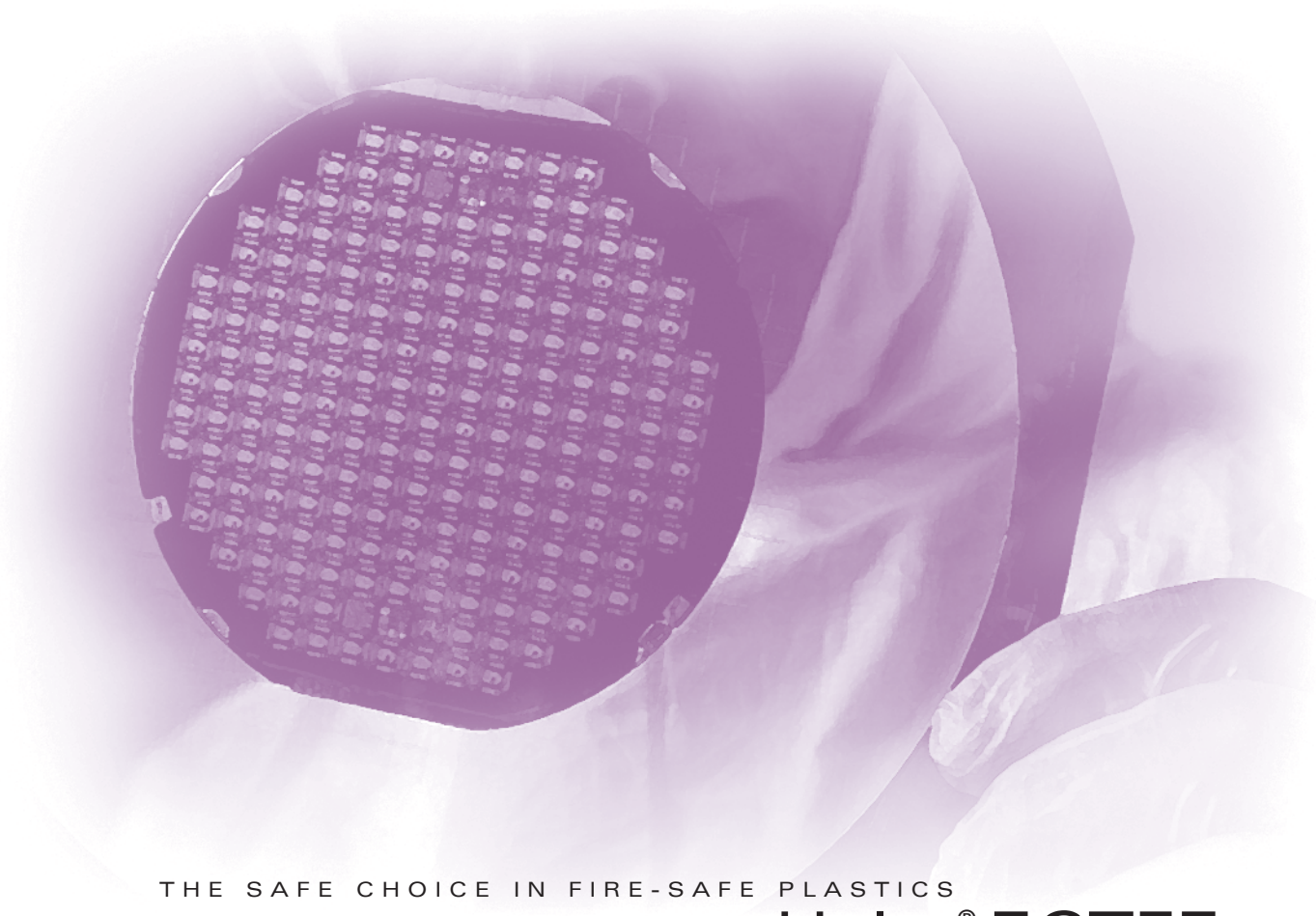


THE SAFE CHOICE IN FIRE-SAFE PLASTICS

Halar® ECTFE

FROM SOLVAY SOLEXIS

Solvay Solexis

SOLVAY

Meeting the needs of the most demanding clean room equipment applications

Clean Room process equipment must be constructed of high purity, chemically-inert and fire-safe materials

Fire Safety

Halar ECTFE meets the demands for fire-safe, non-fire propagating plastics. It is approved and listed to the FM Global 4910 Clean Room Fire Safety Protocol. Halar has been tested and meets the UL 2360 Fire-Safe Clean Room Materials Standard.

In fire-safe tools, Halar eliminates the need for fixed fore suppression with its associated installation and maintenance costs.

Purity & Chemical Compatibility

Halar ECTFE is used as a lining and coating for ultrapure water systems in the semiconductor industry. FM Global 4922 complete exhaust duct systems use Halar ECTFE coated stainless steel.

Halar has complete chemical compatibility handling the full pH range. It is ideal for alkaline chemistries.

Strength

A strong yet ductile material, Halar welded corner seams will flatten before breaking.

When chemical compatibility and fire safety are crucial, your first choice is Halar ECTFE

1998 - Sematech Fire-Safe Plastics Test Project
Following the Sematech Fire-Safe Plastics Test Project (Technical Report #98123623A-Eng), Halar ECTFE was evaluated against Corzan® CPVC, PVDF flex copolymer, and PVDF homopolymer.

Halar ECTFE outperformed the field in three of the most critical areas

- Outgassing
- Leaching in ultrapure water
- Extractables in process chemistry

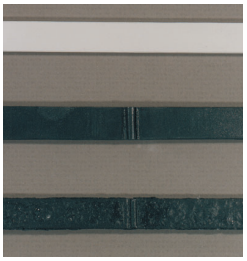
1999 - Solvay Solexis Post Chemical Exposure Weld Strength Report
Following the conditions used in the Sematech Test Project referenced above, plaques of welded plastic sheets were exposed and evaluated for:

- Retention of weld strength
- Swelling
- Weight loss
- Color and surface changes

Halar outperformed all of the competing plastics in all areas. Each material was immersed in aggressive chemicals commonly found in semiconductor processing plants for 30 and 90 days at 190ºF, including piranha (98:2-99% sulfuric acid + 30% H_20_2), 30% ammonium hydroxide, SC1, 20% TMAH, and 30% H_20_2. The results are documented here.

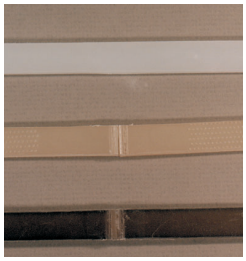
Piranha

Halar ECTFE



Corzan CPVC

PVDF Copolymer



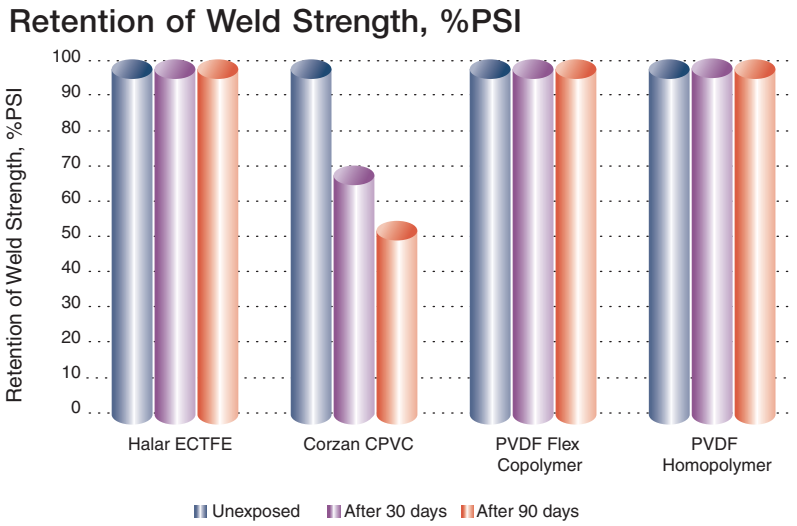
PVDF Homopolymer

Sample Legend:

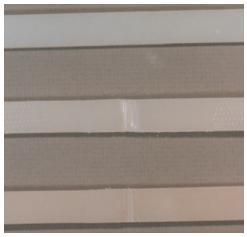
UNEXPOSED

30-DAY EXPOSURE

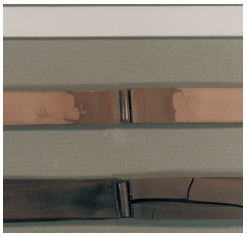
90-DAY EXPOSURE



30% Ammonium Hydroxide



Halar ECTFE



Corzan CPVC

PVDF Copolymer

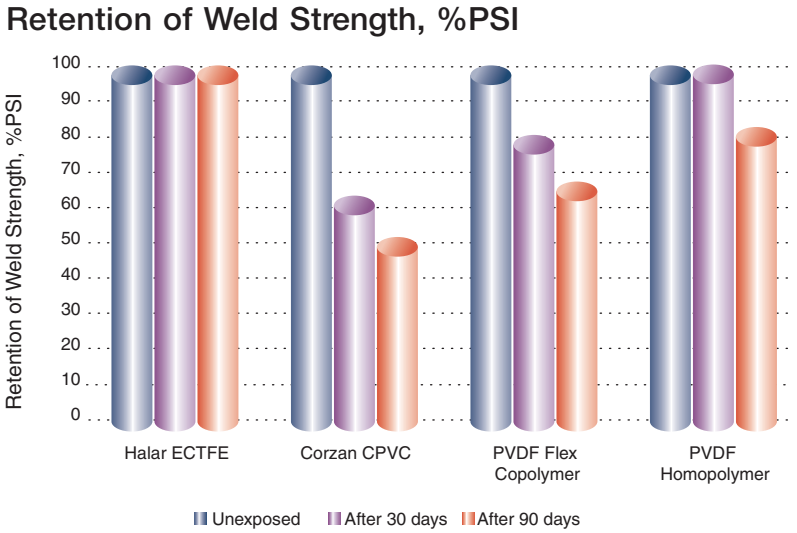
PVDF Homopolymer

Sample Legend:

UNEXPOSED

30-DAY EXPOSURE

90-DAY EXPOSURE



SCI

Halar ECTFE

Corzan CPVC

PVDF Copolymer

PVDF Homopolymer

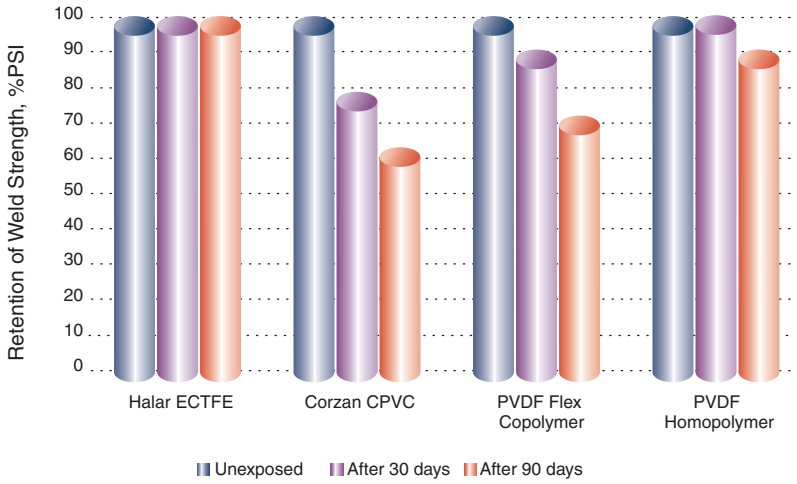
Sample Legend:

UNEXPOSED

30-DAY EXPOSURE

90-DAY EXPOSURE

Retention of Weld Strength, %PSI

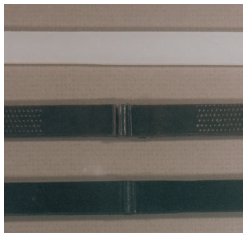


20% TMAH

Halar ECTFE

Corzan CPVC

PVDF Copolymer



PVDF Homopolymer

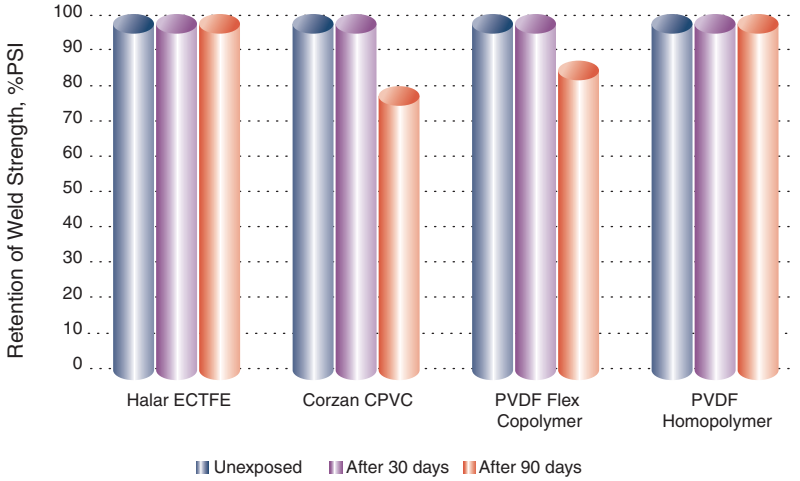
Sample Legend:

UNEXPOSED

30-DAY EXPOSURE

90-DAY EXPOSURE

Retention of Weld Strength, %PSI



30% H_2O_2

Halar ECTFE

Corzan CPVC

PVDF Copolymer

PVDF Homopolymer

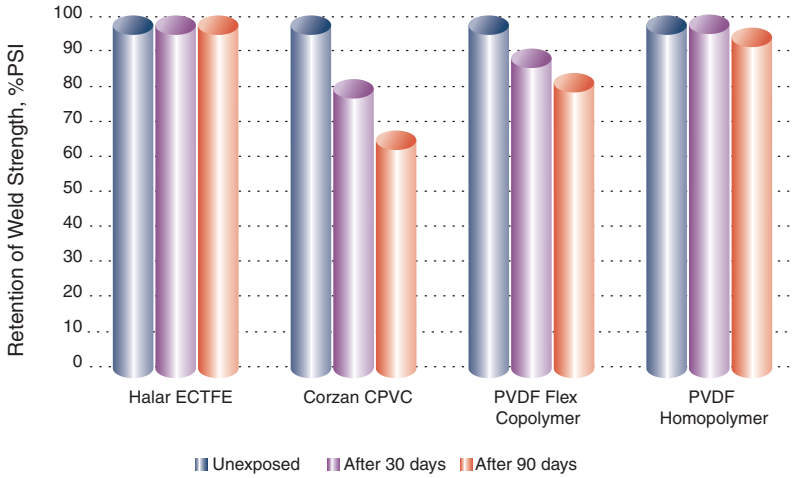
Sample Legend:

UNEXPOSED

30-DAY EXPOSURE

90-DAY EXPOSURE

Retention of Weld Strength, %PSI



30% H_2O_2

Corner Weld Strength Evaluation

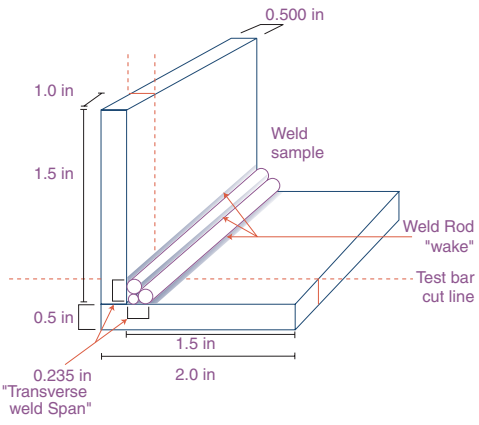
The Test:

Samples:	1" wide (1.5" x 1.5" right angle bars)
Test Device:	Tinius-Olsen 1000 Tensile Strain and Compression Tester
Test Parameter:	1" per minute compression
Units of Measure:	lbs. per linear inch
Weld type:	Triple bead - one bead 1/8", two beads 5/32"
Halar Sheet Thickness:	0.480"

The Results:

	lbs. per linear 1" of weld
Halar ECTFE	952
PVDF	827
PP	700
FRPP(CP7D)	570
FRPP (94VO)	549

Corner Weld Strength Sample Preparation Diagram

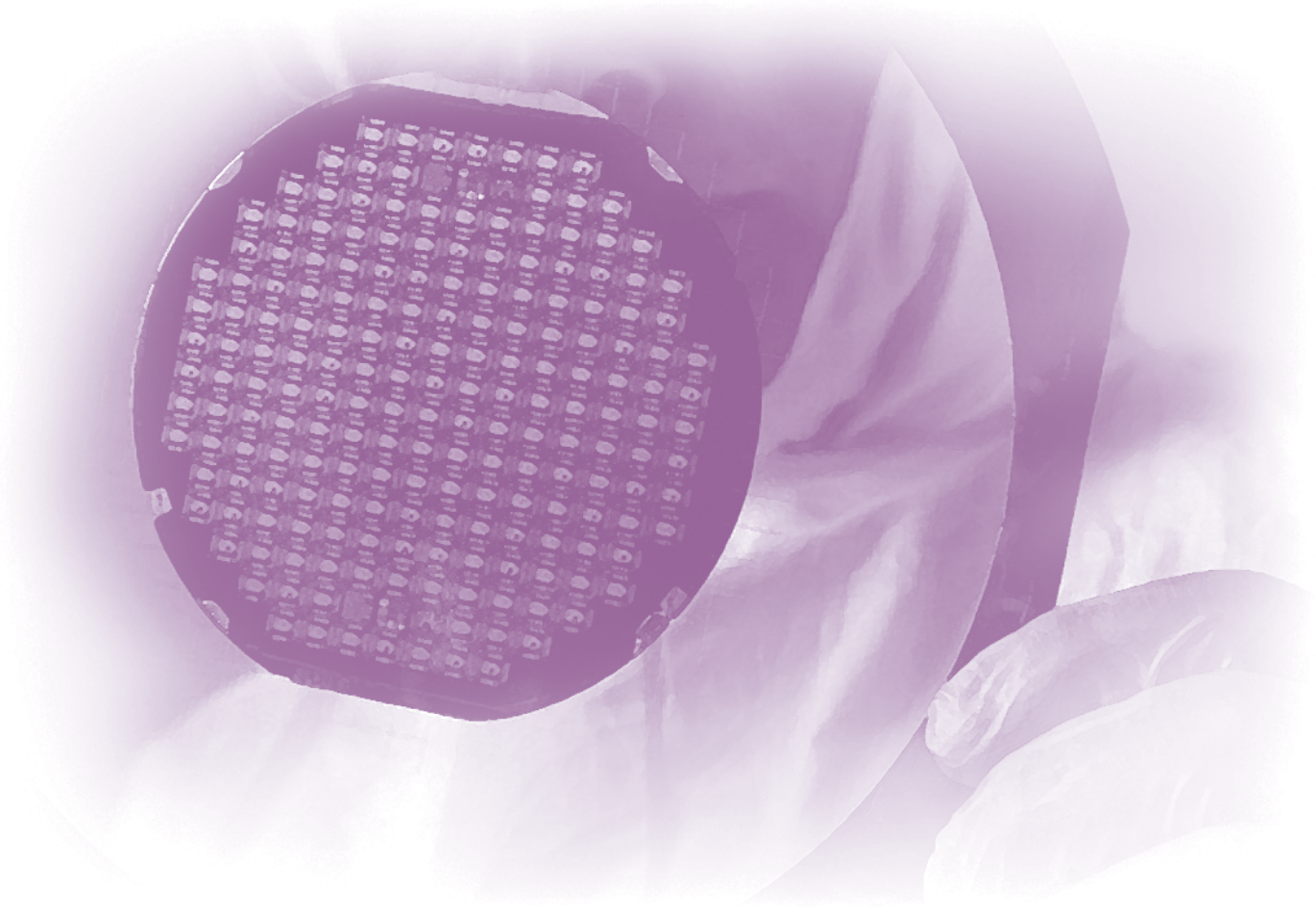


Conclusion:

Only the Halar specimens did not break, either at the weld or in the adjacent sheet. All of the Halar samples compressed flat onto the test platens. This strength/ductility property is unique to Halar among the rigid plastics Materials of Construction (MOC) tested. Full report details are available.

Turn to Solvay Solexis for high performance fluorinated materials of all kinds.

Depend on Solvay Solexis for a wide range of specialty materials, including fluoropolymers, fluorinated fluids, fluoroelastomers, and etchant gases. Solvay Solexis offers materials for high-purity gasketing, seals and bearings, nonreactive tubing and linings, O-rings, seals, and diaphragms, fluids for vacuum pump lubrication, reliability testing and heat transfer, and the world's largest selection of specialty formulated polymers. Only Solvay Solexis offers so many different fluorinated products for your quality-critical applications. For more information about Solvay Solexis fluorinated products, visit www.solvaysolexis.com.



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