

# Sarlink® TPV 4165

Teknor Apex Company - Thermoplastic Vulcanizate

Wednesday, August 11, 2021

## General Information

### Product Description

SARLINK® TPV 4100 series are engineered materials designed primarily for demanding automotive and industrial applications. Available in both black and natural, SARLINK® 4165 is a low density, medium hardness thermoplastic vulcanizate that exhibits excellent compression set, flex fatigue, high and low temperature performance. The material can be processed by injection molding, blow molding and extrusion for applications such as seals, gaskets, chemical resistant hose and tube, boots and bellows.

### General

Material Status	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>
Availability	<ul style="list-style-type: none"> <li>Asia Pacific</li> <li>Europe</li> <li>Latin America</li> <li>North America</li> </ul>
Features	<ul style="list-style-type: none"> <li>Chemical Resistant</li> <li>Excellent Elastic Recovery</li> <li>Fatigue Resistant</li> <li>Good Adhesion</li> <li>Good Flexibility</li> <li>Good Moldability</li> <li>Good Processability</li> <li>Good Surface Finish</li> <li>High Melt Stability</li> <li>Low Density</li> <li>Low Specific Gravity</li> <li>Medium Hardness</li> <li>Medium Heat Resistance</li> <li>Resilient</li> </ul>
Uses	<ul style="list-style-type: none"> <li>Appliance Components</li> <li>Automotive Applications</li> <li>Automotive Exterior Parts</li> <li>Automotive Interior Parts</li> <li>Automotive Under the Hood</li> <li>Blow Molding Applications</li> <li>Gaskets</li> <li>Grommets</li> <li>Hose</li> <li>Industrial Applications</li> <li>O-rings</li> <li>Pipe Seals</li> <li>Plugs</li> <li>Rubber Replacement</li> <li>Seals</li> <li>Tubing</li> <li>White Goods &amp; Small Appliances</li> </ul>
Agency Ratings	<ul style="list-style-type: none"> <li>UL QMFZ2</li> <li>UL QMFZ8</li> </ul>
RoHS Compliance	<ul style="list-style-type: none"> <li>RoHS Compliant</li> </ul>
Automotive Specifications	<ul style="list-style-type: none"> <li>BMW Unspecified Color: Black</li> <li>CHRYSLER MS-AR-100 BGN Color: Black</li> <li>CHRYSLER MS-AR-100 BGN Color: Natural</li> <li>FORD WSD-M2D378-A6 Color: Black</li> <li>FORD WSD-M2D379-A1 Color: Black</li> <li>FORD WSD-M2D379-A1 Color: Natural</li> <li>GM GMP.E/P.002 Color: Black</li> <li>GM GMP.E/P.002 Color: Natural</li> <li>GM GMW15813 Type 5 Color: Black</li> <li>GM GMW15813 Type 5 Color: Natural</li> <li>GM QK 3521 Type 1 Color: Black</li> <li>GM QK 3521 Type 1 Color: Natural</li> </ul>
UL File Number	<ul style="list-style-type: none"> <li>QMFZ2.E54709</li> </ul>
Appearance	<ul style="list-style-type: none"> <li>Black</li> <li>Natural Color</li> <li>Opaque</li> </ul>
Forms	<ul style="list-style-type: none"> <li>Pellets</li> </ul>
Processing Method	<ul style="list-style-type: none"> <li>Blow Molding</li> <li>Extrusion</li> <li>Injection Molding</li> </ul>

## ASTM & ISO Properties <sup>1</sup>

Physical	Nominal Value	Unit	Test Method
Density / Specific Gravity	0.958	g/cm <sup>3</sup>	ASTM D792
Density	0.960	g/cm <sup>3</sup>	ISO 1183
Elastomers	Nominal Value	Unit	Test Method
Tensile Stress			
Across Flow : 100% Strain	2.50	MPa	ISO 37
Across Flow : 100% Strain	2.50	MPa	ASTM D412
Flow : 100% Strain	4.20	MPa	ISO 37
Flow : 100% Strain	4.20	MPa	ASTM D412

Revision Date: 4/9/2018

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<b>Elastomers</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
<b>Tensile Stress</b>			
Across Flow : Break	6.80	MPa	ISO 37
Across Flow : Break	6.80	MPa	ASTM D412
Flow : Break	5.80	MPa	ISO 37
Flow : Break	5.80	MPa	ASTM D412
<b>Tensile Elongation</b>			
Across Flow : Break	570	%	ISO 37
Across Flow : Break	570	%	ASTM D412
Flow : Break	280	%	ISO 37
Flow : Break	280	%	ASTM D412
<b>Tear Strength - Across Flow</b>			
--	29.0	kN/m	ASTM D624
-- <sup>2</sup>	29.0	kN/m	ISO 34-1
<b>Compression Set</b>			
23°C, 22 hr	17	%	ISO 815
23°C, 22 hr	17	%	ASTM D395
70°C, 22 hr	27	%	ISO 815
70°C, 22 hr	27	%	ASTM D395
125°C, 70 hr	40	%	ISO 815
125°C, 70 hr	40	%	ASTM D395
<b>Hardness</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
<b>Shore Hardness</b>			
Shore A, 5 sec, Extruded	63		ISO 868
Shore A, 5 sec, Extruded	63		ASTM D2240
Shore A, 5 sec, Injection Molded	65		ISO 868
Shore A, 5 sec, Injection Molded	65		ASTM D2240
<b>Thermal</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Brittleness Temperature	-65.0	°C	ASTM D746
RTI Elec	100	°C	UL 746B
RTI Imp	65.0	°C	UL 746B
RTI Str	100	°C	UL 746B
<b>Aging</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
<b>Change in Tensile Strength in Air - Across Flow</b>			
135°C, 1000 hr	-9.0	%	ISO 188
135°C, 1000 hr	-9.0	%	ASTM D573
150°C, 168 hr	-11	%	ISO 188
150°C, 168 hr	-11	%	ASTM D573
100% Strain 150°C, 168 hr	0.0	%	ISO 188
100% Strain 150°C, 168 hr	0.0	%	ASTM D573
100% Strain 150°C, 1000 hr	4.0	%	ISO 188
100% Strain 150°C, 1000 hr	4.0	%	ASTM D573
<b>Change in Tensile Strain at Break in Air - Across Flow</b>			
135°C, 1000 hr	-8.0	%	ISO 188
135°C, 1000 hr	-8.0	%	ASTM D573
150°C, 168 hr	-11	%	ISO 188
150°C, 168 hr	-11	%	ASTM D573

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Aging	Nominal Value	Unit	Test Method
Change in Shore Hardness in Air			
Shore A, 135°C, 1000 hr	2.0		ISO 188
Shore A, 135°C, 1000 hr	2.0		ASTM D573
Shore A, 150°C, 168 hr	2.0		ISO 188
Shore A, 150°C, 168 hr	2.0		ASTM D573
Change in Volume			
125°C, 70 hr, in IRM 903 Oil	83	%	ISO 1817
125°C, 70 hr, in IRM 903 Oil	83	%	ASTM D471
<b>Electrical</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Volume Resistivity	1.0E+16	ohms·cm	ASTM D257
<b>Flammability</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Flame Rating (1.0 mm, All Colors)	HB		UL 94
<b>Additional Information</b>	<b>Nominal Value</b>	<b>Unit</b>	<b>Test Method</b>
Apparent Shear Viscosity - Capillary, @ 206/s			
200°C	340	Pa·s	ISO 11443
200°C	340	Pa·s	ASTM D3835

### Legal Statement

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### Processing Information

Injection	Nominal Value	Unit
Drying Temperature	82	°C
Drying Time	3.0	hr
Rear Temperature	180 to 215	°C
Middle Temperature	180 to 215	°C
Front Temperature	180 to 215	°C
Nozzle Temperature	187 to 220	°C
Processing (Melt) Temp	185 to 220	°C
Mold Temperature	10 to 55	°C
Back Pressure	0.100 to 1.00	MPa
Screw Speed	100 to 200	rpm
Extrusion	Nominal Value	Unit
Drying Temperature	82	°C
Drying Time	3.0	hr
Cylinder Zone 1 Temp.	180 to 200	°C
Cylinder Zone 2 Temp.	180 to 205	°C
Cylinder Zone 3 Temp.	187 to 210	°C
Cylinder Zone 4 Temp.	187 to 210	°C
Melt Temperature	195 to 215	°C
Die Temperature	195 to 215	°C
Take-Off Roll	20 to 50	°C

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### Extrusion Notes

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Screen Pack: 20 to 60 mesh  
Screw: general purpose  
Compression Ratio: 3:1

### Notes

<sup>1</sup> Typical properties: these are not to be construed as specifications.

<sup>2</sup> Method Ba, Angle (Unnicked)

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#### Teknor Apex Company Corporate Headquarters

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