

FLEX NORYLTM RESIN WCD815U

REGION AMERICAS

DESCRIPTION

Industrial

FLEX NORYL WCD815U resin is a flexible, non-reinforced extrudable blend of Polyphenylene Ether (PPE) + Thermoplastic Elastomer (TPE). This UV stabilized material contains non-halogenated flame retardant and performance capable of meeting UL 1581 VW-1 requirements. FLEX NORYL WCD815U resin is intended for evaluation in AC cable jacket applications that require UL62 at 90C temperature rating and light color. It has a Shore A Hardness reading of 81 and exhibits superior thermal stability, very low water absorption, good electric properties, and low specific gravity. Processing is typically conducted on standard extrusion equipment, and UL 1581 testing is conducted on 2.0mm wire with 0.12mm X 20 stranded copper conductor

GENERAL INFORMATION	
Features	Flame Retardant, Good Processability, Hydrolytic Stability, Low Warpage, Thin Wall, Flexible, Low Moisture Absorption, Low Specific Gravity, Non CI/Br flame retardant, Non halogenated flame retardant, Creep resistant, Dimensional stability, Impact resistant, No PFAS intentionally added
Fillers	Unreinforced
Polymer Types	Polyphenylene Ether + TPE (PPE+TPE)
Processing Techniques	Wire Coating Extrusion
INDUSTRY	SUB INDUSTRY
Electrical and Electronics	Mobile Phone - Computer - Tablets

TYPICAL PROPERTY VALUES Revision 20241016

Electrical

PROPERTIES TYPICAL VALUES UNITS TEST METHODS MECHANICAL ⁽¹⁾ MECHANICAL Stress, brk, Type 1, 50 mm/min 15 MPa ASTM D638 Tensile Stress, brk, Type 1, 50 mm/min 245 % ASTM D638 Flexural Modulus, 12.5 mm/min, 100 mm span 20 MPa ASTM D2240 Hardness, Shore A, 305 reading 81 - ASTM D2240 Tensile Stress, break, 50 mm/min 17 MPa ISO 527 Tensile Strain, break, 50 mm/min 20 MPa ISO 527 Flexural Modulus, 12.5 mm/min 20 MPa ISO 178 PHYSICAL ⁽¹⁾ S STM D2240 Specific Gravity 1.03 - ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 10 g/10 min ASTM D123 ELECTRICAL ⁽¹⁾ S ASTM D257 Surface Resistivity 5.1E+15 Q.cm ASTM D257 Surface Resistivity 1.6E+16 Q.cm ASTM D257 Dielectric Strength in oil, 2.0mm 26 K//mm ASTM D149 Comparative Tracking Index <th></th> <th></th> <th></th> <th></th>				
Tensile Stress, brk, Type I, 50 mm/min 15 MPa ASTM D638 Tensile Strain, brk, Type I, 50 mm/min 245 % ASTM D638 Flexural Modulus, 12.5 mm/min, 100 mm span 20 MPa ASTM D790 Hardness, Shore A, 30S reading 81 - ASTM D2240 Tensile Stress, break, 50 mm/min 17 MPa ISO 527 Tensile Strain, break, 50 mm/min 260 % ISO 527 Flexural Modulus, 12.5 mm/min 20 MPa ISO 527 Flexural Modulus, 12.5 mm/min 20 MPa SO 178 PhySICAL ⁽¹⁾ V ASTM D792 Betwist In William Mater 250°C/10.0 kgf 10.3 2 ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 10.3 2 ASTM D123 ELECTRICAL ⁽¹⁾ 2 MCm ASTM D257 Sulface Resistivity 1.6E±16 Ω.cm ASTM D257 Dielectric Strength in oil, 2.0mm 25 I/m ASTM D149 Comparative Tracking Index 2.6 X/m ASIM D149 Dielectric Constant, 5 GHz<	PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
Tensile Strain, brk, Type I, 50 mm/min 245 % ASTM D638 Flexural Modulus, 12.5 mm/min, 100 mm span 20 MPa ASTM D790 Hardness, Shore A, 30S reading 81 - ASTM D2240 Tensile Stress, break, 50 mm/min 17 MPa ISO 527 Tensile Strain, break, 50 mm/min 260 % ISO 527 Flexural Modulus, 12.5 mm/min 20 MPa ISO 178 PHYSICAL ⁽¹⁾ WPa ASTM D792 Specific Gravity 1.03 - ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 10 g/10 min ASTM D238 ELECTRICAL ⁽¹⁾ Stress Stress ASTM D257 Surface Resistivity 5.1E+15 Ω.cm ASTM D257 Surface Resistivity 25 W//mm ASTM D257 Dielectric Strength in oil, 2.0mm 50 X//mm ASTM D257 Comparative Tracking Index 2.6 W//mm ASTM D149 Comparative Tracking Index 2.6 ASTM D25 ASTM D25 Dielectric Constant, 5 GHz <th< td=""><td>MECHANICAL (1)</td><td></td><td></td><td></td></th<>	MECHANICAL (1)			
Flexural Modulus, 1.2.5 mm/min, 100 mm span 20 MPa ASTM D790 Hardness, Shore A, 30S reading 81 - ASTM D2240 Tensile Stress, break, 50 mm/min 17 MPa ISO 527 Tensile Strain, break, 50 mm/min 260 % ISO 527 Flexural Modulus, 12.5 mm/min 20 MPa ISO 178 PHYSICAL (1) ** ** ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 1.03 - ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 10 . ASTM D792 ELECTRICAL (1) ** ** ASTM D257 Surface Resistivity 5.1E+15 Ω.cm ASTM D257 Surface Resistivity 1.6E+16 Ω ASTM D257 Dielectric Strength in oil, 2.0mm 25 W/m ASTM D149 Comparative Tracking Index 600 V IEC 60112 Dielectric Constant, 5 GHz 2.002 2.002 SAIC method Disipation Factor, 5 GHz 0.002 2.002 SAIC method	Tensile Stress, brk, Type I, 50 mm/min	15	MPa	ASTM D638
Hardness, Shore A, 30S reading 81 - ASTM D2240 Tensile Stress, break, 50 mm/min 17 MPa ISO 527 Tensile Strain, break, 50 mm/min 260 % ISO 527 Flexural Modulus, 12.5 mm/min 20 MPa ISO 178 PHYSICAL (1) Specific Gravity 1.03 - ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 10 g/10 min ASTM D1238 ELECTRICAL (1) Volume Resistivity 5.1E+15 Ω.cm ASTM D257 Surface Resistivity 1.6E+16 Ω.cm ASTM D257 Dielectric Strength in oil, 2.0mm 25 kV/mm ASTM D149 Comparative Tracking Index 600 V IEC 60112 Dielectric Constant, 5 GHz 2.6 3.002	Tensile Strain, brk, Type I, 50 mm/min	245	%	ASTM D638
Tensile Stress, break, 50 mm/min 17 MPa ISO 527 Tensile Strain, break, 50 mm/min 260 % ISO 527 Flexural Modulus, 12.5 mm/min 20 MPa ISO 178 PHYSICAL (¹) Specific Gravity 1.03 - ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 10 g/10 min ASTM D1238 ELECTRICAL (¹) Volume Resistivity 5.1E+15 Ω.cm ASTM D257 Surface Resistivity 1.6E+16 Ω ASTM D257 Dielectric Strength in oil, 2.0mm 25 kV/mm ASTM D149 Comparative Tracking Index 600 V IEC 60112 Dielectric Constant, 5 GHz 2.6 3.BIC method SABIC method Disipation Factor, 5 GHz 0.002 2. SABIC method	Flexural Modulus, 12.5 mm/min, 100 mm span	20	MPa	ASTM D790
Tensile Strain, break, 50 mm/min 260 % ISO 527 Flexural Modulus, 12.5 mm/min 20 MPa ISO 178 PHYSICAL (1) ** ** ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 10 g/10 min ASTM D1238 ELECTRICAL (1) ** ASTM D257 Volume Resistivity 5.1E+15 Ω.cm ASTM D257 Dielectric Strength in oil, 2.0mm 25 kV/mm ASTM D149 Comparative Tracking Index 600 V IEC 60112 Dielectric Constant, 5 GHz 2.6 - ASBIC method Dissipation Factor, 5 GHz 0.002 - ASBIC method	Hardness, Shore A, 30S reading	81	-	ASTM D2240
Flexural Modulus, 12.5 mm/min 20 MPa ISO 178 PHYSICAL (1) Specific Gravity 10.0 kgf 10.0 Mg	Tensile Stress, break, 50 mm/min	17	MPa	ISO 527
PHYSICAL (1) Specific Gravity 1.03 - ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 10 10 g/10 min ASTM D1238 ELECTRICAL (1) Volume Resistivity 5.1E+15 Ω.cm ASTM D257 Surface Resistivity 1.6E+16 Ω. ASTM D257 Dielectric Strength in oil, 2.0mm 257 Comparative Tracking Index 600 V. BC 60112 Dielectric Constant, 5 GHz 2.66 2.6 SABIC method Dissipation Factor, 5 GHz 5.0002 5.000	Tensile Strain, break, 50 mm/min	260	%	ISO 527
Specific Gravity 1.03 - Ω (10 min) ASTM D792 Melt Flow Rate, 250°C/10.0 kgf 10 g/10 min ASTM D1238 ELECTRICAL (1) Volume Resistivity 5.1E+15 Ω.cm ASTM D257 Surface Resistivity 1.6E+16 Ω ASTM D257 Dielectric Strength in oil, 2.0mm 25 kV/mm ASTM D149 Comparative Tracking Index 600 V IEC 60112 Dielectric Constant, 5 GHz 2.6 - SABIC method Dissipation Factor, 5 GHz 0.002 - SABIC method FLAME CHARACTERISTICS - SABIC method	Flexural Modulus, 12.5 mm/min	20	MPa	ISO 178
Melt Flow Rate, 250°C/10.0 kgf 10 10 250°C/10.0 kgf	PHYSICAL (1)			
ELECTRICAL ⁽¹⁾ Volume Resistivity 5.1E+15 Ω.cm ASTM D257 Surface Resistivity 1.6E+16 Ω ASTM D157 Dielectric Strength in oil, 2.0mm 25 kV/mm ASTM D149 Comparative Tracking Index 600 V IEC 60112 Dielectric Constant, 5 GHz 2.6 SABIC method Dissipation Factor, 5 GHz 0.002 - 2 SABIC method FLAME CHARACTERISTICS	Specific Gravity	1.03	-	ASTM D792
Volume Resistivity 5.1E+15 Ω.cm ASTM D257 Surface Resistivity 1.6E+16 Ω ASTM D257 Dielectric Strength in oil, 2.0mm 25 kV/mm ASTM D149 Comparative Tracking Index 600 V IEC 60112 Dielectric Constant, 5 GHz 2.6 - SABIC method Dissipation Factor, 5 GHz 0.002 - SABIC method FLAME CHARACTERISTICS	Melt Flow Rate, 250°C/10.0 kgf	10	g/10 min	ASTM D1238
Surface Resistivity1.6E+16ΩASTM D257Dielectric Strength in oil, 2.0mm25kV/mmASTM D149Comparative Tracking Index600VIEC 60112Dielectric Constant, 5 GHz2.6-SABIC methodDissipation Factor, 5 GHz0.002-SABIC methodFLAME CHARACTERISTICS	ELECTRICAL (1)			
Dielectric Strength in oil, 2.0mm 25 Comparative Tracking Index 600 V IEC 60112 Dielectric Constant, 5 GHz 2.6 0.002 Comparative Tracking Index Comparative Trac	Volume Resistivity	5.1E+15	$\Omega.cm$	ASTM D257
Comparative Tracking Index 600 V IEC 60112 Dielectric Constant, 5 GHz 2.6 - SABIC method Dissipation Factor, 5 GHz 0.002 - SABIC method FLAME CHARACTERISTICS	Surface Resistivity	1.6E+16	Ω	ASTM D257
Dielectric Constant, 5 GHz 2.6 0.002 Characteristics 2.6 Characteristics SABIC method SABIC method SABIC method	Dielectric Strength in oil, 2.0mm	25	kV/mm	ASTM D149
Dissipation Factor, 5 GHz 0.002 - SABIC method FLAME CHARACTERISTICS	Comparative Tracking Index	600	V	IEC 60112
FLAME CHARACTERISTICS	Dielectric Constant, 5 GHz	2.6	-	SABIC method
	Dissipation Factor, 5 GHz	0.002	-	SABIC method
Smoke Density on 0.5mm plaque, Non-flame, Ds, max 166 - ASTM E662	FLAME CHARACTERISTICS			
	Smoke Density on 0.5mm plaque, Non-flame, Ds, max	166	-	ASTM E662



PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS		
Smoke Density on 0.5mm plaque, Flame, Ds, max	117		ASTM E662		
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		
WIRE AND CABLE - UL 1581 TESTED ON 2.0MM WIRE WITH 0.12MMX20 STRANDED COPPER					
Tensile strength @ break	22	MPa	UL 1581		
Tensile elongation @ break	330	%	UL 1581		
Tensile strength @ break after 7days @136°C	23	MPa	UL 1581		
Tensile elongation @ break after 7days @136°C	290	%	UL 1581		
Heat Deformation at 121°C/250g	10	%	UL 1581		
VW-1	Pass	-	UL 1581		
WIRE COATING EXTRUSION					
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	180 – 220	°C			
Middle Zone Temperatures	220 – 250	°C			
Head Zone Temperature	220 – 250	°C			
Neck Temperature	220 – 250	°C			
Cross-head Temperature	220 – 250	°C			
Die Temperature	220 – 250	°C			
Melt Temperature	220 – 250	°C			
Conductor Pre-heat Temperature	25 – 120	°C			
Screen Pack	150 – 100	-			
Cooling Water Air Gap	100 – 200	mm			
Water Bath Temperature	15 – 60	°C			

⁽¹⁾ The information stated on Technical Datasheets should be used as indicative only for material selection purposes and not be utilized as specification or used for part or tool design.

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