Technical Data

# 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.

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### 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.

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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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