

# Material

## 70 NBR 215544

black

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### Physical properties

|                                                                                   | nominal range                                   | typical values |                   |
|-----------------------------------------------------------------------------------|-------------------------------------------------|----------------|-------------------|
| <b>Density</b><br>DIN EN ISO 1183-1, 23 °C                                        | 1.23 ±0.02                                      | 1.23           | g/cm <sup>3</sup> |
| <b>Hardness</b><br>DIN ISO 7619-1, Shore A, 23 °C                                 | 70 ±5                                           | 71             | Shore             |
| <b>Modulus</b><br>100 %, DIN 53504, S2, 23 °C                                     | ---                                             | 5.7            | MPa               |
| <b>Tensile strength</b><br>DIN 53504, S2, 23 °C                                   | > 10                                            | 19.9           | MPa               |
| <b>Elongation at break</b><br>DIN 53504, S2, 23 °C                                | > 200                                           | 254            | %                 |
| <b>Compression set</b><br>DIN ISO 815, Slab B, 24 h, 70 °C, 25 %                  | < 40                                            | 23             | %                 |
| <b>Ozone Resistance</b><br>ISO 1431-1, 20 % Dehnung, 40 °C, 72 h, 500 ppb, Part A | ---                                             | 0              | Rating            |
| <b>Abrasion</b><br>10, DIN 53516                                                  | ---                                             | 83             | mm <sup>3</sup>   |
| <b>Low Temperature</b><br>DIN 53765, DSC                                          | ---                                             | -32            | °C                |
| <b>Low temperature test</b><br>DIN ISO 2921, TR10                                 | ---                                             | -29            | °C                |
| <b>Temperature range</b>                                                          | static: -40°C to 70°C<br>dynamic: -30°C to 70°C |                |                   |

### Declarations of conformity

This overview is purely informative and does not constitute a declaration of conformity (DoC). Please refer to the actual declaration of conformity (DoC) including the conditions and its validity period.

|                   | Country | Part | Remark                                                          | Expires |
|-------------------|---------|------|-----------------------------------------------------------------|---------|
| Info ROHS and ELV |         |      | EU 2000/53 (ELV) including EU 2011/65 and EU2015/863 (ROHS III) | see DoC |

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### Change after aging

in Air: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

Shore

MPa

%

#### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 72         | 74          | 2          |
| 15.6       | 16.2        | 4 %        |
| 231        | 219         | -5 %       |

### Change after aging

in Fuchs Lubritech Gleitmo 585 K: 72h/100°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

volume change (DIN 53521)

Shore

MPa

%

%

#### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 70         | 79          | 9          |
| 20.9       | 20.7        | -1 %       |
| 332        | 284         | -14 %      |
|            | -5.3        |            |

### Change after aging

in Fuchs Lubritech Stabyl EOS E2: 72h/100°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

volume change (DIN 53521)

Shore

MPa

%

%

#### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 70         | 69          | -1         |
| 20.9       | 20.1        | -4 %       |
| 332        | 266         | -20 %      |
|            | 1.9         |            |

### Change after aging

in Klüberplex BEM 41-141: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Modulus (100 %, DIN 53504, S2, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

volume change (DIN 53521)

Shore

MPa

MPa

%

%

#### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 71         | 75          | 4          |
| 4.9        | 5.8         | 18 %       |
| 19.5       | 19.6        | 1 %        |
| 310        | 264         | -15 %      |
|            | -4.6        |            |

### Change after aging

in Liebherr Hydraulic 37: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A)

Modulus (100 %, DIN 53504)

Tensile strength (DIN 53504)

Elongation at break (DIN 53504)

volume change (DIN ISO 1817)

Shore

MPa

MPa

%

%

#### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 76         | 77          | 1          |
| 7.1        | 7.2         | 1 %        |
| 20.4       | 20.3        | -0 %       |
| 251        | 234         | -7 %       |
|            | -4          |            |

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### Change after aging

#### in Mobil Mobilux EP 2: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A)

Modulus (100 %, DIN 53504)

Tensile strength (DIN 53504)

Elongation at break (DIN 53504)

volume change (DIN 53521)

Shore

MPa

MPa

%

%

### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 72         | 79          | 7          |
| 5.7        | 7.5         | 32 %       |
| 21.6       | 20.9        | -3 %       |
| 306        | 258         | -16 %      |
|            | -4.6        |            |

### Change after aging

#### in Mobil Mobilux EP 2: 72h/100°C

Hardness (DIN ISO 7619-1, Shore A)

Modulus (100 %, DIN 53504)

Tensile strength (DIN 53504)

Elongation at break (DIN 53504)

volume change (DIN 53521)

Shore

MPa

MPa

%

%

### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 72         | 79          | 7          |
| 5.7        | 8.6         | 51 %       |
| 21.6       | 21.2        | -2 %       |
| 306        | 227         | -26 %      |
|            | -4.1        |            |

### Change after aging

#### in Mobil SHC 460: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

volume change (DIN ISO 1817)

Shore

MPa

%

%

### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 72         | 74          | 2          |
| 15.6       | 13.7        | -12 %      |
| 231        | 178         | -23 %      |
|            | -1.9        |            |

### Change after aging

#### in Mobil SHC Grease 460 WT: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Modulus (100 %, DIN 53504, S2, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

volume change (DIN 53521)

Shore

MPa

MPa

%

%

### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 71         | 76          | 5          |
| 4.9        | 6.5         |            |
| 19.5       | 20.8        | 7 %        |
| 310        | 270         | -13 %      |
|            | -3.9        |            |

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### Change after aging

in Mobil SHC Grease 460 WT: 72h/100°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

volume change (DIN 53521)

Shore

MPa

%

%

#### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 70         | 78          | 8          |
| 20.9       | 21.9        | 5 %        |
| 332        | 276         | -17 %      |
|            | -3.2        |            |

### Change after aging

in Mobil SHC Grease 681 WT: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Modulus (100 %, DIN 53504, S2, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

volume change (DIN ISO 1817)

Shore

MPa

MPa

%

%

#### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 77         | 77          | 0          |
| 7.3        | 7           | -4 %       |
| 20.5       | 22.1        | 8 %        |
| 247        | 268         | 9 %        |
|            | -3.6        |            |

### Change after aging

in Mobil SHC Grease 681 WT: 72h/100°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Modulus (100 %, DIN 53504, S2, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

volume change (DIN ISO 1817)

Shore

MPa

MPa

%

%

#### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 77         | 77          | 0          |
| 7.3        | 6.7         | -8 %       |
| 20.5       | 21.9        | 7 %        |
| 247        | 289         | 17 %       |
|            | -3.7        |            |

### Change after aging

in Molykote Longterm 2: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)

Tensile strength (DIN 53504, S2, 23 °C)

Elongation at break (DIN 53504, S2, 23 °C)

volume change (DIN ISO 1817)

Shore

MPa

%

%

#### Typ. values

| Base value | After aging | difference |
|------------|-------------|------------|
| 72         | 77          | 5          |
| 15.6       | 15.4        | -1 %       |
| 231        | 197         | -15 %      |
|            | -6.8        |            |

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### Change after aging in Optimol Optipit: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)  
Modulus (100 %, DIN 53504, S2, 23 °C)  
Tensile strength (DIN 53504, S2, 23 °C)  
Elongation at break (DIN 53504, S2, 23 °C)  
weight change  
volume change (DIN 53521)

|       |      |      |      |
|-------|------|------|------|
| Shore | 72   | 72   | 0    |
| MPa   | 5.3  | 5.8  | 9 %  |
| MPa   | 21.5 | 21   | -2 % |
| %     | 316  | 286  | -9 % |
| %     |      | -1.2 |      |
| %     |      | -1.4 |      |

#### Typ. values

Base value After aging difference

### Change after aging in Shell EP 2: 168h/70°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)  
Tensile strength (DIN 53504, S2, 23 °C)  
Elongation at break (DIN 53504, S2, 23 °C)  
volume change (DIN ISO 1817)

|       |      |      |      |
|-------|------|------|------|
| Shore | 72   | 77   | 5    |
| MPa   | 15.6 | 16.6 | 6 %  |
| %     | 231  | 212  | -8 % |
| %     |      | -4.4 |      |

#### Typ. values

Base value After aging difference

### Change after aging in Shell Rhodina Grease BBZ (80-faches Volumen): 168h/70°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)  
Modulus (100 %, DIN 53504, S2, 23 °C)  
Tensile strength (DIN 53504, S2, 23 °C)  
Elongation at break (DIN 53504, S2, 23 °C)  
volume change (DIN 53521)

|       |      |      |      |
|-------|------|------|------|
| Shore | 73   | 74   | 1    |
| MPa   | 6.5  | 6.9  | 6 %  |
| MPa   | 19.2 | 19.6 | 2 %  |
| %     | 248  | 231  | -7 % |
| %     |      | -2.1 |      |

#### Typ. values

Base value After aging difference

### Change after aging in Shell Rhodina Grease BBZ (80-faches Volumen): 168h/100°C

Hardness (DIN ISO 7619-1, Shore A, 23 °C)  
Modulus (100 %, DIN 53504, S2, 23 °C)  
Tensile strength (DIN 53504, S2, 23 °C)  
Elongation at break (DIN 53504, S2, 23 °C)  
volume change (DIN 53521)

|       |      |      |     |
|-------|------|------|-----|
| Shore | 73   | 73   | 0   |
| MPa   | 6.5  | 6.6  | 2 % |
| MPa   | 19.2 | 20.6 | 7 % |
| %     | 248  | 248  | 0 % |
| %     |      | -1.7 |     |

#### Typ. values

Base value After aging difference

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Tested after ASTM D 2000: M 2 BG 714 EF11 EF21 EO14 EO34 Z1 Z2

|                                                     |         | nominal<br>range | typical<br>values |
|-----------------------------------------------------|---------|------------------|-------------------|
| Hardness                                            | Shore   | 70 ±5            | 73                |
| Tensile strength                                    | MPa     | min. 14          | 20.2              |
| Elongation at break                                 | %       | min. 250         | 259               |
| <b>A14 Change after aging in Air 70h/100°C</b>      |         |                  |                   |
| Hardness                                            | Shore A | ---              | 3                 |
| Tensile strength                                    | %       | ---              | 11                |
| Elongation at break                                 | %       | ---              | -14               |
| <b>EF11 Change after aging in Fuel A 70h/23°C</b>   |         |                  |                   |
| Hardness                                            | Shore A | ±10              | -1                |
| Tensile strength                                    | %       | -25              | -23               |
| Elongation at break                                 | %       | -25              | -21               |
| Volume                                              | %       | -5 to 10         | 2.2               |
| <b>EF21 Change after aging in Fuel B 70h/23°C</b>   |         |                  |                   |
| Hardness                                            | Shore A | 0 to -30         | -12               |
| Tensile strength                                    | %       | -60              | -47               |
| Elongation at break                                 | %       | -60              | -45               |
| Volume                                              | %       | 0 to 40          | 27.2              |
| <b>EO14 Change after aging in IRM 901 70h/100°C</b> |         |                  |                   |
| Hardness                                            | Shore A | -5 to 10         | 5                 |
| Tensile strength                                    | %       | -25              | 2                 |
| Elongation at break                                 | %       | -45              | -15               |
| Volume                                              | %       | -10 to 5         | -8.3              |
| <b>EO34 Change after aging in IRM 903 70h/100°C</b> |         |                  |                   |
| Hardness                                            | Shore A | -10 to 5         | -4                |
| Tensile strength                                    | %       | -45              | -10               |

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|                | Elongation at break            | %             | -45     | -19  |       |
|                | Volume                         | %             | 0 to 25 | 5.4  |       |
| Z1             | Density DIN EN ISO 1183, 23 °C | g/cm³         | ---     | 1.23 |       |
| Z2             | Rebound resilience DIN 53512   | %             | ---     | 30   |       |

The given values are based on a limited number of tests on standard test pieces (2mm sheets) produced in the laboratory. The data from finished parts can deviate from above values depending on the manufacturing process and the component geometry.

Die vorstehenden Angaben stellen unsere gegenwärtigen Erfahrungswerte dar. Es obliegt dem Besteller, vor Verwendung des Produktes selbst zu prüfen, ob es sich, auch im Hinblick auf mögliche anwendungswirksame Einflüsse, für den von ihm vorgesehenen Verwendungszweck eignet. Alle Fragen einer Gewährleistung und Haftung für dieses Produkt regeln sich nach unseren Allgemeinen Verkaufsbedingungen, sofern nicht gesetzliche Vorschriften etwas anderes vorsehen.

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