Lesson Learned Statement:

Personnel were performing routine cleaning of a newly-machined part in a wet bench, when a vigorous chemical reaction occurred, causing a fire in the 1-Liter beaker into which chemicals were being poured. The cleaning solution—a 10:1 ratio of 98% sulfuric acid and 30% hydrogen peroxide—is standard in the microelectronic industry and had been used for years at Sandia without incident. The flames were a few inches high and were put out immediately with a fire extinguisher. Personnel were wearing appropriate Personal Protective Equipment (PPE), training was current for all involved, and all procedures were followed. The only injury was a minor chemical burn on the hand of the person who used the fire extinguisher.

Discussion:

The part was supposed to have been manufactured from a chemical-resistant material—the specifications supplied to the outside (of Sandia) manufacturer called for the part to be made of "Teflon, Teflon-like, etc." material. A chemical analysis showed that the part causing the fire was made from Delrin, which is a Nylon-like material that is not chemical resistant.

Analysis:

None provided at this time.

Recommended Actions:

1) The material for any parts ordered must be CLEARLY specified, and

2) written verification of the material used must be obtained from the manufacturer for any parts where having the incorrect material could have a negative impact on safety/programmatic goals.

Originator:

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Validator:

Contact:
Name Of Authorized Derivative Classifier:

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Name Of Reviewing Official:

Priority Descriptor:

Yellow / Caution

Keywords:

chemical reaction, manufacture specifications

References:

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DOE Function / Work Categories:

Maintenance - Instrumentation and Controls

ISM Category:

Develop / Implement Controls
Define Work
Feedback and Improvement

Hazard:

Fire / Smoke / NFPA

End of Lesson!