



# Data Sheet

## Preliminary Data Sheet

### Nominal Engineering Properties of Ryton® R-4-232NA

Ryton® R-4-232NA is an advanced 40% glass fiber reinforced polyphenylene sulfide compound specially formulated to comply with United States Food and Drug Administration (FDA) regulations for use as a component of articles intended for repeat use in contact with all types of foods.

Property*	Test Method	Value
Tensile Strength, MPa	ISO 527	170
Elongation, %	ISO 527	1.3
Flexural Strength, MPa	ISO 178	245
Flexural Modulus, GPa	ISO 178	14
Notched Izod Impact, kJ/m <sup>2</sup>	ISO 180/A	9.0
Unnotched Izod Impact, kJ/m <sup>2</sup>	ISO 180/U	25
Compressive Strength, MPa	ISO 604	275
Heat Deflection Temperature, 1.8 MPa, °C	ISO 75	>260
Coefficient of Linear Thermal Exp., x 10 <sup>-6</sup> m/m/°C	ISO 11359-2	
Axial Direction, -50°C to 50°C		15
Axial Direction, 100°C to 200°C		15
Transverse Direction, -50°C to 50°C		40
Transverse Direction, 100°C to 200°C		80
Flammability Rating	UL 94	V-0 <sup>†</sup>
Thermal Conductivity, W/m-K		0.31
Dielectric Strength, kV/mm	ASTM D149	20
Dielectric Constant, 1 kHz, 25°C	ASTM D150	3.9
Dielectric Constant, 1 MHz, 25°C	ASTM D150	3.8
Dissipation Factor, 1 kHz, 25°C	ASTM D150	0.002
Dissipation Factor, 1 MHz, 25°C	ASTM D150	0.002
Volume Resistivity, ohm-cm	ASTM D257	1 x 10 <sup>16</sup>
Arc Resistance, sec	ASTM D495	125
Comparative Tracking Index, V	UL 746A	150 <sup>†</sup>
Insulation Resistance, ohm (90°C, 95% RH, 48 hr)		1 x 10 <sup>12</sup>
Mold Shrinkage,** m/m, Flow / Transverse		0.003 / 0.005
Density, g/cc	ISO 1183A	1.68
Water Absorption, % (23°C, 24 hr)	ASTM D570	0.02
Color		Natural

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

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

†This product is not currently UL Listed; test results indicate this level of performance

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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Before using this product, the user is advised and cautioned to make its own determination and assessment of the safety and suitability of the product for the specific use in question and is further advised against relying on the information contained herein as it may relate to any specific use or application. It is the ultimate responsibility of the user to ensure that the product is suited and the information is applicable to the user's specific application. Chevron Phillips Chemical Company LP does not make, and expressly disclaims, all warranties, including warranties of merchantability or fitness for a particular purpose, regardless of whether oral or written, express or implied, or allegedly arising from any usage of any trade or from any course of dealing in connection with the use of the information contained herein or the product itself. The user expressly assumes all risk and liability, whether based in contract, tort or otherwise, in connection with the use of the information contained herein or the product itself. Further, information contained herein is given without reference to any intellectual property issues, as well as federal, state or local laws which may be encountered in the use thereof. Such questions should be investigated by the user.

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Another quality product from



The Woodlands, Texas



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Property*	Test Method	Value
Tensile Strength, kpsi	ASTM D638	25.0
Elongation, %	ASTM D638	1.2
Flexural Strength, kpsi	ASTM D790	34.0
Flexural Modulus, Mpsi	ASTM D790	2.1
Notched Izod Impact, ft-lb/in, 1/8 in specimen	ASTM D256	1.6
Unnotched Izod Impact, ft-lb/in, 1/8 in specimen	ASTM D256	8.5
Compressive Strength, kpsi	ASTM D695	40.0
Heat Deflection Temperature, 264 psi, °F	ASTM D648	>500
Coefficient of Linear Thermal Exp., x 10 <sup>-6</sup> in/in/°C	ASTM E831	
Axial Direction, -50°C to 50°C		15
Axial Direction, 100°C to 200°C		15
Transverse Direction, -50°C to 50°C		40
Transverse Direction, 100°C to 200°C		80
Flammability Rating	UL 94	V-0 <sup>†</sup>
Thermal Conductivity, BTU-in/hr-ft <sup>2</sup> -°F		2.1
Dielectric Strength, V/mil	ASTM D149	500
Dielectric Constant, 1 kHz, 78°F	ASTM D150	3.9
Dielectric Constant, 1 MHz, 78°F	ASTM D150	3.8
Dissipation Factor, 1 kHz, 78°F	ASTM D150	0.002
Dissipation Factor, 1 MHz, 78°F	ASTM D150	0.002
Volume Resistivity, ohm-cm	ASTM D257	1 x 10 <sup>16</sup>
Arc Resistance, sec	ASTM D495	125
Comparative Tracking Index, V	UL 746A	150 <sup>†</sup>
Insulation Resistance, ohm (90°C, 95% RH, 48 hr)		1 x 10 <sup>12</sup>
Mold Shrinkage,** in/in, Flow / Transverse		0.003 / 0.005
Density, g/cc	ASTM D792	1.68
Water Absorption, % (73°F, 24 hr)	ASTM D570	0.02
Color		Natural

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

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

†This product is not currently UL Listed; test results indicate this level of performance

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