

Elastomer Compatibility

THF, GBL, NMP and BDO

Introduction

The data provided here addresses the ability of the elastomer/seal material to resist the contacting fluid. Many factors can contribute to seal performance in actual field conditions. For instance, some elastomer compounds shrink instead of swell in certain fluids. This phenomenon, coupled with high compression set, can result in seal leakage following thermal or pressure cycling. Seals behave differently in dynamic applications than in static conditions. Whenever in doubt, test for suitability before using.

Procedure

Elastomer samples (2" x 2") were totally immersed in the indicated solvent for six weeks at 120°F. At the end of the six weeks, residual solvent was removed from the sample with a paper towel. The final weight and hardness of each sample were then measured. The final color of the solvent was also recorded.

Physical Properties

	NMP	GBL	THF	BDO
Freezing Point	-25°C	-44°C	-108°C	19-20°C
Boiling Point	202-205°C	204°C	66°C	230°C
Flash Point	93°C(199°F)	98°C(209°F)	-17°C(1°F)	155°C(311°F)
Specific Gravity @20°/20°C	1.028	1.13	0.888	1.015
Molecular Weight (g/mole)	99.13	86.1	72.11	90.12

THF Elastomer Compatibility

Elastomer	% Hardness Change	% Weight Change	% Area Change	Color Change	Percent Compatibility
Teflon	0	0	0	No	100
Kalrez	0	1	0	No	100
Butyl	2	1	0	Yes – lt. yellow	99
Nylon	0	3	0	No	99
Mylar	0	6	0	No	98
Hypalon	3	8	0	Yes – black	96
Viton	8	6	10	Yes – lt. yellow	92
BUNA	13	9	2	Yes – yellow	92
Neoprene	8	9	10	Yes – brown	91
Natural Rubber	5	24	2	Yes – black	90
EPDM	12	12	10	Yes – yellow	89
Silicone	12	3	21	No	88
Santoprene	39	55	37	No	56
PVC	100	100	100	No	0

The Average % change in hardness, weight, and area were taken after 6 weeks at 120°F. Note: The PVC sample dissolved in THF.

GBL Elastomer Compatibility

Elastomer	% Hardness Change	% Weight Change	% Area Change	Color Change	Percent Compatibility
Teflon	0	0	0	No	100
EPDM	0	1	0	Yes – very lt. yellow	100
Kalrez	0	0	0	No	100
Silicone	0	1	1	Yes – lt. yellow	99
Nylon	0	4	0	Yes – sl. pink	99
Natural Rubber	3	2	2	Yes – black	98
Mylar	0	8	0	No	97
Hypalon	8	8	5	Yes – orange	93
Neoprene	15	11	0	Yes – very dark yellow	91
Butyl	5	18	7	Yes – very lt. yellow	90
BUNA	17	11	5	Yes – lt. orange	89
Viton	15	25	21	Yes – dk. yellow	80
PVC	100	100	100	No	0

The Average % change in hardness, weight, and area were taken after 6 weeks at 120°F.
 Note: The PVC sample dissolved in GBL.

**NMP
Elastomer
Compatibility**

Elastomer	% Hardness Change	% Weight Change	% Area Change	Color Change	Percent Compatibility
Teflon	0	0	0	No	100
Silicone	0	2	0	Yes – yellow	100
Nylon	0	3	0	Yes – brown	99
Kalrez	0	3	0	No	99
EPDM	5	2	0	Yes – yellow	98
Natural Rubber	3	5	2	Yes – black	97
Mylar	0	10	0	No	97
SANTOPRENE	1	10	1	No	96
Butyl	3	21	12	Yes – yellow	88
Gatron	5	14	25	No	85
BUNA	53	13	5	Yes – brown	76
Neoprene	43	31	21	Yes – yellow	68
Hypalon	43	17	38	Yes – brown	67
Viton	34	60	56	Yes – yellow	50
PVC	100	100	100	No	0

The Average % change in hardness, weight, and area were taken after 6 weeks at 120°F.
 Note: The PVC sample dissolved in NMP.

**BDO
Elastomer
Compatibility**

Elastomer	% Weight Change	% Area Change	Color Change
Natural Rubber	3	4	Yes – black
Neoprene	2	1	Yes – lt. yellow
Butyl	0	1	No
Silicone	0	0	No
EPDM	0	0	No
Viton	0	0	No
PVC	9	10	Yes – milky
Mylar	0	0	No
Hypalon	0	0	Yes – lt. yellow
BUNA	2	0	Yes – brown
Teflon	0	0	No
Nylon	0	0	No
Kalrez	0	0	No

The average % change in weight, and area were taken after 6 weeks at 120°F.

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Users should review the applicable Safety Data Sheet before handling the product.

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