



# Data Sheet

## Nominal Engineering Properties of Ryton® R-4

Ryton® R-4 is a 40% fiberglass reinforced polyphenylene sulfide compound that provides outstanding chemical resistance and mechanical properties even at elevated temperatures.

Property*	Test Method	R-4	R-4 02
Tensile Strength, MPa	ISO 527	150	140
Elongation, %	ISO 527	1.2	1.1
Flexural Strength, MPa	ISO 178	210	195
Flexural Modulus, GPa	ISO 178	14	14
Izod Impact, kJ/m <sup>2</sup>	ISO 180A		
Notched		9.0	8.0
Unnotched		25	20
Compressive Strength, MPa	ASTM D695	250	250
Heat Deflection Temperature, 1.8 MPa, °C**	ASTM D648	>260	>260
UL Temperature Index, °C	UL 746B	200 / 220	200 / 220
Coefficient of Linear Thermal Exp., x 10 <sup>-6</sup> m/m/°C	ASTM E831		
Axial Direction, -50°C to 50°C		20	20
Axial Direction, 100°C to 200°C		15	15
Transverse Direction, -50°C to 50°C		40	40
Transverse Direction, 100°C to 200°C		80	80
Flammability Rating	UL 94	V-0 / 5VA	V-0 / 5VA
Thermal Conductivity, W/m-K		0.32	0.32
Dielectric Strength, kV/mm	ASTM D149	18	18
Dielectric Constant, 25°C	ASTM D150		
1 kHz		3.8	3.8
1 MHz		3.8	3.8
Dissipation Factor, 25°C	ASTM D150		
1 kHz		0.002	0.002
1 MHz		0.002	0.002
Volume Resistivity, ohm-cm	ASTM D257	1 x 10 <sup>15</sup>	1 x 10 <sup>15</sup>
Arc Resistance, sec	ASTM D495	125	125
Comparative Tracking Index, V	UL 746A	130	130
Insulation Resistance, ohm (90°C, 95% RH, 48 hr)		1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>
Mold Shrinkage,*** m/m, Flow / Transverse		0.003 / 0.005	0.003 / 0.005
Density, g/cc	ASTM D792	1.65	1.65
Water Absorption, %	ASTM D570	0.02	0.02
Color		Natural	Black

\*Test specimen molding conditions: Stock Temperature, 315-345°C; Mold Temperature, 135°C

\*\*Annealed 2 hours at 200°C

\*\*\*Measured on 102 mm X 102 mm X 3.2 mm Plaques, Edge Gated

THE NOMINAL PROPERTIES REPORTED HEREIN ARE TYPICAL OF THE PRODUCT BUT DO NOT REFLECT NORMAL TESTING VARIANCES AND THEREFORE SHOULD NOT BE USED FOR SPECIFICATION PURPOSES.

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This document reports accurate and reliable information to the best of our knowledge, but our suggestions and recommendations cannot be guaranteed because the conditions of use are beyond our control. Information presented herein is given without reference to any patent questions which may be encountered in the use thereof. Such questions should be investigated by those using this information. Chevron Phillips Chemical Company assumes no responsibility for the use of information presented herein and hereby disclaims all liability in regard to such use.

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Ryton® R-4 is a 40% fiberglass reinforced polyphenylene sulfide compound that provides outstanding chemical resistance and mechanical properties even at elevated temperatures.

Property*	Test Method	R-4	R-4 02
Tensile Strength, Ksi	ASTM D638	23.0	22.5
Elongation, %	ASTM D638	1.2	1.1
Flexural Strength, Ksi	ASTM D790	30.0	29.0
Flexural Modulus, Msi	ASTM D790	2.2	2.2
Izod Impact, ft-lb/in, 1/8 in specimen	ASTM D256		
Notched		1.6	1.4
Unnotched		6.0	5.5
Compressive Strength, Ksi	ASTM D695	36.0	36.0
Heat Deflection Temperature, 264 psi, °F**	ASTM D648	>500	>500
UL Temperature Index, °C	UL 746B	200 / 220	200 / 220
Coefficient of Linear Thermal Exp., x 10 <sup>-6</sup> in/in/°C	ASTM E831		
Axial Direction, -50°C to 50°C		20	20
Axial Direction, 100°C to 200°C		15	15
Transverse Direction, -50°C to 50°C		40	40
Transverse Direction, 100°C to 200°C		80	80
Flammability Rating	UL 94	V-0 / 5VA	V-0 / 5VA
Thermal Conductivity, BTU-in/hr-ft <sup>2</sup> -°F		2.2	2.2
Dielectric Strength, V/mil	ASTM D149	450	450
Dielectric Constant, 78°F	ASTM D150		
1 kHz		3.8	3.8
1 MHz		3.8	3.8
Dissipation Factor, 78°F	ASTM D150		
1 kHz		0.002	0.002
1 MHz		0.002	0.002
Volume Resistivity, ohm-cm	ASTM D257	1 x 10 <sup>15</sup>	1 x 10 <sup>15</sup>
Arc Resistance, sec	ASTM D495	125	125
Comparative Tracking Index, V	UL 746A	130	130
Insulation Resistance, ohm (90°C, 95% RH, 48 hr)		1 x 10 <sup>11</sup>	1 x 10 <sup>11</sup>
Mold Shrinkage,*** in/in, Flow / Transverse		0.003 / 0.005	0.003 / 0.005
Density, g/cc	ASTM D792	1.65	1.65
Water Absorption, %	ASTM D570	0.02	0.02
Color		Natural	Black

\*Test specimen molding conditions: Stock Temperature, 600-650°F; Mold Temperature, 275°F

\*\*Annealed 2 hours at 400°F

\*\*\*Measured on 4 in X 4 in X 1/8 in Plaques, Edge Gated

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