EVAL™ Chemical Resistance

Emilio Morales

The modern chemical industry encompasses many diverse markets including agriculture, mining, oil and gas, home care, health & beauty care, as well as other non-foodstuff goods. Products in these segments can have demanding requirements on packaging to make use of existing shipping networks and ultimately to be made available to consumers. Production in these industries can also create unique containment and storage opportunities, such as piping to transport products and safety geomembranes to protect the environment in long-term chemical storage. EVAL™ resins and films have unique properties that make them excel in such applications.

EVAL™ resins and films offer superior resistance to most chemicals and solvents. Applications using EVAL™ to prevent product weight loss, to provide aroma / odor barrier, to protect products against residual solvents and external contamination, and to be integrated into protective clothing are all becoming increasingly popular.

The following table shows the permeation rate of some common solvents used in the chemical industry through EVAL™ and other polymers. If you need additional information regarding the chemical barrier and solvent resistance properties of EVAL™ resins, please contact us at https://www.kuraray.us.com/.

Resistance and barrier against solvents and other chemicals

Resistance of EVAL™ to various organic solvents

Solvent	Solubility Parameter (SP) Value $\sqrt{(cal/m^3)}$	Weight Increase (wt%)					
		20°C, 1 month		20°C, 6 months		20°C, 12 months	
		F101B	*PA6*	*F101B*	*PA6*	*F101B*	*PA6*
Xylene	8.80	0.00	0.00	0.00	0.80	0.00	0.70
Ethylacetate	9.10	0.00	0.00	0.00	0.20	0.00	0.30
Benzene	9.20	0.00	0.00	0.00	0.80	0.04	1.00
Acetone	9.90	0.00	0.00	0.00	0.60	0.00	1.20
Pyridine	10.70	0.50	0.00	0.30	1.20	0.50	1.20
Ethanol	12.70	1.50	5.20	2.00	12.00	2.30	11.40
Salad Oil	-	0.00	0.04	-	-	0.10	0.20

Measurement conditions: swelling method, SP value of EVAL™ F=19.0; the SP value of PA6 = 12.7.
For best results, the difference between the material and solvent SP values should be as large as possible

EVAL™ barrier against solvent permeation

Film Type	Chloroform	Xylene	Methyl Ethyl Ketone	Kerosene
EVAL F	0.20	<0.04	0.09	<0.04
EVAL E	0.21	<0.06	0.13	<0.06
OPA	16.90	1.19	3.38	0.48
OPP	3740	350	12	53
LDPE	6900	813	185	190

Unit: g • 20μm/m^2 • day • atm

KAI Corporate Headquarters
2625 Bay Area Blvd. Ste 600
Houston, TX 77058

Kuraray.us.com

KAI EVAL Plant
11500 Bay Area Blvd.
Pasadena, TX 77507