

Makerspace equipment–facility matrix

Equipment	Requires "laboratory ventilation" (Note 0)	Requires handwash sink (Note 1)	Requires eyewash and shower (Note 2)	Requires local exhaust ventilation or filtration (Note 3)	Needs Class II (Div. 1 or 2) electrical area	Requires space with automatic sprinkler	Comments
Soldering		✓	?	Note 4			Desktop air filter may be acceptable alternative to LEV. Corrosive materials (some fluxes and flux removers) will require eyewash. Assessment of chemical inventory, SDS and SOP to determine necessary controls.
FDM/Filament 3D printers	Note 5	✓	?	Note 5			Certain post-processing may involve volatile solvents or corrosive liquids. Assessment of chemical inventory, SDS and SOP to determine necessary controls.
SLA 3D printers	Note 5	✓	✓	Note 5			Certain resins and post-processing baths may involve corrosive or volatile liquids. Assessment of chemical inventory, SDS and SOP to determine necessary controls.
Metal powder 3D printers	✓	✓	✓	?	?	✓	Ventilation and/or special electrical construction needed to prevent dust explosion. Assessment of chemical inventory, SDS and SOP to determine necessary controls.
Laser cutter	Note 6			Note 6			Interlocks to prevent interaction with enclosed laser. Air filtration of exhaust may be an acceptable alternative to LEV
Use of volatile solvents	?	✓	?	?		?	Assessment of chemical inventory, SDS and SOP to determine necessary controls.
Use of corrosive materials	?	✓	✓	?			Assessment of chemical inventory, SDS and SOP to determine necessary controls.

Legend:

✓ = required

? = needs to be determined through a risk assessment

Notes:

Note 0: "Laboratory ventilation" is generally defined as a mechanically-ventilated HVAC system with a minimum of 4 air changes per hour, does not recirculate air to other spaces, with a dedicated rooftop exhaust and a supply of sufficient make-up air.

Note 1: If a handwashing sink is required, it is cost-effective to add a counter-top mounted eyewash and it is strongly recommended to do so.

Note 2: An emergency shower will also be required if there is a risk of splashing injurious, corrosive materials on a part of the body apart from the eyes.

Note 3: Local exhaust ventilation (LEV) can take the form of a snorkel, fume hood, or ventilated/exhausted enclosure. LEV will require "laboratory ventilation". Filtration can take the form of benchtop or floor-standing fume extractors which recirculates the filtered air. The filtration system must be maintained in accordance with manufacturer's recommendations.

Note 4: For manual soldering, LEV is not required, and a filtration (desktop fume extractor) will suffice.

Note 5: Use of 3-D printers with enclosures that are either exhausted or filtered are strongly recommended. Otherwise, 4 ACH minimum mechanical ventilation may be required for non-enclosed 3-D printers.

Note 6: Provide the laser cutter with dedicated ventilation as prescribed by the manufacturer to remove air contaminants. If the unit is equipped with a filter, the filter system must be maintained in accordance with manufacturer's recommendations.

Requirements can be waived or additional requirements may be imposed on a case-by-case basis, as established by a risk assessment of the specific equipment and materials.