

# Ryton® R-4-220NA

## polyphenylene sulfide

Ryton® R-4-220NA and R-4-220BL 40% glass fiber reinforced polyphenylene sulfide compounds provide

enhanced mechanical strength after constant or repeated exposure to high temperature water.

### General

Material Status	• Commercial: Active
Availability	• Asia Pacific • Europe • Latin America • North America
Filler / Reinforcement	• Glass Fiber, 40% Filler by Weight
Features	• Good Strength
Uses	• Automotive Applications
RoHS Compliance	• RoHS Compliant
Automotive Specifications	• CHRYSLER MS-DB-570 CPN4241 Color: Natural • FORD WSL-M4D807-A • GM GMP.PPS.001
Appearance	• Natural Color
Forms	• Pellets
Processing Method	• Injection Molding

### Physical

	Typical Value	Unit	Test method
Density / Specific Gravity	1.68		ASTM D792
Molding Shrinkage			
Flow : 3.20 mm	0.20	%	
Across Flow : 3.20 mm	0.50	%	
Water Absorption (23°C, 24 hr)	0.020	%	ASTM D570

### Mechanical

	Typical Value	Unit	Test method
Tensile Strength			
--	186	MPa	ASTM D638
--	190	MPa	ISO 527-2
Tensile Elongation (Break)	1.6	%	ASTM D638 ISO 527-2
Flexural Modulus			
--	14500	MPa	ASTM D790
--	14000	MPa	ISO 178
Flexural Strength			
--	269	MPa	ASTM D790
--	275	MPa	ISO 178
Compressive Strength	275	MPa	ASTM D695
Poisson's Ratio	0.37		ISO 527

### Impact

	Typical Value	Unit	Test method
Notched Izod Impact			
3.18 mm	91	J/m	ASTM D256
--	9.0	kJ/m <sup>2</sup>	ISO 180/A

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<b>Impact</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Unnotched Izod Impact			
3.18 mm	640	J/m	ASTM D4812
--	35	kJ/m <sup>2</sup>	ISO 180

<b>Hardness</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Rockwell Hardness			ASTM D785
M-Scale	103		
R-Scale	122		

<b>Thermal</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Deflection Temperature Under Load			ASTM D648
1.8 MPa, Unannealed	265	°C	
CLTE			ASTM E831
Flow : -50 to 50°C	1.5E-5	cm/cm/°C	
Flow : 100 to 200°C	1.5E-5	cm/cm/°C	
Transverse : -50 to 50°C	4.0E-5	cm/cm/°C	
Transverse : 100 to 200°C	8.5E-5	cm/cm/°C	
Thermal Conductivity	0.31	W/m/K	
UL Temperature Rating	200 to 220	°C	UL 746B

<b>Electrical</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Surface Resistivity	1.0E+16	ohms	ASTM D257
Volume Resistivity	1.0E+16	ohms·cm	ASTM D257
Dielectric Strength	22	kV/mm	ASTM D149
Dielectric Constant			ASTM D150
25°C, 1 kHz	3.80		
25°C, 1 MHz	3.80		
Dissipation Factor			ASTM D150
25°C, 1 kHz	2.0E-3		
25°C, 1 MHz	3.0E-3		
Arc Resistance	125	sec	ASTM D495
Comparative Tracking Index (CTI)	150	V	UL 746

<b>Flammability</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test method</b>
Flame Rating (1.6 mm)	V-0		UL 94
Oxygen Index	45	%	ASTM D2863

<b>Additional Information</b>	<b>Typical Value</b>	<b>Unit</b>
Hydrolytic Stability <sup>1</sup>		
Tensile Strength Retained	> 80	%
Weight Gain	< 1.0	%

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## Notes

Typical properties: these are not to be construed as specifications.

<sup>1</sup> Test specimens aged 1000 hours in water at 140°C (284°F)

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**[www.solvay.com](http://www.solvay.com)**

**[SpecialtyPolymers.EMEA@solvay.com](mailto:SpecialtyPolymers.EMEA@solvay.com)** | Europe, Middle East and Africa

**[SpecialtyPolymers.Americas@solvay.com](mailto:SpecialtyPolymers.Americas@solvay.com)** | Americas

**[SpecialtyPolymers.Asia@solvay.com](mailto:SpecialtyPolymers.Asia@solvay.com)** | Asia and Australia

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