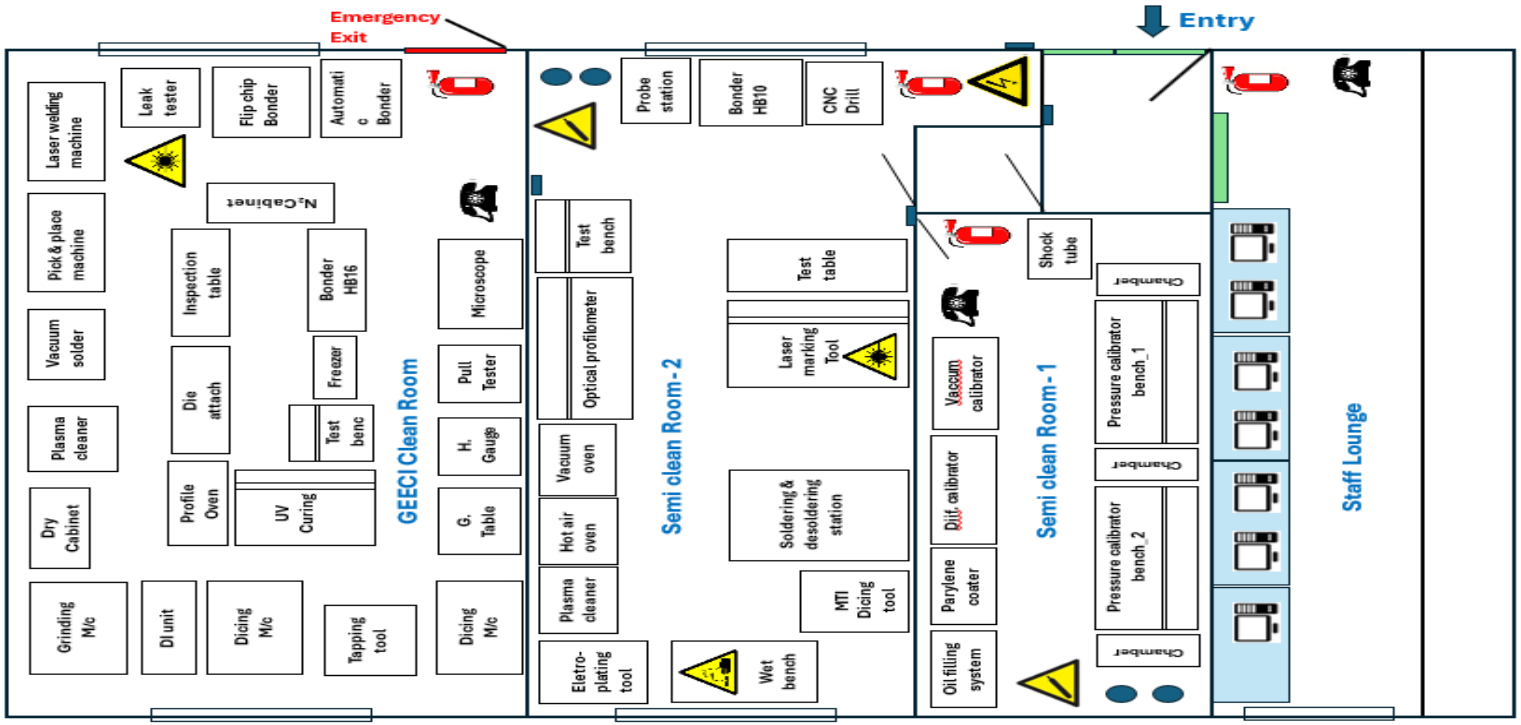
**Doc No:-**
**TF32PASF_Safety_Orientation_02-2025**

# Packaging & Systems Facility (PASF) -TF32 Safety Orientation and Training

**Issue 1: Rev0**
**December 26-2025**

# PASF-TF32 Layout




Clean Room Class10K – Restricted Entry

Semiclean Room2

Semiclean Room1 Testing Area

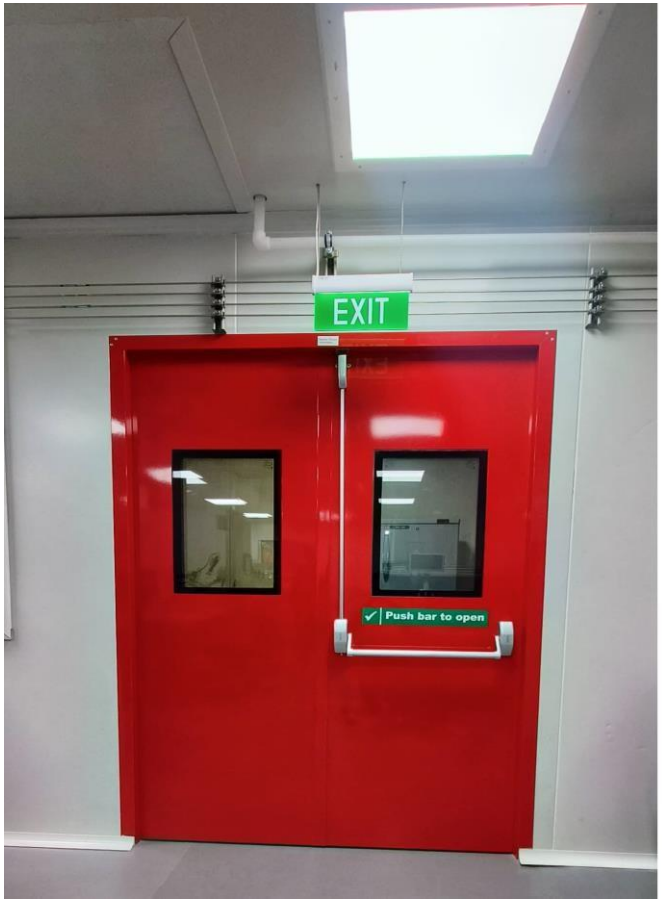
Seating-Design Services-TF36
Seating- Packaging Services-TF34

# General Guidelines

1. No eating, drinking, or munching in the lab. No food is allowed to store in lab refrigerator/freezer.
2. Use Shoe Cover before Entering lab.
3. Any new material/chemical should be checked with the respective tool owner with MSDS before using them at PASF.
4. Gloves need to be worn anytime you are handling chemicals and other reaccommodated places.
5. Always use dedicated gloves, face-shield, and apron when using wet bench tool
6. Any new Gas cylinders required for measurements must be checked with the tool owners before taking them inside PASF
7. Do not leave your samples & desiccators at PASF after your experiments.
8. Keep the workspace clean.
9. In the case of Emergency all the Doors of PASF –Entry, Semiclean Room1, Room2, Clean Room will be unlocked automatically. Exit through Exit sign as in Slide 4
10. All Staff need to Evacuate through the respective doors and as in Slide 3 by pressing the Clean Room Exit Door latch and as in Slide 4.

# Emergency Response Instructions

1. Emergency response in case of an incident
2. Know emergency evacuation protocols thoroughly
3. Please inform BMS at 115 immediately in case of any emergency
4. Call someone if you cannot get BMS. (Phone numbers available in the bay near the phone) • Press panic button.
5. Panic Button is in Clean Room
6. Evacuate through nearest exit point and wait near the Assembly points.




Clean Room Emergency Exit Handle and Exit Point

# Emergency Evacuation

**Evacuate through the emergency exit (follow the exit sign) and wait near the assigned floor Assemblyarea**


PASF Emergency exit way

# Common warning sign &meanings

Be aware about the common warning signs

| Warning sign | Description |
|---|---|
|  | Danger! Visually visible or invisible laser light from the laser will cause severe damage and may cause blindness, as are reflective, scattered and diffusely reflected light. Please note that the human eye is invisible to lasers with wavelengths outside the 400-700 nm (visible) range. That is, the laser may actually exist, but the laser is not visible to the human eye. |
|  | Caveat! Potential harm to the human body, if not properly followed by "warning" to use, may cause physical harm to you or others. Do not use beyond the "Precautions" unless you fully understand the product and use it in the specified environment. |
|  | Danger! Risk of high voltage, beware of electric shock! |
|  | Note! To prevent accidental exposure to the laser or reflected laser range, laser protective glasses (1064 nm) with specific wavelengths should be worn when using, maintaining, and servicing the laser. |

# In Case of Instrument/Tool Break Down

1. Send ‘Instrument problem report’ to the instrument managers using FOM – Log off and press the “something wrong” button DO NOT TRY TO REPAIR BY YOURSELF.

   Notify the FT/SFT by Mail and personally

2. In case of utilities breakdown(like CDA line, PCW line), Inform BMS immediately (call 115)

# PASF-TF 32 Tools and Equipments with Safety Hazards & Protocols to be followed

| Sl No. | Tool | Hazards | Safety Precautions |
|---|---|---|---|
| 1 | Automatic Dicing Saw | i. **Mechanical Hazard** – High-speed rotating blade can cause severe cuts or amputations if contacted during operation.<br>ii. **Noise Hazard** – High noise levels generated during cutting can exceed safe exposure limits.<br>iii. **Chemical Exposure Hazard** - from wafer debris, adhesive residues, or process materials | i. Ensure blade guards, stage covers, and safety interlocks are properly installed and functional. Keep hands, tools, and loose objects away from the cutting area while the spindle is running.<br>ii. Use appropriate hearing protection when noise levels are high or during prolonged operation.<br>iii. Wear appropriate PPE such as gloves, safety goggles, and lab coat. Avoid direct skin contact and inhalation of particles. Dispose of wafer debris and adhesive waste as per hazardous waste disposal procedures. |
| 2 | Wire bonder HB16/HB10 | i. **Burn Hazard** – The heated work stage and substrate can reach temperatures up to 250 °C.<br>ii. **Electrical Hazard (EFO – Electronic Flame Off)** – High-voltage discharge is used to form the Free Air Ball, which can cause electric shock or burns.<br>iii. **Electrostatic Discharge (ESD) Hazard** – Sensitive devices may be damaged by static electricity. | i. Do not touch the heated stage or sample during or immediately after operation. Allow sufficient cooling time before handling. Use heat-resistant gloves if required.<br>ii. Keep hands, tools, and conductive objects away from the capillary and EFO area during operation. Ensure proper grounding and operate the system only with safety interlocks enabled.<br>iii. Use proper ESD protection such as grounding straps and ESD mats |
| 3 | Fiber Laser Marking Tool | i. **Laser radiation (Class 1)** - can cause serious eye or skin injury through direct, reflected, or scattered exposure.<br>ii. **Fume generation** - can release toxic vapors or particulates from metals or polymers, posing inhalation hazards.<br>iii. **Mechanical Hazards** - Moving galvo mirrors and Z-axis platform may pinch or trap hands.<br>iv. **Electrical Hazard** - The system operates on mains voltage and includes high-voltage capacitor banks.<br>v. **Red Dot Alignment Beam** - Though low power, the alignment laser can still harm the eye on prolonged exposure.<br>vi. **Fire Risk** - Concentrated energy can ignite flammable materials or residues. | i. Wear appropriate laser safety eyewear<br>ii. Must be operated with local fume extraction system active<br>iii. Keep hands clear and use software interface for adjustments.<br>iv. Only authorized personnel should access control panels or service the system.<br>v. Avoid looking directly into alignment beams.<br>vi. Combustible objects must be removed from the working area. |

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|---|---|---|---|
| 4 | High power Plasma Cleaner | i. **UV Radiation -** Plasma emits UV photons that may damage skin and eyes.<br>ii. **Sharp Objects & Glassware -** Quartz substrates or holders may chip or break.<br>iii. **Thermal Effects -** Plasma cleaning may cause slight heating of the substrate.<br>iv. **Vacuum Hazards -** Implosion risk if chamber or window is cracked/damaged.<br>v. **High Voltage Exposure -** RF power supplies operate at several hundred volts. | i. Chamber lid must remain closed and interlocked during operation.<br>ii. Handle all components with gloves and use tweezers where appropriate.<br>iii. Avoid handling freshly processed parts without gloves.<br>iv. Never operate the vacuum pump with the lid open or damaged chamber parts.<br>v. Internal components should never be accessed while the tool is powered on. |
| 5 | Hot Air oven | i. **Burn Hazard** – High operating temperatures can cause burns if hot surfaces or materials are touched.<br>ii. **Fire Hazard** – Overloading or placing flammable materials inside the oven can lead to fire.<br>iii. **Electrical Hazard** – Faulty wiring or damaged electrical components may cause electric shock. | i. Wear heat-resistant gloves while loading or unloading samples. Avoid direct contact with hot surfaces. Allow sufficient cooling time before handling.<br>ii. Do not overload the oven. Keep flammable materials away. Ensure proper temperature settings as per SOP.<br>iii. Ensure proper earthing of the oven. Do not operate with damaged cables or loose connections |
| 6 | Manual DC Probe Station | i. **Electrical Hazard** – Contact with live probes or test points can cause electric shock or equipment damage.<br>ii. **Mechanical Hazard**– Movement of the chuck stage or probe arms can pinch fingers or damage delicate components.<br>iii. **Electrostatic Discharge (ESD) Hazard** – Sensitive devices may be damaged by static electricity. | i. Ensure all probes are properly positioned before applying power. Do not touch probes or the sample during measurement.<br>ii. Keep hands clear of moving parts during operation. Use fine adjustment knobs carefully.<br>iii. Use proper ESD protection such as grounding straps and ESD mats |

# PASF-TF 32 Tools and Equipments with Safety Hazards & Protocols to be followed

| Sl No. | Tool | Hazards | Safety Precautions |
|---|---|---|---|
| 7 | MTI Precison CNC Manual Dicing Tool | i. **Rotating Blade Hazard –** High-speed blade (up to 3,000 RPM) can cause severe cuts or amputations.<br>ii. **Debris and Particulate Inhalation** – Cutting brittle materials generates fine particles and debris.<br>iii. **Electrical Hazard -** Operates on mains voltage (typically 230V).<br>iv. **Eye Injury from Flying Fragments -** Small chips may eject during the cutting process.<br>v. **Noise -** The tool produces moderate mechanical noise during cutting. | i. Keep hands away from the cutting area at all times.Only trained personnel may operate the system while wearing appropriate PPE (gloves, lab coat, safety glasses).<br>ii. Tool must be used with its integrated vacuum and water cooling system at all times.<br>iii. Damaged cables or connectors should be reported immediately.<br>iv. Always wear shatterproof safety goggles or face shield.<br>v. Users should limit exposure and consider hearing protection during extended use. |
| 8 | REMI Centrifuge PASF016 | i. **Rotational Hazard -** High-speed rotation of unbalanced loads may cause vibration, rotor breakage, or internal component damage.<br>ii. **Electrical shock Hazard -** due to operation on mains voltage (typically 230 V) and possible exposure from damaged cables or wet surfaces.<br>iii. **Chemical exposure Hazard** - due to leakage or handling of hazardous chemicals or solvents, which may cause skin burns or inhalation risks.<br>iv. **Lid Opening Under Rotation -** Attempting to open the lid during operation may result in severe injury from spinning rotor. | i. Ensure samples are properly balanced before operation. Do not exceed the recommended load limits or rotational speed.<br>ii. Ensure all power cords and plugs are in good condition before use. Do not operate the equipment with wet hands or in wet conditions. Report damaged cables or electrical faults immediately.<br>iii. Wear appropriate PPE such as chemical-resistant gloves, safety goggles, face shield, and lab coat.<br>iv. Lid interlock mechanism must be functional and must not be bypassed. |
| 9 | Soldering and Desoldering station | i. **Electrical Hazard** – Operates on mains voltage (RX-802AS: 110–240 V, Heatex-845CR: 230 V); damaged cords or improper grounding can cause electric shock.<br>ii. **Heat / Burn Hazard** – Heating elements, soldering tips, and hot-air nozzles can exceed 400 °C.<br>iii. **Fume Exposure Hazard** – Leaded solder and flux fumes can cause respiratory irritation.<br>iv. **ESD (Electrostatic Discharge) Hazard** – Static discharge can damage sensitive electronic components | i. Ensure correct voltage connection. Inspect power cords and plugs before use. Keep the station properly grounded and do not operate with damaged cables.<br>ii. Avoid touching heated parts. Always place the iron or hot-air gun in its holder when not in use. Allow sufficient cooling time before handling or maintenance.<br>iii. Operate in a well-ventilated area or use a fume extraction system. Avoid inhaling fumes directly.<br>iv. Use antistatic wrist straps and ESD mats. Ensure proper grounding with resistance < 2 Ω. |

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| Sl No. | Tool | Hazards | Safety Precautions |
|---|---|---|---|
| 10 | Parylene C Deposition System | i. **High Temperature Zones -** The pyrolysis furnace operates at ~690°C, and the vaporizer at 160–175°C.<br>ii. **Chemical Hazards -**Parylene N, Parylene C dimers and byproducts can be hazardous.<br>iii. **Cold Trap and Hazards -** Cold traps may use mechanical chiller and collect volatile substances. | i. Use thermal gloves and allow sufficient cooling before handling.<br>ii. Wear safety goggles, a lab coat, and nitrile gloves during the operation.<br>iii. Use cryogenic gloves and face protection. |
| 11 | Hydraulic Dead Weight Tester | i. **High Pressure Hazard:** It can generate very high pressures exceeding 1100 bar. Risk of fluid injection injuries if fittings or hoses fail.<br>ii. **Hydraulic Fluid Exposure:** Fluids may cause skin or eye irritation.<br>iii. **Mechanical Hazard:** Mechanical Injuries due to dropping heavy weights may cause foot or hand injuries.<br>iv. **Slips and Falls:** Oil spills from the tool can create slip hazards. | i. Always verify tight connections and use pressure-rated fittings.<br>ii. Use gloves, goggles, and avoid inhaling vapours.<br>iii. Ensure weights are handled with care and stored properly.<br>iv. Inform the FT and Clean spills immediately with absorbent pads. |
| 12 | Climate Chamber Votsch 1 and 2 | i. **Extreme Temperature Hazard (High / Low Temperature Exposure)** – Chambers operate over wide temperature ranges which may cause burns or cold injuries.<br>ii. **Electrical Hazard** – Operates on high electrical power; faulty wiring or improper grounding may cause electric shock. | i. Allow sufficient cooling or warming time before opening the chamber. Wear heat- or cold-resistant gloves when handling samples.<br>ii. Ensure proper grounding and correct voltage supply. Do not operate with damaged cords or panels open. |
| 13 | Environmental Chamber ATT | i. **Extreme Temperature Hazard (High / Low Temperature Exposure)** – Chambers operate over wide temperature ranges which may cause burns or cold injuries.<br>ii. **Electrical Hazard** – Operates on high electrical power; faulty wiring or improper grounding may cause electric shock. | i. Allow sufficient cooling or warming time before opening the chamber. Wear heat- or cold-resistant gloves when handling samples.<br>ii. Ensure proper grounding and correct voltage supply. Do not operate with damaged cords or panels open. |
| 14 | Pneumatic Pressure controller 20bar and 200bar | i. **Electrical Hazard** – Operation involves electrical power which may cause shock if wiring is faulty.<br>ii. **Projectile Hazard** – Loose fittings or improperly mounted DUT may eject under pressure. | i. Check power cables and plugs before use. Ensure proper grounding. Do not operate the system with damaged wires or open panels.<br>ii. Secure DUT and adapters firmly before pressurization. Do not stand in line with pressurized connections. |

# For More Details Contact:-

krishnapr@iisc.ac.in

080-2293 3276 Ext 432/419

080-2293 3291 Ext 432/419

https://sysefandpackagingfacility.cense.iisc.ac.in/