

# SANTOPRENE® 101-64

## SANTOPRENE®

A soft, black, versatile thermoplastic vulcanizate (TPV) in the thermoplastic elastomer (TPE) family. This material combines good physical properties and chemical resistance for use in a wide range of applications. This grade of Santoprene® TPV is shear-dependent and can be processed on conventional thermoplastics equipment for injection molding, extrusion or blow molding. It is polyolefin based and recyclable within the manufacturing stream.

### Key Features

- UL listed: file #QMFZ2.E80017, Plastics - Component; file #QMFZ8.E80017, Plastics Certified For Canada - Component
- Recommended for applications requiring excellent flex fatigue resistance
- Excellent ozone resistance

### Product information

|                      |       |           |
|----------------------|-------|-----------|
| Resin Identification | TPV   | ISO 1043  |
| Part Marking Code    | >TPV< | ISO 11469 |

### Rheological properties

|                              |                      |                 |
|------------------------------|----------------------|-----------------|
| Moulding shrinkage, parallel | 3.2 <sup>[1]</sup> % | ISO 294-4, 2577 |
| Moulding shrinkage, normal   | 0.8 <sup>[1]</sup> % | ISO 294-4, 2577 |

[1]: 2.0 mm thickness, min. 24 hours after molding, per test method TPE-X0080

### Typical mechanical properties

|  |          |                        |
|--|----------|------------------------|
| Tensile stress at 100% elongation, perpendicular | 2.83 MPa | ISO 37                 |
| Tensile stress at break, perpendicular           | 6.47 MPa | ISO 527-1/-2 or ISO 37 |
| Elongation at break, perpendicular               | 450 %    | ISO 527-1/-2 or ISO 37 |
| Brittleness Temperature                          | -60 °C   | ASTM D 746             |
| Low temperature brittleness                      | -60 °C   | ISO 812                |
| Shore A hardness, 15s                            | 70       | ISO 48-4 / ISO 868     |
| Compression set, 70 °C, 24h                      | 25 %     | ISO 815                |
| Compression set, 125 °C, 70h                     | 44 %     | ISO 815                |
| Tear strength, normal                            | 23 kN/m  | ISO 34-1               |

### Thermal properties

|                        |       |         |
|------------------------|-------|---------|
| RTI, electrical, 1.5mm | 90 °C | UL 746B |
| RTI, electrical, 3.0mm | 90 °C | UL 746B |
| RTI, strength, 1.5mm   | 90 °C | UL 746B |
| RTI, strength, 3.0mm   | 95 °C | UL 746B |

### Specific Application Suitability

|  |        |           |
|--|--------|-----------|
| Continuous Upper Temperature Resistance, 1000h | 135 °C | SAE J2236 |
| Detergent resistance                           | f3     | UL 749    |
| Detergent resistance                           | f4     | UL 2157   |
| Outdoor suitability                            | f1     | UL 746C   |

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### Flammability

|                                      |             |                      |
|--------------------------------------|-------------|----------------------|
| Burning Behav. at 1.5mm nom. thickn. | HB class    | IEC 60695-11-10      |
| Thickness tested                     | 1.5 mm      | IEC 60695-11-10      |
| UL recognition                       | yes         | UL 94                |
| Burning Behav. at thickness h        | HB class    | IEC 60695-11-10      |
| Thickness tested                     | 1 mm        | IEC 60695-11-10      |
| UL recognition                       | yes         | UL 94                |
| FMVSS Class                          | B           | ISO 3795 (FMVSS 302) |
| Burning rate, Thickness 2 mm         | 23.7 mm/min | ISO 3795 (FMVSS 302) |

### Electrical properties

|   |             |               |
|---|-------------|---------------|
| Relative permittivity, 60Hz                 | 2.5         | IEC 62631-2-1 |
| Comparative tracking index, 23°C            | 0 PLC       | UL 746A       |
| Arc Resistance Performance Level Category   | PLC 6 class | UL 746B       |
| High Amperage Arc Ignition Category, 1.5 mm | PLC 0 class | UL 746A       |

### Physical/Other properties

|         |                       |          |
|---------|-----------------------|----------|
| Density | 970 kg/m <sup>3</sup> | ISO 1183 |
|---------|-----------------------|----------|

### Injection

|                                 |         |
|---------------------------------|---------|
| Drying Recommended              | yes     |
| Drying Temperature              | 80 °C   |
| Drying Time, Dehumidified Dryer | ≥3 h    |
| Processing Moisture Content     | ≤0.08 % |
| Max. regrind level              | 20 %    |
| Melt Temperature Optimum        | 200 °C  |
| Min. melt temperature           | 185 °C  |
| Max. melt temperature           | 220 °C  |
| Mold Temperature Optimum        | 30 °C   |
| Min. mould temperature          | 10 °C   |
| Max. mould temperature          | 50 °C   |

### Extrusion

|                                 |        |
|---------------------------------|--------|
| Drying Temperature              | 82 °C  |
| Drying Time, Dehumidified Dryer | 3 h    |
| Melt Temperature Range          | 196 °C |

### Characteristics

|               |  |
|---------------|--|
| Processing    | Injection Moulding, Multi Injection Moulding, Extrusion, Sheet Extrusion, Coextrusion, Blow Moulding |
| Delivery form | Pellets  |

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### Additional information

#### Non Standard Data

| Property Name                     | Condition    | Value | Unit | Standard |
|-----------------------------------|--------------|-------|------|----------|
| Change in Tensile Strength        | 150 °C, 168h | -9.4  | %    | ISO 188  |
| Change in Tensile Strain at Break | 150 °C, 168h | -7.7  | %    | ISO 188  |
| Change in Shore A Hardness        | 150 °C, 168h | 1.3   | -    | ISO 188  |

#### Injection molding

Holding pressure should be about 50 to 75% of the actual injection pressure.  
A high screw RPM (100 to 200) is recommended.  
Back pressure is not always needed, however, a back pressure of 0.3 to 0.7 MPa may be used to ensure a homogeneous melt and maintain a consistent shot size.  
A higher back pressure is normally employed when using masterbatches.

#### Processing Notes

### Processing Notes

Desiccant drying for 3 hours at 80 °C (180 °F) is recommended.  
Santoprene® TPV has a wide temperature processing window from 175 to 230 °C (350 to 450 °F) and is incompatible with acetal and PVC.

Santoprene® TPV has a relatively high melt viscosity at low shear rates. Viscosity decreases as the shear rate increases.

Increasing temperature has little effect on TPV melt viscosity. Smaller gates and higher shear rates keep melt viscosity low and improve melt flow. Please also refer to the injection molding guide.

### Automotive

| OEM            | STANDARD                       | ADDITIONAL INFORMATION                      |
|----------------|--------------------------------|---|
| BMW            | GS93042                        | 2022-12                                     |
| Ford           | WSD-M2D379-A1                  |   |
| Ford           | WSS-M9P9-D2                    | SANTOPRENE101-64_WSS-M9P9-D2_2022-08-17.pdf |
| General Motors | GMW15813P-TPV-(EPDM+PP)-Type 5 | N/A   |
| Hyundai        | MS220-05 Type B                |   |
| Hyundai        | MS220-31 Type A1               |   |
| Mercedes-Benz  | DBL5562                        |   |

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|            |  |               |
|------------|--|---------------|
| Renault    | FRM 18-27-020 /---, No Spec, Special Part Approval, See Your CE Account Manager. |               |
| SAIC Motor | SMTC 5 320 024   |               |
| Stellantis | 55248_02 EMP70   | MS-AR-100 BGN |
| VW Group   | VW 50123   |               |