

# Rubber compatibility

For Rubber compatibility different greases and rubber types were analyzed by placing the rubber sample covered with grease in the oven at 80°C for 7 days.

Per definition Compatible is below + 8 % / - 4 % for elastomers weight change.

|                 | NBR           |                | EPDM          |                | FKM           |                | Si-Rubber     |                |
|-----------------|---------------|----------------|---------------|----------------|---------------|----------------|---------------|----------------|
|                 | weight change | Shore A change | weight change | Shore A change | weight change | Shore A change | weight change | Shore A change |
| Ester Grease    | 26,41%        | -36            | 31,58%        | -25            | -0,28%        | 3              | 1,86%         | 0              |
| PFPE Grease 1   | 0,05%         | -3             | 0,07%         | 0              | 0,04%         | 3              | 0,67%         | 3              |
| Silicone grease | -0,15%        | -1             | -8,10%        | 13             | -0,52%        | 2              | 8,01%         | -4             |
| PFPE Grease 2   | -0,07%        | -4             | -0,01%        | 0              | -0,04%        | 1              | 0,27%         | 5              |

## Silicone Rubber Tests with different lubricants

|                                                | Grease<br>Base oil | Grease<br>thickener | Change in<br>weight | Shore A<br>hardness | Tensile<br>strength (MPa) |
|------------------------------------------------|--------------------|---------------------|---------------------|---------------------|---------------------------|
| Grease A                                       | Fluorosilicone     | PTFE                | -0.12%              | 52                  | 8.15                      |
| Grease B                                       | Fluorosilicone     | Special<br>polyurea | -0.16%              | 51                  | 8.96                      |
| Grease C                                       | Silicone           | Lithium             | 9.24%               | 46                  | 7.31                      |
| Grease D                                       | Silicone           | Silica              | 10.28%              | 49                  | 6.73                      |
|                                                |                    |                     |                     |                     |                           |
| Original rubber, 7d@80°C                       |                    |                     | -0.16%              | 53                  | 8.02                      |
| Original rubber (without<br>thermal treatment) |                    |                     |                     | 57                  | 8.95                      |

**Silicone rubber: MVQ 60 M210 black (Kokai)**

**Test parameters: 7 days, 80°C**