



Polyimide Tool Fire Safety

Whitepaper by: Gary Hillman
S-Cubed, Inc.
Mars Court
PO Box 365
Montville, NJ 07045-0365
(973) 263-0640
<http://www.s-cubed.com>

Polyimide Tool Fire Safety

Polyimide solvents are flammable, requiring careful management of fire safety risks. The following are considerations and resolutions related to flammable polyimide solvents in actual tool use and manufacture.

Limit fuel availability:

- Use maximum three gallon stainless steel canisters to store fluids.
- Use only two solvents for complete process if at all possible. Solvent develop and rinse can do double duty as ebr and back side rinse
- No more than 5% of the weight of the entire tool should be of flammable material. This can be achieved by using CPVC and/or metallic construction and covers.

Contain and confine fuel (solvent):

- Use stainless steel or braided armored tubing in all pressurized (up stream of dispense valve) solvent lines
- Provide secondary containment for dispense canisters that has sufficient volume to contain all of the solvent in the correct canister.
- Provide secondary containment at process modules
- Provide exhaust to the chemical storage cabinet, the spin cup, the spin module, and the hot plates. All exhausts are monitored to the EMO circuit of the tool.

Prevent combustion (reducing the concentration of Oxygen in the risk ambient obviates the possibility of combustion):

- Nitrogen inert the spin cup exhaust (continuous bleed of Nitrogen to the spin cup).
- Nitrogen inert the hot plate exhaust (CDA to the soft-bake modules for process requirement but inert the downstream exhaust from the hot plate).
- Nitrogen inert the chemical cabinet (continuous bleed of Nitrogen to the chemical cabinet).

If after all of the foregoing it is thought necessary (though FM does not require it) to provide fire suppression, there are two means of doing so. Marine-type fire suppression, which is very inexpensive but effective, or CO₂-type which is very expensive but effective. We at S-Cubed recommend the Marine type fire suppression system.

About Mr. Gary Hillman

Mr. Gary Hillman has enjoyed a long and distinguished career in the engineering and semiconductor industries. A graduate of the Georgia Institute of Technology with a B.S. in Ceramic Engineering, Mr. Hillman began his career with Corning Glass Works in Corning, New York.

Mr. Hillman has made multiple critical contributions while working at a variety of companies during his long and successful career, including receiving a patent for the semiconductor industry's first practical "robotic" wafer handling system while working at Machine Technology, Inc. in Parsippany, New Jersey. Since then, Mr. Hillman has 22 patents to his credit.

Mr. Hillman served as the Chairman of SEMI Standards in 1987 and Chairman of SEMI in 1989.

In 1994, Mr. Hillman and a group of others formed Service Support Specialties, Inc. and Creative Design Corporation. Service Support Specialties, also known as S-Cubed, evolved over time into a leading manufacturer of Photoresist processing tools and associated robotics.

Mr. Hillman has helped to develop significant advances in the engineering and semiconductor industries. He and his dedicated team at S-Cubed work to meet and exceed the needs of their customers.

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