

安全时刻



NO. 24
12月24日, 2024



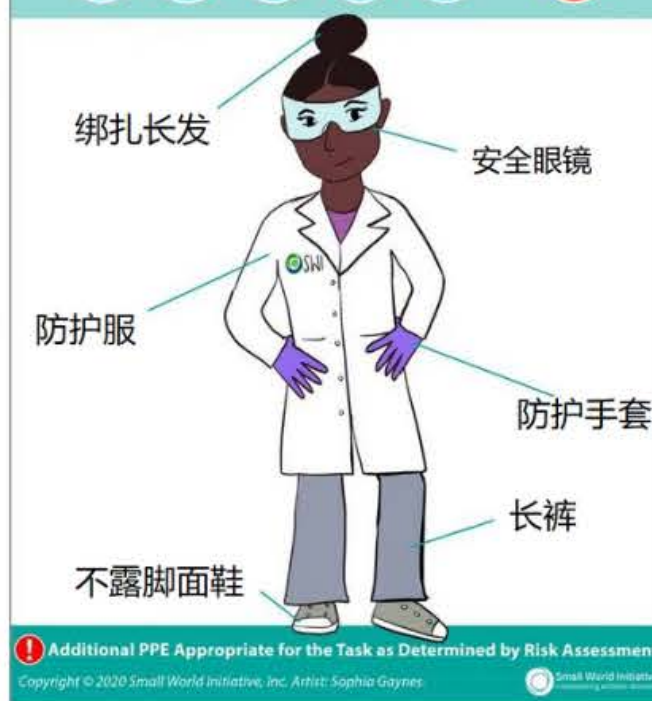
如何安全使用水热釜 (I)

水热釜又叫消解罐或高压罐，由不锈钢套筒和耐腐蚀的内胆组成，内胆常由聚四氟乙烯材质制成，一般容积在 25-500mL，可以承受一定的温度和压力。常见的水热釜使用温度为180-220°C，设计使用上限为 1-3MPa。

使用前应：

1. 参加培训
2. 穿戴个人防护装备
3. 外观检查（不锈钢外套和内胆），确认无裂缝、点蚀、生锈、蠕变或过度破损、聚四氟乙烯内胆扭曲、钢壳破裂、有缺陷以及清洗不到位；禁止使用不配套的水热釜配件
4. 了解产品最高使用压力上限及温度上限，严禁超压和超温使用
5. 正确安装水热釜，不可离开桌面紧固水热釜，禁止倾斜
6. 反应物料严禁超过内容积的2/3
7. 推荐使用有超温保护或超温报警的烘箱加热，严禁使用低温段控温不准确的马弗炉进行水热釜实验

Minimum PPE to Enter Lab



以下体系严禁使用水热釜进行实验：

- 含有放射性物质
- 含有爆炸性物质
- 含有可能分解或设置温度下不稳定的化学物质
- 含有污染的针头
- 含有高氯酸
- 硝酸和有机物的混合物

如何安全使用水热反应釜

安全培训



Safety Moment



How To Safely Use The Hydrothermal Autoclave Reactor (I)

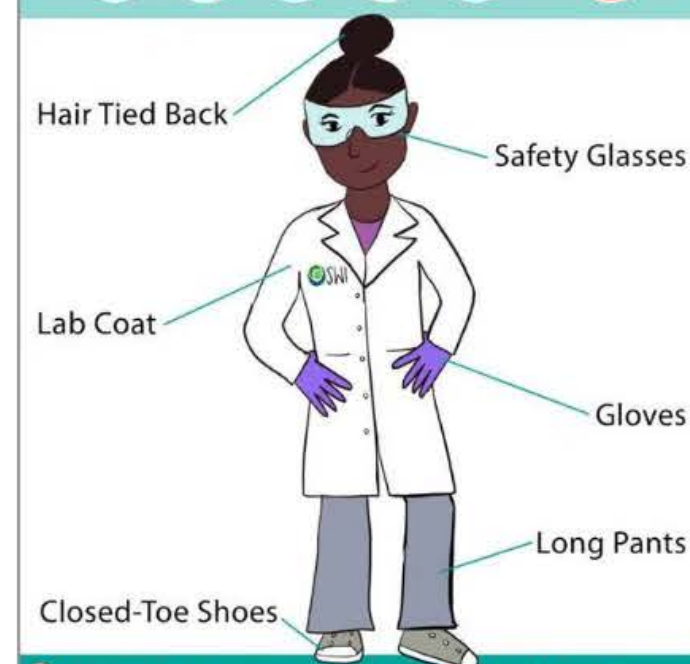
A hydrothermal reactor, also known as a digestion vessel or high-pressure pot, is composed of a stainless steel jacket and a corrosion-resistant liner, usually made of polytetrafluoroethylene (PTFE). It typically has a volume of 25-500mL and can withstand certain temperatures and pressures. Common operating temperatures for hydrothermal bombs are between 180-220°C, with a design pressure limit of 1-3MPa.

Pre-use:

1. Attend training
2. Wear PPE
3. Inspect the exterior (stainless steel jacket and liner) for cracks, pitting, rust, creep, excessive damage, PTFE liner distortion, steel shell rupture, defects, and inadequate cleaning; do not use mismatched autoclave accessories.
4. Ensure pressure and temperature are below product limits. Avoid overloading.
5. Install hydrothermal reactor properly. Don't tighten off the bench. No tilting
6. Do not exceed 2/3 capacity with reaction materials
7. Use ovens with over-temperature protection or alarms for heating. Do not use muffle furnaces with poor low-temperature control for hydrothermal reactor experiments

From Zhaorong Wan and HSE

Minimum PPE to Enter Lab



Additional PPE Appropriate for the Task as Determined by Risk Assessment
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The following systems are strictly prohibited for hydrothermal reactor experiments:

- Containing radioactive materials
- Containing explosive substances
- Containing chemically unstable substances that may decompose or at set temperatures
- Contaminated with used needles
- Containing perchloric acid
- Mixtures of nitric acid and organic compounds

