



**NORYL™ Resin WCA901**  
**Americas: COMMERCIAL**

Non-Halogenated flame retardant, flexible NORYL resin intended for evaluation in wire and cable applications, capable of meeting VW-1 and 105&#176;C end use temperature requirements as defined by UL 1581. Good processing performance by using standard extrusion equipment. UL1581 tests conducted on 2.0 mm wire with 0.12 mm x 20 stranded copper conductor.

TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>MECHANICAL</b>			
Tensile Stress, brk, Type I, 50 mm/min	230	kgf/cm <sup>2</sup>	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	110	%	ASTM D 638
Flexural Modulus, 12.5 mm/min, 100 mm span	3900	kgf/cm <sup>2</sup>	ASTM D 790
Hardness, Shore A, 30S reading	91	-	ASTM D 2240
Tensile Stress, break, 50 mm/min	22	MPa	ISO 527
Tensile Strain, break, 50 mm/min	95	%	ISO 527
Flexural Modulus, 12.5 mm/min	390	MPa	ISO 178
Tear strength	13	N/mm	ISO 6383
<b>IMPACT</b>			
Brittleness Temperature	<-40	°C	ASTM D 746
<b>PHYSICAL</b>			
Specific Gravity	1.1	-	ASTM D 792
Melt Flow Rate, 250°C/10.0 kgf	10	g/10 min	ASTM D 1238
<b>ELECTRICAL</b>			
Volume Resistivity	5.1E+15	Ohm-cm	ASTM D 257
Surface Resistivity	4.2E+16	Ohm	ASTM D 257
Relative Permittivity, 1 MHz	2.7	-	IEC 60250
Dissipation Factor, 1 MHz	0.004	-	IEC 60250
Comparative Tracking Index	600	V	IEC 60112
<b>FLAME CHARACTERISTICS</b>			
UL Compliant, 94V-0 Flame Class Rating (3)(4)	6	mm	UL 94 by SABIC-IP
Glow Wire Flammability Index 850°C, passes at	3	mm	IEC 60695-2-12
Glow Wire Ignitability Temperature, 3.0 mm	775	°C	IEC 60695-2-13
Oxygen Index (LOI)	27	%	ISO 4589
<b>WIRE AND CABLE - UL 1581 tested on 2.0mm wire with 0.12mmx20 stranded copper</b>			
Tensile strength @ break	26	MPa	UL 1581

(1) Typical values only. Variations within normal tolerances are possible for various colors. All values are measured after at least 48 hours storage at 23°C/50% relative humidity. All properties, except the melt volume and melt flow rates, are measured on injection molded samples. All samples tested under ISO test standards are prepared according to ISO 294.

(2) Only typical data for selection purposes. Not to be used for part or tool design.  
 (3) This rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

(4) Internal measurements according to UL standards.

(5) Measurements made from laboratory test coupon. Actual shrinkage may vary outside of range due to differences in processing conditions, equipment, part geometry and tool design. It is recommended that mold shrinkage studies be performed with surrogate or legacy tooling prior to cutting tools for new molded article.

(6) Needs hard coat to consistently pass 60 sec Vertical Burn.

Source GMD, last updated:

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TYPICAL PROPERTIES <sup>1</sup>	TYPICAL VALUE	Unit	Standard
<b>WIRE AND CABLE - UL 1581 tested on 2.0mm wire with 0.12mmx20 stranded copper</b>			
Tensile elongation @ break	190	%	UL 1581
Tensile strength @ break after 7days @136°C	27	MPa	UL 1581
Tensile elongation @ break after 7days @136°C	127	%	UL 1581
UL temperature rating	105	°C	UL 1581
Heat Deformation at 121°C/250g	15	%	UL 1581
VW-1	Pass	-	UL 1581

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PROCESSING PARAMETERS	TYPICAL VALUE	Unit
<b>Wire Coating Extrusion</b>		
Drying Temperature	75 - 85	°C
Drying Time	5 - 7	hrs
Drying Time (Cumulative)	12	hrs
Maximum Moisture Content	0.02	%
Extruder Length/Diameter Ratio (L/D)	22:1 to 26:1	-
Screw Speed	15 - 85	rpm
Feed Zone Temperature	200 - 240	°C
Middle Zone Temperatures	240 - 270	°C
Head Zone Temperature	240 - 270	°C
Neck Temperature	240 - 270	°C
Cross-head Temperature	240 - 270	°C
Die Temperature	240 - 270	°C
Melt Temperature	240 - 270	°C
Conductor Pre-heat Temperature	80 - 150	°C
Screen Pack	150 - 100	-
Cooling Water Air Gap	100 - 200	mm
Water Bath Temperature	15 - 45	°C

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