

## Technical Data

### Product Description

Sipolprene®  
55211

Sipolprene® 55211 is an ether ester thermoplastic elastomer (TPC-ET), developed and manufactured by Sipol, with a nominal hardness of Shore D 54 and a rheological behaviour, which makes it suitable for injection moulding and extrusion processing.

Generic  
TPC-ET

This data represents typical values that have been calculated from all products classified as: Generic TPC-ET

This information is provided for comparative purposes only.

| General                   | Sipolprene®<br>55211   | Generic<br>TPC-ET  |
|---------------------------|--|--|
| Manufacturer / Supplier   | • SIPOL S.p.A  | • Generic  |
| Generic Symbol            | • TPC-ET   | • TPC-ET   |
| Material Status           | • Commercial: Active   | • Commercial: Active   |
| Literature <sup>1</sup>   | • <a href="#">Technical Datasheet (English)</a>  | --   |
| Search for UL Yellow Card | • <a href="#">SIPOL S.p.A</a>  | --   |
| Availability              | <ul style="list-style-type: none"> <li>• Africa &amp; Middle East</li> <li>• Asia Pacific</li> <li>• Europe</li> <li>• Latin America</li> <li>• North America</li> </ul> | <ul style="list-style-type: none"> <li>• Africa &amp; Middle East</li> <li>• Asia Pacific</li> <li>• Europe</li> <li>• Latin America</li> <li>• North America</li> </ul> |
| Processing Method         | <ul style="list-style-type: none"> <li>• Extrusion</li> <li>• Injection Molding</li> </ul>   | --   |

| Physical                                    | Sipolprene®<br>55211 | Generic<br>TPC-ET | Unit                   | Test Method     |
|---|----------------------|-------------------|------------------------|-----------------|
| Density / Specific Gravity                  |                      |                   |                        |                 |
| --  | --                   | 1.12 to 1.27      | g/cm <sup>3</sup>      | ASTM D792       |
| --  | 1.21                 | 1.08 to 1.29      | g/cm <sup>3</sup>      | ISO 1183        |
| --  | --                   | 1.12 to 1.25      | g/cm <sup>3</sup>      | ASTM D1505      |
| --  | 1.21                 | --                | g/cm <sup>3</sup>      | ASTM D792       |
| Apparent (Bulk) Density                     | --                   | 0.65 to 0.83      | g/cm <sup>3</sup>      | ISO 60          |
| Melt Mass-Flow Rate (MFR)                   |                      |                   |                        |                 |
| 230°C/2.16 kg                               | 10                   | 14 to 34          | g/10 min               | ASTM D1238      |
| 230°C/2.16 kg                               | 10                   | 4.9 to 34         | g/10 min               | ISO 1133        |
| Melt Volume-Flow Rate (MVR) (230°C/2.16 kg) | --                   | 2.7 to 49         | cm <sup>3</sup> /10min | ISO 1133        |
| Molding Shrinkage                           |                      |                   |                        |                 |
| Flow  | --                   | 0.36 to 1.7       | %                      | ASTM D955       |
| Across Flow                                 | --                   | 0.39 to 1.5       | %                      | ASTM D955       |
| --  | --                   | 0.97 to 2.0       | %                      | ISO 294-4       |
| Water Absorption                            |                      |                   |                        |                 |
| 24 hr                                       | --                   | 0.30 to 0.80      | %                      | ASTM D570       |
| 24 hr, 23°C <sup>3</sup>                    | 2.1                  | --                | %                      | Internal Method |
| 24 hr, 23°C                                 | --                   | 0.10 to 0.95      | %                      | ISO 62          |
| Saturation, 23°C                            | --                   | 0.10 to 3.3       | %                      | ISO 62          |
| Equilibrium                                 | --                   | 0.30 to 0.50      | %                      | ASTM D570       |
| Equilibrium, 23°C, 50% RH                   | --                   | 0.18 to 0.33      | %                      | ISO 62          |



| Mechanical                             | Sipolprene®<br>55211 | Generic<br>TPC-ET | Unit              | Test Method |
|--|----------------------|-------------------|-------------------|-------------|
| <b>Tensile Modulus</b>                 |                      |                   |                   |             |
| --                                     | --                   | 10.0 to 413       | MPa               | ASTM D638   |
| --                                     | --                   | 14.0 to 281       | MPa               | ISO 527-1   |
| <b>Tensile Strength</b>                |                      |                   |                   |             |
| Yield                                  | --                   | 13.2 to 35.0      | MPa               | ASTM D638   |
| Yield                                  | --                   | 6.00 to 27.0      | MPa               | ISO 527-2   |
| Break                                  | 39.0                 | 0.300 to 55.1     | MPa               | ASTM D638   |
| Break                                  | 39.0                 | 14.7 to 55.5      | MPa               | ISO 527-2   |
| --                                     | --                   | 5.00 to 37.6      | MPa               | ASTM D638   |
| --                                     | --                   | 0.800 to 24.0     | MPa               | ISO 527-2   |
| <b>Tensile Strain</b>                  |                      |                   |                   |             |
| Yield                                  | --                   | 17 to 51          | %                 | ISO 527-2   |
| Break                                  | 570                  | 4.0 to 1000       | %                 | ASTM D638   |
| Break                                  | 570                  | 290 to 820        | %                 | ISO 527-2   |
| <b>Nominal Tensile Strain at Break</b> |                      |                   |                   |             |
|  | --                   | 35 to 910         | %                 | ISO 527-2   |
| <b>Tensile Creep Modulus</b>           |                      |                   |                   |             |
|  |                      |                   |                   | ISO 899-1   |
| 1 hr                                   | --                   | 206               | MPa               |             |
| 1000 hr                                | --                   | 173               | MPa               |             |
| <b>Flexural Modulus</b>                |                      |                   |                   |             |
| --                                     | 132                  | 10.0 to 303       | MPa               | ASTM D790   |
| --                                     | 132                  | 8.00 to 326       | MPa               | ISO 178     |
| <b>Flexural Stress</b>                 |                      |                   |                   |             |
|  | --                   | 1.00 to 20.6      | MPa               | ISO 178     |
| <b>Poisson's Ratio</b>                 |                      |                   |                   |             |
|  | --                   | 0.47 to 0.50      |                   | ASTM E132   |
| Elastomers                             | Sipolprene®<br>55211 | Generic<br>TPC-ET | Unit              | Test Method |
| <b>Tensile Stress (Break)</b>          |                      |                   |                   |             |
|  | --                   | 18.0 to 33.2      | MPa               | ISO 37      |
| <b>Tensile Elongation (Break)</b>      |                      |                   |                   |             |
|  | --                   | 300 to 500        | %                 | ISO 37      |
| <b>Tear Strength</b>                   |                      |                   |                   |             |
| --                                     | --                   | 29.4 to 249       | kN/m              | ASTM D624   |
| --                                     | --                   | 51.0 to 233       | kN/m              | ISO 34-1    |
| <b>Compression Set</b>                 |                      |                   |                   |             |
|  | --                   | 34 to 51          | %                 | ISO 815     |
| <b>Bayshore Resilience</b>             |                      |                   |                   |             |
|  | --                   | 40 to 65          | %                 | ASTM D2632  |
| Impact                                 | Sipolprene®<br>55211 | Generic<br>TPC-ET | Unit              | Test Method |
| <b>Charpy Notched Impact Strength</b>  |                      |                   |                   |             |
|  | --                   | 3.5 to 120        | kJ/m <sup>2</sup> | ISO 179     |
| <b>Notched Izod Impact</b>             |                      |                   |                   |             |
| --                                     | --                   | 29 to 310         | J/m               | ASTM D256   |
| 23°C                                   | No Break             | --                |                   | ASTM D256   |
| --                                     | --                   | 3.0 to 83         | kJ/m <sup>2</sup> | ISO 180     |
| <b>Tensile Impact Strength</b>         |                      |                   |                   |             |
|  | --                   | 140 to 310        | kJ/m <sup>2</sup> | ISO 8256    |



| Hardness                          | Sipolprene®<br>55211 | Generic<br>TPC-ET  | Unit     | Test Method           |
|-----------------------------------|----------------------|--------------------|----------|-----------------------|
| Durometer Hardness                |                      |                    |          |                       |
| --                                | --                   | 27 to 72           |          | ASTM D2240            |
| Shore D                           | 54                   | --                 |          | ASTM D2240<br>ISO 868 |
| --                                | --                   | 18 to 98           |          | ISO 868               |
| Shore Hardness                    | --                   | 24 to 71           |          | ISO 48-4              |
| Thermal                           | Sipolprene®<br>55211 | Generic<br>TPC-ET  | Unit     | Test Method           |
| Deflection Temperature Under Load |                      |                    |          |                       |
| 0.45 MPa, Unannealed              | --                   | 59.9 to 111        | °C       | ASTM D648             |
| 0.45 MPa, Unannealed              | --                   | 45.2 to 116        | °C       | ISO 75-2/B            |
| 1.8 MPa, Unannealed               | --                   | 39.9 to 52.9       | °C       | ISO 75-2/A            |
| Brittleness Temperature           | --                   | -100 to -64.9      | °C       | ISO 974               |
| Glass Transition Temperature      |                      |                    |          |                       |
| --                                | --                   | -80.0 to 29.3      | °C       | ISO 11357-2           |
| --                                | --                   | 2.00 to 65.3       | °C       | DSC                   |
| Vicat Softening Temperature       |                      |                    |          |                       |
| --                                | --                   | 70.4 to 211        | °C       | ASTM D1525            |
| --                                | --                   | 44.0 to 213        | °C       | ISO 306               |
| Melting Temperature               |                      |                    |          |                       |
| --                                | --                   | 165 to 221         | °C       | ISO 11357-3           |
| --                                | 215                  | 164 to 220         | °C       | ASTM D3418            |
| --                                | 215                  | 150 to 219         | °C       | ISO 3146              |
| CLTE                              |                      |                    |          |                       |
| Flow                              | --                   | 1.4E-4 to 2.0E-4   | cm/cm/°C | ASTM D696             |
| Flow                              | --                   | 1.5E-4 to 2.2E-4   | cm/cm/°C | ISO 11359-2           |
| Transverse                        | --                   | 1.5E-4 to 2.3E-4   | cm/cm/°C | ISO 11359-2           |
| Electrical                        | Sipolprene®<br>55211 | Generic<br>TPC-ET  | Unit     | Test Method           |
| Surface Resistivity               | --                   | 2.0E+13 to 5.0E+15 | ohms     | IEC 62631-3-2         |
| Volume Resistivity                |                      |                    |          |                       |
| --                                | --                   | 1.0E+13 to 1.8E+16 | ohms·cm  | ASTM D257             |
| --                                | --                   | 1.0E+14 to 1.0E+17 | ohms·cm  | IEC 60093             |
| --                                | --                   | 4.0E+9 to 1.0E+13  | ohms·m   | IEC 62631-3-1         |
| Dielectric Strength               |                      |                    |          |                       |
| --                                | --                   | 26                 | kV/mm    | ASTM D149             |
| --                                | --                   | 14 to 26           | kV/mm    | IEC 60243-1           |
| Dielectric Constant               |                      |                    |          |                       |
| --                                | --                   | 3.98 to 6.00       |          | IEC 60250             |
| --                                | --                   | 4.13               |          | IEC 62631-2-1         |
| Dissipation Factor                |                      |                    |          |                       |
| --                                | --                   | 9.0E-3 to 0.065    |          | IEC 60250             |
| --                                | --                   | 1.0E-3 to 0.081    |          | IEC 62631-2-1         |
| Comparative Tracking Index        | --                   | 593 to 600         | V        | IEC 60112             |



| Flammability | Sipolprene®<br>55211 | Generic<br>TPC-ET | Unit   | Test Method |
|--------------|----------------------|-------------------|--------|-------------|
| Burning Rate | --                   | 78 to 80          | mm/min | ISO 3795    |
| Oxygen Index | --                   | 20 to 21          | %      | ISO 4589-2  |

| Fill Analysis             | Sipolprene®<br>55211 | Generic<br>TPC-ET | Unit              | Test Method |
|---------------------------|----------------------|-------------------|-------------------|-------------|
| Melt Density              | --                   | 0.896 to 1.07     | g/cm <sup>3</sup> |             |
| Melt Viscosity            | --                   | 0.500 to 403      | Pa·s              | ASTM D3835  |
| Melt Specific Heat        | --                   | 1800              | J/kg/°C           | ASTM C351   |
| Melt Thermal Conductivity | --                   | 0.10              | W/m/K             | ASTM C177   |

| Injection              | Sipolprene®<br>55211 | Generic<br>TPC-ET | Unit |
|------------------------|----------------------|-------------------|------|
| Drying Temperature     | --                   | 84 to 110         | °C   |
| Drying Time            | --                   | 2.5 to 4.1        | hr   |
| Suggested Max Moisture | --                   | 0.010 to 0.082    | %    |
| Rear Temperature       | --                   | 173 to 231        | °C   |
| Middle Temperature     | --                   | 175 to 241        | °C   |
| Front Temperature      | --                   | 175 to 246        | °C   |
| Nozzle Temperature     | --                   | 180 to 246        | °C   |
| Processing (Melt) Temp | --                   | 180 to 251        | °C   |
| Mold Temperature       | --                   | 23 to 51          | °C   |

**Injection Notes**

Generic TPC-ET This data represents typical values that have been calculated from all products classified as: Generic TPC-ET  
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| Extrusion              | Sipolprene®<br>55211 | Generic<br>TPC-ET | Unit |
|------------------------|----------------------|-------------------|------|
| Drying Temperature     | --                   | 80 to 110         | °C   |
| Drying Time            | --                   | 2.5 to 3.5        | hr   |
| Suggested Max Moisture | --                   | 0.010 to 0.060    | %    |
| Cylinder Zone 1 Temp.  | --                   | 190 to 230        | °C   |
| Cylinder Zone 2 Temp.  | --                   | 200 to 240        | °C   |
| Cylinder Zone 3 Temp.  | --                   | 190 to 240        | °C   |
| Cylinder Zone 4 Temp.  | --                   | 190 to 240        | °C   |
| Adapter Temperature    | --                   | 190 to 240        | °C   |
| Melt Temperature       | --                   | 192 to 236        | °C   |
| Die Temperature        | --                   | 189 to 231        | °C   |

**Extrusion Notes**

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**Notes**

- <sup>1</sup> These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.
- <sup>2</sup> Typical properties: these are not to be construed as specifications.
- <sup>3</sup> Immersion

