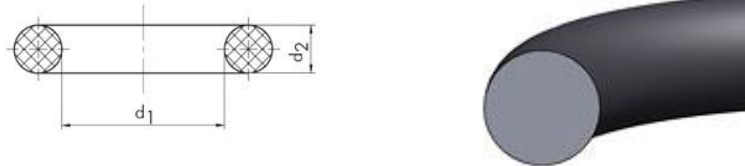


## De O-ring

O-ringen zijn gesloten kringvormige afdichtingen, waarvan de werking berust op de O-ringen vervorming van de doorsnede. O-ringen worden eindeloos geproduceerd van elastomeer materialen, zoals NBR, FKM (Viton), EPDM enz., door vulkanisering in matrijzen. De eenvoudige vorm en de betrouwbaarheid van de afdichtingfunctie van O-ringen is geniaal. O-ringen zijn daarom de meest gebruikte afdichting. De economische fabricage en de ongecompliceerde montage maken de O-ringen onovertroffen. De beschrijving van de O-ringen bestaat uit de afmetingen van de binnendiameter en de snoerdikte in mm met de materiaalaanduiding en de hardheid ervan.



### Werkwijze

De afdichtingfunctie van de O-ringen ontstaat in ingebouwde toestand allereerst door samenpersing tussen twee respectievelijk meerdere elementen. In werking zorgt de druk van het medium voor de vervorming van de O-ringen en hiermee de afdichtingfunctie. Neemt de druk af tot “nul” dan gaat de vervorming ongeveer terug naar de ingebouwde toestand.

### Toepassingsmogelijkheden

Men maakt onderscheid tussen statische afdichtingen bij statische, of dynamische afdichtingen bij bewegende machineonderdelen.

### Toleranties

De basistoleranties van de O-ringen zijn volgens de DIN-norm 3771 en de DIN-norm ISO 3601

Voor tussenmaten wordt de eerstvolgende grotere tolerantie gebruikt. De toleranties met betrekking tot de afmetingen aan de geproduceerde O-ringen zijn afhankelijk van de matrijs, rekening houdend met de krimp van het verwerkte elastomeer. Indien men matrijzen toepast voor compounds waarvoor deze matrijzen eigenlijk niet bestemd zijn moet O-ringen rekening gehouden worden met afwijkende toleranties. De toepassing van matrijzen voor hiervoor niet bedoelde rubbersoorten is in vele gevallen mogelijk, veroorzaakt echter een afwijking van de toleranties ten aanzien van bovenstaande tabel. Het is echter mogelijk de genoemde toleranties te verkleinen door modificatie van het elastomeer en door bijzondere productieprocessen.

### Afmeting en oppervlakte

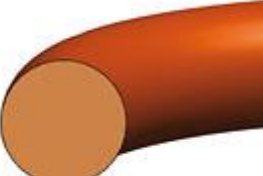
De meting van de binnendiameter ( $d_1$ ) wordt bij voorkeur uitgevoerd met behulp van een meetkegel. Bij O-ringen met een binnendiameter groter dan 250 mm is een circometer een toereikend meetmiddel. De kleinere O-Ringen (minder dan 1 mm binnendiameter) worden gemeten onder een microscoop. De O-ring dikte wordt met een schuifmaat gemeten. Afwijkingen ten aanzien van vorm en oppervlakte. Dichtomatik streeft door overleg met klanten en producenten actief naar een perfecte productkwaliteit. De DIN-norm 3771 probeert een balans te vinden tussen een economische fabricage en acceptabele soorten fouten. In deel 4 beschrijft de DIN-norm 3771 soorten fouten en onderscheidt toelaatbare afwijkingen ten aanzien van vorm en oppervlakte volgens de kenmerken N en S. Het verschil van beide soorten bestaat uit de grootte van de toelaatbare afwijkingen. De kwaliteitsnormen van Dichtomatik voor standaard O-ringen zijn gelijk aan de DIN-norm 3771- 4 kenmerk N. Ook afwijkende technische specificaties zijn mogelijk.

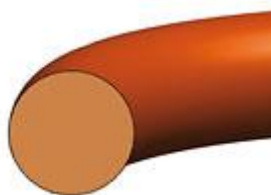
## Compounds

O-ringen zijn in de vier onderstaande standaard compounds verkrijgbaar.

Hierbij gaat het om elastomeren. Als basismateriaal voor elastomeren dient rubber, dat als natuurrubber kan worden gewonnen, tegenwoordig echter merendeels als synthetisch rubber wordt geproduceerd in de chemische industrie.

Het onderscheid tussen de diverse elastomeren wordt bepaald door de toegepaste basispolymeren. De verkorte benamingen van de elastomeren volgens de DIN-norm ISO 1629 en ASTM D 1418 zijn onderstaand weergegeven. Het kant-en-klare compound ontstaat door het mengen van het basispolymeer met vulmiddelen, weekmakers, hulpmiddelen bij de verwerking, vulkaniseringsmiddelen, versnellers en overige stoffen. Dit proces maakt het mogelijk, de gewenste materiaaleigenschappen te bereiken en daardoor standaard compounds met een brede toepasbaarheid evenals speciale compounds voor speciaal gebruik aan te bieden. Zijn stabiele vorm krijgt de O-ring uiteindelijk door het vulkaniseringsproces, waarbij het plastische rubbermengsel overgaat in een gummi-elastische toestand, waarbij de O-ring zijn definitieve mechanische eigenschappen (hardheid, trekvastheid, reksterkte, drukvervormingsrest) krijgt.

|                                                                                     |              |                            |          |   |
|-------------------------------------------------------------------------------------|--------------|----------------------------|----------|---|
|   | Omschrijving | Bestelcode                 | °C       | . |
|                                                                                     | OR EPDM 70   | OR EPDM 70 Zwavel<br>ZWART | -45/+130 | . |
|  | Omschrijving | Bestelcode                 | °C       | . |
|                                                                                     | OR EPDM 70   | OR EPDM 70 Perox.<br>ZWART | -50/+150 | . |
|  | Omschrijving | Bestelcode                 | °C       | . |
|                                                                                     | OR FKM 75    | OR FKM 75 GROEN            | -15/+200 | . |
|  | Omschrijving | Bestelcode                 | °C       | . |
|                                                                                     | OR FKM 75    | OR FKM 75 BRUIN            | -15/+200 | . |
|  | Omschrijving | Bestelcode                 | °C       | . |
|                                                                                     | OR FKM 80    | OR FKM 80 GROEN            | -15/+200 | . |



| Omschrijving | Bestelcode      | °C       |   |
|--------------|-----------------|----------|---|
| OR FKM 80    | OR FKM 80 BRUIN | -15/+200 | . |



| Omschrijving | Bestelcode      | °C       | . |
|--------------|-----------------|----------|---|
| OR FKM 80    | OR FKM 80 ZWART | -15/+200 | . |



| Omschrijving | Bestelcode      | °C       | . |
|--------------|-----------------|----------|---|
| OR FKM 90    | OR FKM 90 GROEN | -15/+200 | . |



| Omschrijving | Bestelcode      | °C       | . |
|--------------|-----------------|----------|---|
| OR FKM 90    | OR FKM 90 ZWART | -15/+200 | . |



| Omschrijving | Bestelcode       | °C        | . |
|--------------|------------------|-----------|---|
| OR HNBR 70   | OR HNBR 70 ZWART | -30 /+150 | . |



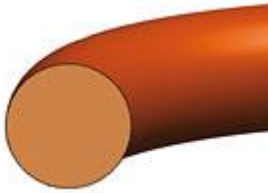
| Omschrijving | Bestelcode      | °C       | . |
|--------------|-----------------|----------|---|
| OR NBR 70    | OR NBR 70 ZWART | -30/+100 | . |



| Omschrijving | Bestelcode      | °C       | . |
|--------------|-----------------|----------|---|
| OR NBR 80    | OR NBR 80 ZWART | -30/+100 | . |



| Omschrijving | Bestelcode      | °C       | . |
|--------------|-----------------|----------|---|
| OR NBR 90    | OR NBR 90 ZWART | -30/+100 | . |

|                                                                                   |                  |                  |          |   |
|-----------------------------------------------------------------------------------|------------------|------------------|----------|---|
|  | Omschrijving     | Bestelcode       | °C       | . |
|                                                                                   | OR VMQ 70        | OR VMQ 70 ROOD   | -55/+200 | . |
|  | Omschrijving     | Bestelcode       | °C       | . |
|                                                                                   | OR ENCAP FEP/FKM | OR ENCAP FEP/FKM | -55/+200 | . |
|  | Omschrijving     | Bestelcode       | °C       | . |
|                                                                                   | OR ENCAP FEP/VMQ | OR ENCAP FEP/VMQ | -55/+200 | . |

## Resistentie data\*

|                                 | EPDM | NBR | CR  | HNBR | VMQ | FVMQ | FKM | ACM | FFKM | PTFE |
|---------------------------------|------|-----|-----|------|-----|------|-----|-----|------|------|
| acetic acid 10% / 50°C          | C/U  | U   | C/U | -    | U   | -    | U   | -   | A    | A    |
| acetic acid 25% / 50°C          | U    | U   | U   | -    | U   | -    | U   | -   | -    | A    |
| acetic acid 30%                 | A    | B   | A   | -    | A   | B    | B   | U   | -    | -    |
| acetic acid 75% / 50°C          | U    | U   | U   | -    | U   | -    | U   | -   | -    | A    |
| acetic acid, steam              | -    | B   | A   | -    | -   | -    | -   | -   | -    | B    |
| acetic anhydride                | B    | C   | A   | -    | C   | U    | U   | U   | A    | A    |
| acetone                         | A    | U   | B   | -    | B   | U    | U   | U   | A    | A    |
| acetylene                       | A    | A   | B   | -    | B   | A    | A   | A   | A    | A    |
| acrylonitrile                   | U    | U   | C   | -    | U   | U    | U   | -   | A    | A    |
| ammonia gas, cold               | A    | A   | A   | -    | A   | A    | U   | -   | A    | A    |
| ammonia gas, hot                | B    | C   | B   | -    | A   | U    | U   | -   | A    | A    |
| ammonia waterless               | A    | A   | A   | -    | C   | U    | U   | -   | A    | A    |
| ammonia aqueous                 | A    | B   | A   | -    | B   | B    | C   | -   | -    | A    |
| ammonium chloride               | A    | A   | A   | -    | A   | -    | A   | -   | -    | A    |
| ammonium fluoride               | A    | A   | A   | -    | A   | A    | A   | -   | -    | A    |
| ammonium sulfate                | A    | A   | A   | -    | A   | A    | A   | U   | -    | A    |
| ammonium sulfide, aqueous       | A    | A   | A   | -    | B   | -    | A   | -   | -    | A    |
| animal grease                   | U    | A   | B   | -    | B   | A    | A   | A   | -    | A    |
| asphalt                         | U    | B   | C   | -    | U   | B    | A   | B   | -    | A    |
| ASTM fuel no. 1, i-Oct.         | -    | A   | U   | -    | U   | -    | A   | -   | -    | A    |
| ASTM fuel no. 2, i-Oct./Toluol  | -    | C   | U   | -    | U   | -    | A   | -   | -    | A    |
| ASTM fuel no. 3, Toluol /i-Oct. | -    | U   | U   | U    | U   | -    | B   | -   | -    | A    |
| ASTM oil no. 1                  | U    | A   | B   | A    | B   | A    | A   | A   | A    | A    |
| ASTM oil no. 1, 150°C           | -    | -   | -   | B    | -   | -    | -   | -   | -    | A    |
| ASTM oil no. 2                  | U    | A   | C   | -    | B   | B    | A   | -   | A    | A    |
| ASTM oil no. 3                  | U    | B   | U   | -    | C   | U    | B   | -   | A    | A    |
| ASTM oil no. 3, 150°C           | -    | -   | -   | C    | -   | -    | -   | -   | -    | A    |
| beer                            | A    | A   | A   | -    | A   | A    | A   | A   | -    | A    |
| benzol                          | U    | U   | U   | -    | U   | A    | A   | U   | A    | A    |
| benzyl alcohol                  | B    | U   | A   | -    | B   | B    | A   | -   | -    | A    |
| brackish water                  | A    | A   | A   | -    | -   | -    | -   | -   | -    | -    |
| brake fluid (glycol ether)      | A/B  | U   | B/C | -    | A   | A    | -   | U   | -    | A    |
| butadiene                       | C    | U   | B   | -    | B   | B    | B   | A   | -    | A    |
| butane                          | U    | A   | A   | -    | C   | A    | A   | A   | -    | A    |
| butanol                         | B    | A   | A   | -    | B   | A    | A   | U   | A    | A    |
| butyl alcohol                   | A/B  | U   | B/C | -    | -   | -    | -   | -   | -    | A    |
| butyric                         | A    | A   | B   | -    | A   | A    | A   | A   | -    | A    |
| butyric acid, aqueous           | -    | B   | U   | -    | -   | -    | B   | -   | B    | A    |
| calcium chloride                | A    | A   | A   | -    | A   | A    | A   | B   | -    | A    |
| calcium hydroxide               | A    | A   | A   | -    | A   | A    | A   | U   | -    | A    |
| calcium nitrate                 | A    | A   | A   | -    | B   | A    | A   | A   | -    | A    |
| camphor                         | C    | A   | B   | -    | U   | U    | B   | U   | -    | A    |
| camphor oil                     | U    | A   | U   | -    | -   | -    | B/C | -   | -    | A    |
| carbon dioxide, dry             | A    | A   | A   | -    | A   | A    | A   | A   | -    | A    |
| carbon dioxide, wet             | A    | A   | A   | -    | A   | A    | A   | A   | -    | A    |
| carbon monoxide                 | A    | A   | A   | -    | A   | B    | A   | -   | -    | A    |
| carbonic acid gas               | A    | A   | A   | -    | A   | A    | A   | A   | -    | A    |
| castor oil                      | B    | A   | A   | -    | A   | A    | A   | A   | -    | A    |
| caustic potash                  | A    | B   | A   | -    | C   | C    | B   | U   | A    | A    |
| caustic potash 50%              | A    | A   | A   | -    | C   | C    | A   | C   | -    | A    |
| caustic soda                    | A    | B   | A   | -    | C   | C    | B   | A   | A    | A    |
| caustic soda 10%                | A    | C   | B   | A    | U   | U    | B   | U   | A    | A    |
| caustic soda 25%                | A    | U   | B   | A    | U   | U    | C   | U   | A    | A    |
| caustic soda 50%                | A    | U   | B   | -    | U   | U    | C   | U   | A    | A    |
| chloric acid                    | A    | C   | B   | -    | U   | U    | A   | U   | -    | A    |
| chlorinated hydrocarbon         | -    | C   | U   | -    | U   | -    | -   | -   | -    | A    |
| chlorine, dry                   | B    | U   | C   | -    | C   | A    | A   | -   | A    | A    |
| chlorine, wet                   | C    | U   | U   | -    | C   | B    | A   | U   | A    | A    |
| citric acid                     | A    | A   | A   | -    | A   | A    | A   | -   | -    | A    |
| citric oil                      | -    | U   | B   | -    | -   | -    | -   | -   | -    | A    |
| coconut oil                     | C    | A   | B/C | -    | A   | A    | A   | A   | -    | A    |
| coconut oil                     | U    | A   | B/C | -    | A   | A    | A   | A   | -    | A    |
| diesel oil, minerally           | U    | A   | B   | -    | U   | A    | A   | A   | -    | A    |
| essential oils                  | C    | C   | C   | -    | A   | B    | B/C | -   | -    | A    |
| ethane                          | U    | A   | B   | -    | U   | A    | A   | A   | -    | A    |
| ethanol 20°C                    | A    | B   | B   | -    | B   | -    | B   | -   | A    | A    |
| ethanol 50°C                    | A    | C   | B   | -    | B/C | -    | B/C | -   | A    | A    |
| ethene                          | -    | A   | -   | -    | -   | A    | A   | -   | -    | -    |
| ether                           | C    | U   | C   | -    | U   | C    | U   | C   | -    | A    |
| ethyl acetate                   | B/C  | U   | U   | U    | U   | -    | U   | -   | A    | A    |
| ethyl acetate, vinyl acetate    | B    | U   | -   | -    | -   | -    | U   | -   | A    | A    |
| ethyl acrylate                  | B    | C   | -   | -    | B   | U    | U   | U   | -    | A    |
| ethylacetate                    | B    | U   | C   | -    | B   | U    | U   | -   | -    | A    |

|                                                  |     |     |     |   |     |     |     |     |   |   |
|--------------------------------------------------|-----|-----|-----|---|-----|-----|-----|-----|---|---|
| ethylene glycol                                  | A   | A   | A   | A | A   | -   | A   | -   | A | A |
| FAM-test-fuel DIN 51 604-A                       | U   | A   | B/C | - | U   | A   | A   | B/C | - | A |
| FAM-test-fuel DIN 51 604-C                       | C   | U   | U   | - | U   | B/C | A/C | U   | - | A |
| fertiliser, liquid                               | A   | A   | B/C | - | A   | A   | A   | -   | - | A |
| formaldehyde                                     | A   | B   | A   | - | -   | -   | A   | -   | A | A |
| formic acid                                      | A   | B   | A   | - | B   | C   | C   | -   | A | A |
| fuel                                             | U   | U   | B   | - | U   | A   | A   | A   | - | A |
| fuel benzol mixture 50 / 50                      | U   | U   | U   | - | U   | B   | B   | U   | A | A |
| fuel benzol mixture 60 / 40                      | U   | U   | U   | - | U   | B   | B   | U   | A | A |
| fuel benzol mixture 70 / 30                      | U   | B/C | U   | - | U   | A   | B   | B   | A | A |
| fuel benzol mixture 80 / 20                      | U   | B/C | U   | - | U   | A   | B   | B   | A | A |
| fuel oil                                         | U   | A   | B   | - | B   | B   | A   | B   | - | A |
| fuel-benzol-ethanol 50 / 30 / 20                 | U   | U   | U   | - | U   | B/C | B/C | U   | - | A |
| glycerin                                         | A   | A   | A   | - | A   | A   | A   | U   | A | A |
| glycol                                           | A   | A   | A   | - | A   | A   | A   | U   | - | A |
| herbal grease                                    | U   | A   | B   | - | B   | A   | A   | A   | - | A |
| hydraulic fluid DIN 51 524 80°C                  | U   | A/B | B/C | - | B/C | A/B | A/B | A/B | - | A |
| hydraulic fluid DIN 51524 group H                | U   | A/B | B/C | - | B/C | A/B | A/B | A/B | - | A |
| hydraulic fluid DIN 51524 group H-L              | U   | A/B | B/C | - | B/C | A/B | A/B | A/B | - | A |
| hydraulic fluid DIN 51524 group H-LP             | U   | A/B | B/C | - | B/C | A/B | A/B | A/B | - | A |
| hydraulic fluid, oil-in-water emulsion HFAE 55°C | U   | A/B | B/C | - | -   | -   | A/B | -   | - | A |
| hydraulic fluid, phosphoric acid ester HFD 80°C  | A/U | U   | U   | - | U   | U   | A/U | U   | - | A |
| hydraulic fluid, polyglycol-water HFC 60°C       | A/B | A/B | B/C | - | A/B | A/B | A/B | -   | - | A |
| hydraulic fluid, water-oil-emulsion HFB 60°C     | U   | A/B | B/C | - | -   | -   | A/B | -   | - | A |
| hydrocyanic acid                                 | A   | B   | B   | - | B   | B   | A   | U   | - | A |
| hydrofluoric acid, cold <65%                     | C   | C   | B   | - | -   | -   | A   |     | A | A |
| hydrofluoric acid, cold >65%                     | B/C | B/C | B/C | - | -   | -   | A   | -   | A | A |
| hydrofluoric acid, hot <65%                      | C   | U   | C   | - | -   | -   | B/C | -   | - | A |
| hydrofluoric acid, hot >65%                      | C   | U   | C   | - | -   | -   | B/C | -   | A | A |
| hydrogen peroxide, concentrated                  | A   | C   | B   | - | U   | U   | A   | U   | - | A |
| hydrogen peroxide, diluted                       | A   | C   | A   | - | U   | U   | A   | U   | - | A |
| hydrogen sulfide                                 | A   | C   | C   | - | -   | -   | C   | -   | A | A |
| hydrogen, cold                                   | A   | A   | A   | - | C   | C   | A   | B   | A | A |
| hydrogen, hot                                    | -   | A   | A   | - | A   | -   | -   | -   | - | A |
| ink                                              | A   | A   | A   | - | A   | A   | B   | A   | - | A |
| isobutyl alcohol                                 | A   | B   | A   | - | A   | B   | A   | U   | A | A |
| isopropanol                                      | A   | B   | A   | - | B   | B   | A   | U   | A | A |
| isopropyl alcohol                                | A   | B   | A   | - | A   | B   | A   | C   | - | A |
| kerosene                                         | U   | C   | U   | - | U   | U   | B   | C   | - | A |
| lactic acid, cold                                | A   | B   | B   | - | -   | -   | A   | -   | A | A |
| lactic acid, hot                                 | A   | B   | B   | - | -   | -   | A   | -   | A | A |
| leach                                            | A   | C   | B   | - | B   | A   | B   | U   | - | - |
| lime milk                                        | A   | A   | B   | - | B   | A   | A   | U   | - | A |
| linseed oil                                      | B   | A   | B   | - | C   | A   | A   | A   | - | A |
| lubricant oil, mineral oil based                 | U   | A   | B   | - | U   | A   | A   | A   | - | A |
| machine oil, mineral                             | U   | A   | B   | - | B   | B   | A   | B   | - | A |
| magnesium chloride                               | A   | A   | A   | - | A   | A   | A   | U   | - | A |
| malic acid                                       | U   | A   | B   | - | B   | A   | A   | U   | - | A |
| malic acid                                       | A   | A   | A   | - | A   | -   | A   | -   | - | A |
| margarine                                        | C   | A   | B   | - | A   | A   | A   | A   | - | A |
| mercury                                          | A   | A   | A   | - | A   | A   | A   | A   | A | A |
| methane                                          | U   | A   | B   | A | U   | B   | A   | A   | - | A |
| methanol                                         | A   | A   | A   | C | A   | A   | C   | U   | A | A |
| methyl alcohol ketone                            | B   | U   | U   | U | U   | U   | U   | U   | A | A |
| milk                                             | A   | A   | A   | - | A   | A   | A   | U   | - | A |
| mineral grease                                   | U   | A   | B   | - | B   | A   | A   | A   | - | A |
| mineral oil                                      | C   | A   | B   | - | A   | A   | A   | B   | - | A |
| mineral water                                    | A   | A   | A   | - | A   | A   | A   | A   | - | A |
| molasses                                         | A   | A   | A   | - | A   | -   | A   | -   | - | A |
| muriatic acid, concentrated, cold                | A   | B   | B   | - | B   | B   | A   | U   | - | A |
| muriatic acid, concentrated, hot                 | C   | U   | U   | - | U   | U   | A   | U   | A | A |
| muriatic acid, diluted B67                       | A   | B   | B   | - | A   | U   | A   | U   | A | A |
| mustard                                          | -   | A   | A   | - | -   | -   | -   | -   | - | A |
| naphtha                                          | U   | C   | C   | - | U   | B   | A   | B   | A | A |
| naphthenic acid                                  | U   | B   | -   | - | -   | A   | A   | -   | - | - |
| natural gasoline                                 | U   | A   | A   | - | A   | C   | A   | B   | - | A |
| natural gasoline, liquefied                      | U   | A   | B   | - | C   | B   | A   | C   | - | A |
| nitric acid, concentrated                        | C   | U   | C   | - | U   | U   | A   | U   | A | A |
| nitric acid, diluted                             | B   | U   | A   | - | B   | B   | A   | U   | - | A |
| nitric acid, red                                 | U   | U   | U   | - | U   | U   | C   | U   | B | A |
| nitrogen                                         | A   | A   | A   | - | A   | A   | A   | A   | - | A |
| non-flammable hydraulic fluids HFA               | U   | A/B | B/C | - | -   | -   | A/B | -   | - | A |
| non-flammable hydraulic fluids HFB               | U   | A/B | B/C | - | -   | -   | A/B | -   | - | A |
| non-flammable hydraulic fluids HFC               | A/B | A/B | B/C | - | A/B | A/B | A/B | -   | - | A |
| non-flammable hydraulic fluids HFD-R             | B   | U   | U   | - | B   | -   | A   | -   | - | A |
| non-flammable hydraulic fluids HFD-S             | U   | U   | U   | - | B   | -   | A   | -   | - | A |

|                                      |     |     |     |   |     |     |     |     |   |   |
|--------------------------------------|-----|-----|-----|---|-----|-----|-----|-----|---|---|
| non-flammable hydraulic fluids HFD-T | U   | U   | U   | - | B   | -   | A   | -   | - | A |
| octyl alcohol                        | A   | B   | A   | - | B   | B   | A   | U   | - | A |
| olive oil                            | C   | A   | A   | - | B   | B   | A   | A   | - | A |
| oxygen, cold                         | A   | B   | B   | - | A   | A   | A   | A   | - | A |
| oxygen, hot                          | U   | U   | U   | - | B   | U   | B   | -   | - | - |
| ozone                                | A   | U   | B   | - | A   | U   | A   | B   | - | A |
| paraffin                             | U   | A/B | A/B | - | -   | -   | A/B | -   | - | A |
| paraffin oil                         | B   | A   | B   | - | A   | A   | A   | A   | - | A |
| peanut oil                           | C   | A   | B   | - | A   | A   | A   | A   | - | A |
| petroleum                            | U   | C   | U   | - | U   | U   | B   | C   | - | A |
| phosphoric acid cold, <45 %          | A   | B   | A   | - | B   | -   | A   | -   | A | A |
| phosphoric acid hot, concentrated    | A   | U   | B/C | - | U   | -   | A   | -   | A | A |
| phosphoric acid, concentrated        | A   | A   | A   | - | B   | -   | A   | -   | A | A |
| potassium chloride                   | A   | A   | A   | - | A   | -   | A   | -   | - | A |
| potassium hydroxide                  | A   | B   | A   | - | C   | -   | B/C | -   | A | A |
| propane, liquid                      | B   | A   | A   | - | B   | A   | A   | A   | - | A |
| propyl alcohol                       | A   | A   | A   | - | A   | A   | A   | U   | - | A |
| propylene                            | U   | U   | U   | - | -   | B   | A   | -   | - | - |
| propylene glycol                     | A   | B   | A   | - | -   | -   | A   | -   | A | A |
| rape oil                             | A   | B   | B   | - | U   | A   | A   | B   | - | A |
| salicylic acid                       | A   | A   | A   | - | A   | A   | A   | A   | - | A |
| salt water                           | A   | A   | A   | - | -   | A   | A   | -   | - | A |
| seawater                             | A   | C   | A   | - | A   | A   | C   | B   | - | A |
| silicone grease                      | A   | A   | A   | - | C   | A   | A   | A   | - | A |
| silicone oil                         | A   | A   | A   | - | C   | A   | A   | A   | - | A |
| soapsuds                             | A   | A   | A   | - | A   | A   | A   | U   | - | A |
| soda                                 | A   | A   | A   | - | A   | A   | A   | A   | - | A |
| sodium chloride                      | A   | A   | A   | - | A   | A   | A   | -   | - | A |
| sodium chloride, aqueous             | A   | U   | U   | - | -   | -   | A   | -   | - | A |
| sodium hydroxide                     | A   | B   | A   | - | B   | B   | B   | A   | A | A |
| sodium nitrite                       | A   | C   | A   | - | U   | U   | A   | U   | - | A |
| sodium peroxide                      | A   | B   | B   | - | U   | A   | A   | U   | - | - |
| sodium sulfide                       | A   | A   | A   | - | -   | -   | A   | U   | - | A |
| spirit of turpentine                 | U   | B   | U   | - | U   | U   | A   | -   | - | A |
| spirits                              | A   | A   | A   | - | A   | A   | A   | U   | - | A |
| starch                               | A   | A   | A   | - | A   | A   | A   | -   | - | A |
| steam                                | A/B | U   | U   | - | U   | U   | A/C | -   | - | A |
| stearic acid                         | B   | B   | B   | - | A   | A   | A   | A   | - | A |
| storage battery acid                 | A   | B   | A   | - | U   | U   | A   | U   | - | A |
| styrene                              | U   | U   | U   | - | U   | U   | C   | C   | - | A |
| suds                                 | A   | A   | A   | - | A   | A   | A   | U   | - | A |
| sugar beet juice                     | A   | A   | A   | - | A   | -   | A   | -   | - | A |
| sulfur                               | A   | U   | A   | - | A   | A   | A   | U   | - | A |
| sulfuric acid 10%                    | A   | B   | B   | - | A   | -   | B   | -   | A | A |
| sulfuric acid 50%                    | A   | U   | C   | - | U   | -   | B   | -   | A | A |
| sulfuric acid 90%                    | U   | U   | U   | - | U   | -   | B   | -   | A | A |
| sulfuric acid, concentrated          | B   | U   | U   | - | U   | U   | A   | U   | - | A |
| sulfuric acid, fuming                | U   | U   | U   | - | U   | U   | A   | U   | A | A |
| sulfurous acid                       | B   | B   | B   | - | U   | -   | A   | U   | - | A |
| tar                                  | U   | B   | C   | - | B   | A   | A   | U   | - | A |
| tartaric acid                        | B   | A   | B   | - | A   | A   | A   | -   | - | A |
| toluol                               | U   | U   | U   | - | U   | B   | A   | U   | A | A |
| transformer oil                      | U   | A   | B   | - | B   | A   | A   | B   | - | A |
| transmission fluid type A            | -   | A/B | B/C | - | B/C | A/B | A/B | A/B | - | A |
| transmission lubricant               | U   | A   | B   | - | B   | A   | A   | A   | - | A |
| turpentine substitute                | C   | A   | B   | - | -   | -   | A   | A   | - | A |
| urea                                 | A   | A   | A   | - | A   | A   | A   | A   | - | A |
| vaseline                             | B   | A   | A   | - | B   | -   | A   | -   | - | A |
| vegetable oil                        | A   | A   | B   | - | A   | A   | A   | A   | - | A |
| vinegar                              | A   | B   | A   | - | A   | -   | A   | U   | - | A |
| vinyl acetate                        | A   | A   | A   | - | -   | -   | A   | -   | A | A |
| vinyl chloride                       | B   | U   | U   | - | -   | -   | A   | -   | - | A |
| water                                | A   | A   | A   | - | A   | A   | A   | U   | - | A |
| water vapor <130°C                   | A   | U   | C   | - | U   | U   | U   | U   | - | - |
| water vapor >130°C                   | B   | U   | U   | - | U   | U   | U   | U   | - | - |
| white oil                            | U   | A   | B   | - | U   | A   | A   | A   | - | A |
| white spirit                         | U   | B   | U   | - | U   | B   | A   | A   | - | A |
| xylol                                | U   | U   | U   | - | U   | A   | A   | -   | A | A |
| yeast                                | A   | A   | A   | - | A   | A   | A   | A   | - | A |

A = excellent, no or just a small attack

B = good, weak to moderate attack

C = low, moderate to strong attack

U = inadequate

\* The ratings given in the resistance list were ascertained using standard test specimens in accordance to standardised testing procedure under laboratory conditions or are based on the experiences of many years. Comparisons with results taken from practice with finished products, e.g. O-rings, lead to deviating results due to differences in geometry, general conditions and production processes. However, these deviations are not necessarily inconsistent with the ratings in the resistance list. It is the responsibility of the user to check whether the product is suitable for the intended purpose prior to using it.

The ratings given here are not generally binding. In case of doubt, a resistance test should be carried out. The ratings of elastomer resistance to foodstuffs refer solely to the resistance of the elastomer and not to food compatibility or food approvals.