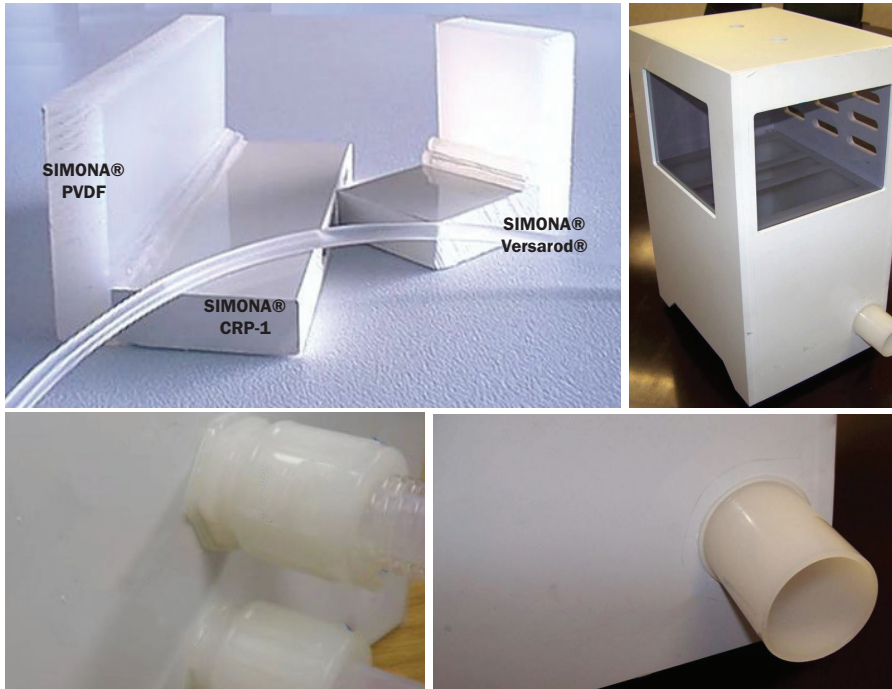


## SIMONA® Versarod Weld Rod

*This hybrid weld rod is designed specifically for welding SIMONA® CRP-1 to SIMONA® PVDF.*



**SIMONA® Versarod® is a proprietary weld rod that allows seamless fabrication in wet/dry process tool construction.** Versarod® allows exhaust plenums to be thermoplastically sealed, welding SIMONA® PVDF to SIMONA® PVDF on the inside of the tool, and SIMONA® PVDF to SIMONA® CRP 1 on the outside of the pipe to cabinet weld. Versarod® also allows PVDF plumbing pass-through to be thermoplastically sealed, removing the need for secondary braces and securements.

SIMONA AMERICA Industries manufactures the widest range of FM 4910 sheet, rod, and welding rod in the industry, featuring SIMONA® CRP-1 material as the leading material for critical applications. All of our compliant materials are designed to satisfy semiconductor process applications without compromise.

### Advantages

- Welds SIMONA® CRP-1 FM 4910 to SIMONA® PVDF or SIMONA® PVDF-C
- Good weld strength and weld ductility
- Continuous use temperature nominal 60 to 65 °C
- Allows seamless tool construction and weld sealed SIMONA PVDF plumbing through SIMONA CRP-1 cabinet walls
- Proven, historical performance with tools still in service since 1999

### Applications

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

### Configurations

- Weld rod
  - 4.0 mm (0.156 in) diameter, clear
  - 4.0 mm (0.156 in) diameter, white

### Weld Parameters

- **Hot Gas Weld Parameters**
  - **Temp:** 380 °C
  - **Flow:** 60-65 LPM
  - **Speed:** 0.25-0.50 in/sec
  - **Pressure:** sufficient pressure should be applied to the tip to produce weld rod 'wake'
- Melt viscosity is relatively low. Versarod will appear soft/limp immediately after welding.
- Versarod will begin to 'set' after 2-3 minutes, reaching full strength after 10 minutes.
- Priming the weld seam is important to achieve maximum adhesion.



# Versarod® Weld Rod Chemical Resistance Guideline

## CRP-1 to PVDF chemical compatibility and service temperature

CHEMISTRY	FORMULA	CONCENTRATION	OBSERVED PERFORMANCE
<b>ACIDS</b>			
Acetic acid	CH <sub>3</sub> COOH	100%	No apparent change
Citric acid	C <sub>3</sub> H <sub>4</sub> OH(COOH) <sub>3</sub>	50%	No apparent change
Hydrochloric acid	HCl	38%	No apparent change
Hydrofluoric acid	HF	49%	No apparent change
Nitric acid	HNO <sub>3</sub>	70%	Swelling, deformation, discolor
Phosphoric acid	H <sub>3</sub> PO <sub>4</sub>	85%	No apparent change
Sulfuric acid	H <sub>2</sub> SO <sub>4</sub>	99%	Swelling, deformation, discolor
<b>SOLUTIONS</b>			
<b>SC1</b>	5: UPW	5:1:1	No apparent change
	1: NH <sub>4</sub> OH		
	1: H <sub>2</sub> O <sub>2</sub>		
<b>SC2</b>	5: UPW	5:1:1	No apparent change
	1: HCl		
	1: H <sub>2</sub> O <sub>2</sub>		
<b>BASES</b>			
Ammonium fluoride	NH <sub>4</sub> F	40%	No apparent change
Ammonium hydroxide	NH <sub>4</sub> OH (NH <sub>3</sub> +H <sub>2</sub> O)	30%	No apparent change
Hydrogen peroxide	H <sub>2</sub> O <sub>2</sub>	30%	No apparent change
Potassium hydroxide	KOH	45%	No apparent change

### Chemical Parameters

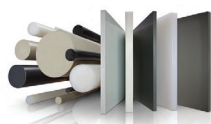
- Versarod® weld rod is not recommended for prolonged continuous contact with strong oxidizing acids, including:
  - 99% sulfuric acid (H<sub>2</sub>SO<sub>4</sub>)
  - 70% nitric acid (HNO<sub>3</sub>)
  - However, Versarod weld rod performs well in intermittent contact with these acids
- Versarod weld rod appears to have good resistance to:
  - 38% hydrochloric acid (HCl)
  - 49% hydrofluoric acid (HF)
  - 85% phosphoric acid (H<sub>3</sub>PO<sub>4</sub>)
  - 30% ammonium hydroxide (NH<sub>4</sub>OH)
  - 45% potassium hydroxide (KOH)
  - 30% hydrogen peroxide (H<sub>2</sub>O<sub>2</sub>)
  - 5:1:1 SC1 and SC2

### Versarod® Maximum Continuous Service Temperature

Versarod® weld rod is serviceable at 65 °C, but may have higher use temperature. Depending on configuration, Versarod is limited to 72 to 75 °C use temperature of CRP-1.

### Notes:

- Direct continuous contact with the above chemicals was assessed at ambient temperature
- Direct continuous contact was not tested at elevated temperatures or at the maximum recommended use temperature. The above service temperatures are based upon knowledge of historical applications.
- Because end use varies, SIMONA AMERICA Industries recommends verification and suitability of individual applications.



SIMONA AMERICA Group offers the widest product range of PVC sheet and rod materials including – FM 4910 rated sheet – chemical resistant materials from PVC, PP and PE to fluoropolymers – material solutions for orthotics and prosthetics – Boltaron® aircraft-rated and general thermoforming sheet – plus proven products for boat building, outdoor furniture and many other industries.

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