

## Overview of materials for Thermoplastic Elastomer, Melt-Processible Rubber

Category : Polymer , Thermoplastic , Elastomer, TPE , Thermoplastic Elastomer, Melt-Processible Rubber

### Material Notes:

This property data is a summary of similar materials in the MatWeb database for the category "Thermoplastic Elastomer, Melt-Processible Rubber". Each property range of values reported is minimum and maximum values of appropriate MatWeb entries. The comments report the average value, and number of data points used to calculate the average. The values are not necessarily typical of any specific grade, especially less common values and those that can be most affected by additives or processing methods.

Order this product through the following link:

[http://www.lookpolymers.com/polymer\\_Overview-of-materials-for-Thermoplastic-Elastomer-Melt-Processible-Rubber.php](http://www.lookpolymers.com/polymer_Overview-of-materials-for-Thermoplastic-Elastomer-Melt-Processible-Rubber.php)

| Physical Properties               | Metric                                     | English  | Comments   |
|-----------------------------------|--|--|--|
| Density                           | 0.180 - 1.99 g/cc                          | 0.00650 - 0.0717 lb/in <sup>3</sup>            | Average value: 1.03 g/cc Grade Count:671                         |
| Water Absorption                  | 0.300 - 0.700 %                            | 0.300 - 0.700 %                                | Average value: 0.488 % Grade Count:8                             |
| Oxygen Transmission               | 53.0 - 64.0 cc-mm/m <sup>2</sup> -24hr-atm | 135 - 163 cc-mil/100 in <sup>2</sup> -24hr-atm | Average value: 58.0 cc-mm/m <sup>2</sup> -24hr-atm Grade Count:6 |
| Viscosity                         | 3250 - 720000 cP                           | 3250 - 720000 cP                               | Average value: 148000 cP Grade Count:5                           |
|                                   | 17.0 - 5800 cP                             | 17.0 - 5800 cP                                 | Average value: 1.53e+6 cP Grade Count:21                         |
|                                   | @Temperature 30.0 - 30.0 °C                | @Temperature 86.0 - 86.0 °F                    |  |
|                                   | 4000 - 5.00e+7 cP                          | 4000 - 5.00e+7 cP                              | Average value: 1.53e+6 cP Grade Count:111                        |
|                                   | @Temperature 190 - 210 °C                  | @Temperature 374 - 410 °F                      |  |
|                                   | 4000 - 5.00e+7 cP                          | 4000 - 5.00e+7 cP                              | Average value: 1.53e+6 cP Grade Count:111                        |
|                                   | @Shear Rate 0.100 - 11000 1/s              | @Shear Rate 0.100 - 11000 1/s                  |  |
| Mooney Viscosity                  | 5.80 - 48.0                                | 5.80 - 48.0                                    | Average value: 21.0 Grade Count:20                               |
| Linear Mold Shrinkage             | 0.000400 - 0.0420 cm/cm                    | 0.000400 - 0.0420 in/in                        | Average value: 0.0148 cm/cm Grade Count:262                      |
| Linear Mold Shrinkage, Transverse | 0.00300 - 0.0392 cm/cm                     | 0.00300 - 0.0392 in/in                         | Average value: 0.0133 cm/cm Grade Count:37                       |
| Melt Flow                         | 0.0800 - 150 g/10 min                      | 0.0800 - 150 g/10 min                          | Average value: 11.3 g/10 min Grade Count:448                     |

| Mechanical Properties | Metric      | English     | Comments                            |
|-----------------------|-------------|-------------|-------------------------------------|
| Hardness, Shore A     | 2.00 - 98.0 | 2.00 - 98.0 | Average value: 63.4 Grade Count:623 |
|                       | 71.0 - 97.0 | 71.0 - 97.0 |                                     |

| Mechanical Properties        | Metric<br>@ Temperature 100 -<br>100 °C | English<br>@ Temperature 212 -<br>212 °F | Comments<br>Average value: 84.8 Grade Count:10 |
|------------------------------|---|--|--|
|                              | 71.0 - 97.0                             | 71.0 - 97.0                              | Average value: 84.8 Grade Count:10             |
|                              | @Time 252000 -<br>3.60e+6 sec           | @Time 70.0 - 1000<br>hour                |  |
| Hardness, Shore D            | 16.0 - 80.0                             | 16.0 - 80.0                              | Average value: 45.6 Grade Count:89             |
| Hardness, Shore OO           | 30.0 - 50.0                             | 30.0 - 50.0                              | Average value: 40.0 Grade Count:3              |
| Tensile Strength, Ultimate   | 0.255 - 51.0 MPa                        | 37.0 - 7400 psi                          | Average value: 9.26 MPa Grade<br>Count:573     |
|                              | 2.96475 - 43.5749 MPa                   | 430.001 - 6320.01 psi                    | Average value: 23.0 MPa Grade<br>Count:1       |
|                              | @Temperature -40.0 -<br>85.0 °C         | @Temperature -40.0 -<br>185 °F           |  |
|                              | 10.9006 - 29.9646 MPa                   | 1581.00 - 4346.01 psi                    | Average value: 23.0 MPa Grade<br>Count:11      |
|                              | @Temperature 100 -<br>100 °C            | @Temperature 212 -<br>212 °F             |  |
|                              | 10.9006 - 29.9646 MPa                   | 1581.00 - 4346.01 psi                    | Average value: 23.0 MPa Grade<br>Count:11      |
|                              | @Time 252000 -<br>3.60e+6 sec           | @Time 70.0 - 1000<br>hour                |  |
| Tensile Strength, Yield      | 0.0827 - 47.0 MPa                       | 12.0 - 6820 psi                          | Average value: 4.49 MPa Grade<br>Count:499     |
| Film Elongation at Break, MD | 740 - 1270 %                            | 740 - 1270 %                             | Average value: 1060 % Grade Count:7            |
| Film Elongation at Break, TD | 820 - 1200 %                            | 820 - 1200 %                             | Average value: 1070 % Grade Count:7            |
| Elongation at Break          | 9.50 - 1660 %                           | 9.50 - 1660 %                            | Average value: 582 % Grade<br>Count:674        |
|                              | 780 - 1360 %                            | 780 - 1360 %                             | Average value: 310 % Grade Count:1             |
|                              | @Temperature -40.0 -<br>85.0 °C         | @Temperature -40.0 -<br>185 °F           |  |
|                              | 161.4 - 452 %                           | 161.4 - 452 %                            | Average value: 310 % Grade Count:11            |
|                              | @Temperature 100 -<br>100 °C            | @Temperature 212 -<br>212 °F             |  |
|                              | 161.4 - 452 %                           | 161.4 - 452 %                            | Average value: 310 % Grade Count:11            |
|                              | @Time 252000 -<br>3.60e+6 sec           | @Time 70.0 - 1000<br>hour                |  |
| Elongation at Yield          | 16.0 - 100 %                            | 16.0 - 100 %                             | Average value: 43.3 % Grade Count:9            |
|                              | 10.0 - 10.0 %                           | 10.0 - 10.0 %                            | Average value: 10.0 % Grade Count:2            |
|                              | @Temperature -35.0 - -<br>35.0 °C       | @Temperature -31.0 - -<br>31.0 °F        |  |

| Mechanical Properties      | Metric  | English   | Comments                                  |
|----------------------------|---|---|---|
| Modulus of Elasticity      | 0.000300 - 2.76 GPa                                     | 0.0435 - 400 ksi  | Average value: 0.256 GPa Grade Count:64   |
| Flexural Yield Strength    | 2.40 - 294 MPa  | 348 - 42700 psi   | Average value: 48.2 MPa Grade Count:28    |
| Flexural Modulus           | 0.00207 - 2.26 GPa                                      | 0.300 - 327 ksi   | Average value: 0.274 GPa Grade Count:120  |
|                            | 0.0379212 - 2.07946 GPa<br>@Temperature -40.0 - 85.0 °C | 5.50009 - 301.605 ksi<br>@Temperature -40.0 - 185 °F    | Average value: 0.660 GPa Grade Count:2    |
| Compressive Yield Strength | 0.0900 - 2.33 MPa                                       | 13.1 - 338 psi  | Average value: 0.661 MPa Grade Count:10   |
| Compressive Modulus        | 0.00220 - 0.00760 GPa                                   | 0.319 - 1.10 ksi  | Average value: 0.00416 GPa Grade Count:10 |
| Resilience                 | 5.00 - 67.0   | 5.00 - 67.0   | Average value: 35.5 Grade Count:21        |
| Rebound                    | 12.0 - 40.0 %   | 12.0 - 40.0 %   | Average value: 21.3 % Grade Count:4       |
| Shear Modulus              | 0.00119 - 0.0115 GPa                                    | 0.173 - 1.67 ksi  | Average value: 0.00466 GPa Grade Count:16 |
| Secant Modulus             | 0.00336 - 0.110 GPa                                     | 0.487 - 16.0 ksi  | Average value: 0.0242 GPa Grade Count:52  |
| Izod Impact, Notched       | 0.267 J/cm - NB   | 0.500 ft-lb/in - NB                                     | Average value: 2.43 J/cm Grade Count:23   |
|                            | 0.300 J/cm - NB<br>@Temperature -40.0 - - 20.0 °C       | 0.562 ft-lb/in - NB<br>@Temperature -40.0 - - 4.00 °F   | Average value: 2.20 J/cm Grade Count:21   |
| Gardner Impact             | 18.1 - 28.2 J   | 13.3 - 20.8 ft-lb                                       | Average value: 23.0 J Grade Count:4       |
|                            | 12.5074 - 137.051 J<br>@Temperature -30.0 - - 6.67 °C   | 9.22501 - 101.083 ft-lb<br>@Temperature -22.0 - 20.0 °F | Average value: 37.9 J Grade Count:17      |
| Tear Strength Test         | 17.5 - 570  | 17.5 - 570  | Average value: 284 Grade Count:11         |
| Tear Strength              | 1.60 - 275 kN/m   | 9.13 - 1570 pli   | Average value: 34.8 kN/m Grade Count:448  |
| Peel Strength              | 0.470 - 1.35 kN/m                                       | 2.68 - 7.72 pli   | Average value: 0.886 kN/m Grade Count:4   |
| Graves Tear Strength       | 16.0 - 62.2 kN/m  | 91.3 - 355 pli  | Average value: 32.8 kN/m Grade Count:45   |
|                            | 9.00 - 10.2 kN/m<br>@Temperature 100 - 100 °C           | 51.4 - 58.2 pli<br>@Temperature 212 - 212 °F            | Average value: 9.58 kN/m Grade Count:6    |

| Taber Abrasion, mg/1000 Cycles<br>Mechanical Properties | 0.00130 - 581<br>Metric                     | 0.00130 - 581<br>English                   | Average value: 92.3 Grade Count:66<br>Comments |
|---|---|--|--|
| Compression Set   | 3.90 - 85.0 %                               | 3.90 - 85.0 %                              | Average value: 27.7 % Grade Count:270          |
|   | 22.0 - 100 %<br>@Temperature 70.0 - 100 °C  | 22.0 - 100 %<br>@Temperature 158 - 212 °F  | Average value: 49.8 % Grade Count:94           |
|   | 4.00 - 69.0 %<br>@Temperature 70.0 - 125 °C | 4.00 - 69.0 %<br>@Temperature 158 - 257 °F | Average value: 49.8 % Grade Count:12           |
|   | 4.00 - 69.0 %<br>@Time 79200 - 1.21e+6 sec  | 4.00 - 69.0 %<br>@Time 22.0 - 336 hour     | Average value: 49.8 % Grade Count:12           |
| Tensile Set   | 3.80 - 185 %                                | 3.80 - 185 %                               | Average value: 24.8 % Grade Count:102          |
| Film Tensile Strength at Break, MD                      | 23.5 - 38.2 MPa                             | 3410 - 5540 psi                            | Average value: 35.2 MPa Grade Count:7          |
| Film Tensile Strength at Break, TD                      | 24.5 - 38.2 MPa                             | 3550 - 5540 psi                            | Average value: 31.0 MPa Grade Count:7          |
| Torsional Stiffness                                     | 1.38 - 127 MPa                              | 200 - 18500 psi                            | Average value: 14.2 MPa Grade Count:20         |

| Electrical Properties  | Metric                     | English                    | Comments                                     |
|------------------------|----------------------------|----------------------------|--|
| Electrical Resistivity | 5.30e+15 - 3.00e+16 ohm-cm | 5.30e+15 - 3.00e+16 ohm-cm | Average value: 2.18e+16 ohm-cm Grade Count:3 |
| Dielectric Constant    | 2.30 - 2.51                | 2.30 - 2.51                | Average value: 2.36 Grade Count:10           |

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