

## Wafab Uses Wide Range of **SIMONA FM 4910 Materials** for Wet Benches and Chemical Handling Equipment



Top: SIMONA FM 4910 Material being routed; bottom left: Wafab team welding SIMONA FM 4910 materials ; bottom right: Wafab Materials utilizing SIMONA CRP-1 materials

### The project at a glance

**Project**  
Wafab Uses Wide Range of SIMONA FM 4910 Materials for Wet Benches and Chemical Handling Equipment

- Requirements**
- High chemical resistance
  - Attractive appearance
  - Easy processing capability for milling
  - Sustainability
  - Reliability

**Fabricator**  
Wafab Kinetics

- Products used**
- SIMONA CRP-1
  - PP-H
  - PP-C
  - SIMONA 2000 Clear CPVC
  - PVDF
  - PVDF Welding Rod
  - Versarod Welding Rod

Leading fabricator of wet processing stations and semiconductor market equipment Wafab needed a dependable source for FM 4910 rated materials for a broad range of parts on the wet bench. SIMONA AMERICA Industries technical expertise and line of high performance materials provided Wafab solutions they could rely on for compliance, weldability, ease of fabrication and processing, as well as quality and long-lasting appearance.

Wet bench systems are used for semiconductor chemical handling of various applications, electro-chemical processing, acid processing, as well as other chemical wet process applications. Due to the highly flammable and strong chemicals used to operate these systems, these benches are usually constructed using polypropylene, stainless steel, PVDF, PVC-C as well as Teflon®, PFA, and ECTFE.

SIMONA CRP-1 FM 4910 rated sheet is extruded from a proprietary formulation and provides higher impact strength and improved weldability over PVC-C and other semicon grade PVCs. FM 4910 listed, it can withstand typical wet bench cabinetry operating temperatures. Its uniform white color and surface gloss also affords exceptional cleanroom aesthetics compared to other PVC-C materials.

To assemble the bench, proprietary hybrid weld rod, SIMONA Versarod®, is specifically designed for welding SIMONA CRP-1 to SIMONA PVDF. Versarod is known for its solid weld strength and ductility, continuous use temperature nominal 60 to 65 °C (140 to 149 °F), seamless tool construction, and weld-sealed SIMONA PVDF plumbing through SIMONA CRP-1 cabinet walls.



From left to right: SIMONA FM 4910 sheet being welded; Wafab pre-cutting material for fabrication; Close-up of FM 4910 sheet being edge welded

## Operators Benefit from Ease of Fabricating with SIMONA CRP-1

### Initial Situation

To meet the requirements of Factory Mutual Insurance, semiconductor manufacturing companies require that their wet bench equipment systems are made with FM 4910 listed materials. Materials resist wet process acids, bases, solvents and oxidizers, withstand temperatures from 140 to 425°F (60 to 218°C), meets FM 4910 and UL 94 V-0 flame test criteria.

Wafab is a full-service process and mechanical contractor specializing in the design and installation of process, mechanical, plumbing and HVAC systems and supporting global clients in the microelectronic, solar, biopharmaceutical, data center, R&D and other technology-driven markets.

In their typical wet bench application, Wafab uses white, high gloss FM 4910 thermoplastic materials for the outer cabinet, clear thermoplastic for the viewing windows, visibility and chemical resistance, and PP and PVDF inside the cabinet for wet chemicals.

### Task

Wafab's team of fabricators listed the following requirements to SIMONA AMERICA Industries for what materials were needed:

- Compliance to FM 4910
- High quality appearance and gloss finish
- Quality masking that processes well and keeps the material's appearance
- Compatible welding rod that welds efficiently and quickly
- Compatible welding rod with the right materials, size, quality, color
- A clear material for viewing windows that meets FM 4910 and provides visibility

### Solution

SIMONA AMERICA Industries technical team worked with Wafab's team of fabricators to sample a range of SIMONA FM 4910 materials, including CRP-1, PVDF, PP-H, PP-C, Versarod, and SIMONA CPVC 2000.

Welding trials were held to understand how CRP-1 could be welded to PVDF using Versarod.

For the bench and cabinet frame, Wafab selected CRP-1 and PVDF.

For the viewing windows, Wafab also selected SIMONA CPVC 2000.

"Our team of fabricators really like CRP-1. The CRP-1 masking is good and doesn't fly off like others during machining. CRP-1 also machines well. We really like the fact that weld rod and sheet stock work well together. Almost all of our plastic work uses the SIMONA brand of material," said Frank Gavin, Wafab sales manager.

### SIMONA® CRP-1

#### Properties

- High impact strength; Rigidity
- Meets FM 4910 and UL 94 V-0
- Uniform gloss, color consistency
- Resist strong acids & alkalines
- Improves welding productivity
- Welds to PVDF with proprietary JSR hybrid welding rod

#### Fields of application

- Wet process tool cabinetry
- Chemical distribution equipment and valve boxes
- Semicon process enclosures
- Cleanroom cabinetry
- Rinse modules
- Water transfer interfaces
- Dry tool enclosures
- Electrical cabinets

### SIMONA® VERSAROD

#### Properties

- Solid weld strength and ductility
- continuous use temperature nominal 60 to 65°C (140 to 149°F)
- seamless tool construction
- weld sealed SIMONA PVDF plumbing through SIMONA CRP-1 cabinet walls

#### Fields of application

- PVDF fittings and plumbing
- Plenums and pump box walls
- Wet and dry process tool fabrication
- Cabinets, casework, and tables

### Further information

SIMONA AMERICA Industries LLC.  
101 Power Boulevard  
Archbald PA 18403

Phone +1 866 501 2992  
Fax +1 800 522 4857

Kinetic Systems, Inc.  
US Headquarters  
3083 Independence Drive  
Livermore, CA 94551 USA