



Rynite® PET

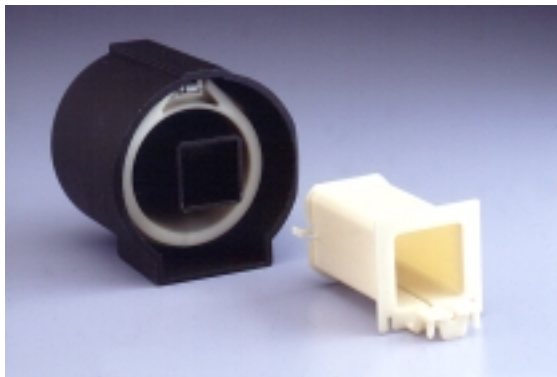
thermoplastic polyester resin



T-Roof Rail: Stiffness, strength and toughness, combined with good surface appearance.



Oven Handle: High stiffness, low discoloration and distortion, and light color availability.



Coil Bobbin: Excellent dielectric properties, outstanding heat resistance, combined with lasting adhesion.



Encapsulated Motor Stator: All-in-one molded stator assembly, lower production time, and cooler operation.

Start
with
DuPont

General Description

Rynite® PET thermoplastic polyester resins contain uniformly dispersed glass fibers or mineral/glass fiber combinations in polyethylene terephthalate (PET) resin that has been specially formulated for rapid crystallization during the injection molding process. Rynite® PET thermoplastic polyester resins are among the strongest and stiffest engineering resins available. As an engineering polymer resin family, Rynite® PET thermoplastic polyester resins offer a unique combination of properties—high strength, stiffness, excellent dimensional stability, outstanding chemical and heat resistance, and good electrical properties.

Specific grades of Rynite® PET thermoplastic polyester resin are formulated with special emphasis on strength, low warp and dimensional stability, toughness, high-temperature color stability, electrical properties, and excellent UL flammability and relative temperature index ratings.

Rynite® PET thermoplastic polyester resins are noted for their excellent flow characteristics in thin wall applications, close molding tolerances, and high productivity from multicavity molds. Several compositions are exceptional in encapsulation applications. The properties, processing characteristics, and competitive price of Rynite® PET thermoplastic polyester resins lead to high value-in-use and lower part cost and weight as compared to metals such as zinc or aluminum.

Among the many successful applications for Rynite® PET thermoplastic polyester resins are housings and covers, support brackets, pump parts, electrical sensor housings, motor parts, lamp sockets, terminal blocks, switches, bobbins, oven handles and control panels, small appliance housings, automotive support brackets, exterior components, headlamp retainers, ignition components, and luggage racks.

**Table 1
Compositions**

| Standard Compositions | Characteristics | Candidate Uses |
|-------------------------------|--|---|
| General-Purpose Grades | | |
| Rynite® 520 | 20% glass-reinforced modified polyethylene terephthalate—good balance of strength, stiffness, specific gravity, and toughness with good surface appearance. | Housings, electrical components, covers, frames, bobbins. |
| Rynite® 530 | 30% glass-reinforced modified polyethylene terephthalate—outstanding balance of strength, stiffness, and toughness, excellent electrical properties, surface appearance, and chemical resistance. | Electrical/electronic parts such as ignition components, relay bases, lamp sockets, bobbins; housings and other parts for pumps; mechanical components including gears, sprockets, vacuum cleaner parts, motor end bells; chair arms, casters, and other furniture parts. |
| Rynite® 545 | 45% glass-reinforced modified polyethylene terephthalate—greater strength and stiffness, excellent dimensional stability, and creep resistance. | Lamp housings, compressor housings, fuel, air, and temperature sensor housings, sunroof frames, spools, bobbins, transmission components, medical devices. |
| Rynite® 555 | 55% glass-reinforced modified polyethylene terephthalate—superior stiffness, dimensional stability, heat resistance, and outstanding resistance to creep. | Structural support brackets, housings and covers, auto parts, bicycle components, propellers. |
| Low Warp Grades | | |
| Rynite® 935 | 35% mica/glass-reinforced modified polyethylene terephthalate—exceptionally low warpage, excellent electrical properties, high stiffness, and high heat resistance. | Exterior body parts, structural housings and frames, irrigation components, electrical components including transformer and ignition coil housings. |
| Rynite® 940 | 40% mica/glass-reinforced modified polyethylene terephthalate—greater strength, stiffness, and low warpage. | Frames, exterior body parts; structural supports. |
| Toughened Grades | | |
| Rynite® 408 | 30% glass-reinforced modified polyethylene terephthalate with improved impact resistance. Excellent balance of strength, stiffness, toughness, and temperature resistance. | Water pump housings, structural housings and brackets, electrical and electronic housings, luggage rack components. |
| Rynite® 415HP | 15% glass-reinforced modified polyethylene terephthalate—improved for easy, fast processing over a broad molding range—excellent balance of strength, stiffness, and temperature resistance. | Snap fit applications, encapsulation of sensors, coils, etc. |
| Rynite® SST 35 | 35% stiffened, super-tough, glass-reinforced modified polyethylene terephthalate—superior combination of toughness and stiffness. Excellent surface appearance, moldability, and temperature resistance. | Automotive parts, wheels, yard and shop tools, sporting goods, luggage components, appliance housings, structural furniture components. |

(continued)

Table 1
Compositions *(continued)*

| Standard Compositions | Characteristics | Candidate Uses |
|--------------------------------|--|---|
| Flame-Retardant Grades* | | |
| Rynite® FR330 | Flame-retardant, 30% glass-reinforced modified polyethylene terephthalate. Recognized by UL as 94 V-0 at 0.032". Has a 140°C (284°F) temperature index. Excellent balance of electrical and mechanical properties. High temperature resistance and flow. | Electrical and electronic connectors and components such as relays, switches, lamp sockets, and fans. Used in structural components such as office equipment, fans, fan housings, and oven handles. |
| Rynite® FR515 | Flame-retardant, 15% glass-reinforced modified polyethylene terephthalate. Recognized by UL as 94 V-0 at 0.034". Has a 140°C (284°F) temperature index. Excellent balance of electrical and mechanical properties. High temperature resistance and flow. | Electrical and electronic connectors and components such as relays, switches, lamp sockets, and fans. |
| Rynite® FR530 | Flame-retardant, 30% glass-reinforced modified polyethylene terephthalate. Recognized by UL as 94 V-0 at 0.014". Has a 150°C (302°F) temperature index. Outstanding balance of properties and excellent flow characteristics. | Electrical and electronic connectors and other components requiring flame-retardant characteristics. Used in applications employing vapor phase and wave soldering techniques. |
| Rynite® FR543 | Flame-retardant, 43% glass-reinforced polyethylene terephthalate. Has a 155°C (311°F) temperature index—equivalent to many thermosets. Recognized by UL as 94 V-0 at 0.032". | Electrical/electronic applications such as relays, switches, lighting ballasts, and terminal blocks. |
| Rynite® FR943 | Flame-retardant, 43% glass-reinforced modified polyethylene terephthalate. Recognized by UL as 94 V-0 at 0.014". Has a 155°C (311°F) temperature index. Excellent balance of electrical and mechanical properties. Low warp characteristics. | Electrical and electronic connectors and other components requiring low warp characteristics. Used in electronic applications such as connector bodies and terminal blocks. |
| Rynite® FR945 | Flame-retardant, 45% mineral/glass-reinforced modified polyethylene terephthalate. Recognized by UL as 94 V-0 at 0.032". Has a 150°C (302°F) temperature index. Low warpage, high stiffness, and economical price. | Electrical and electronic components. Economical for large parts requiring flame-retardant characteristics, such as motor housings, bobbins, terminal blocks, and fans. |
| Rynite® FR946 | Flame-retardant, 46% glass-reinforced modified polyethylene terephthalate. Recognized by UL as 94 V-0 at 0.032". Has a 150°C (302°F) temperature index. Excellent balance of stiffness, strength, toughness, good surface appearance, and electrical properties. | Electrical and electronic components. Economical for large parts requiring flame-retardant characteristics, such as connector bodies, bobbins, and terminal blocks. |

*This numerical flame spread rating is not intended to reflect hazards presented by this or any other material under actual fire conditions.

**Table 2
Typical Properties of Rynite® PET**

| Property ¹ | Method | Unit | General-Purpose | | | | Low Warp | | Toughened | | | Flame-Retardant | | | | | | | | |
|--|--|--------------|-----------------|----------------|----------------|----------------|----------------|----------------|----------------|------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|--------|--|
| | | | Rynite® 520 | Rynite® 530 | Rynite® 545 | Rynite® 555 | Rynite® 935 | Rynite® 940 | Rynite® 408 | Rynite® 415HP | Rynite® SST 35 | Rynite® FR330 | Rynite® FR515 | Rynite® FR530 | Rynite® FR543 | Rynite® FR943 | Rynite® FR945 | Rynite® FR946 | | |
| Strength | Tensile Strength -40°C -40°F 23°C 73°F 90°C 194°F 150°C 300°F | ASTM D638 | MPa | 148 | 214 | 242 | 220 | 121 | 152 | 206 | 145 | 190 | 193 | 138 | 193 | 210 | 155 | 139 | 145 | |
| | | | kpsi | 21.5 | 31.0 | 35.1 | 31.9 | 17.5 | 22.0 | 29.9 | 21.0 | 27.5 | 28.0 | 20.0 | 28.0 | 30.5 | 22.5 | 20.2 | 21.0 | |
| | | | MPa | 114 | 159 | 186 | 189 | 89.6 | 117 | 126 | 79.0 | 103 | 138 | 107 | 138 | 172 | 124 | 104 | 103 | |
| | | | kpsi | 16.5 | 23.0 | 27.0 | 27.5 | 13.0 | 17.0 | 18.3 | 11.5 | 15.0 | 20.0 | 15.5 | 20.0 | 25.0 | 18.0 | 15.1 | 15.0 | |
| | | | MPa | 58.6 | 83.4 | 91.7 | 95.8 | 40.7 | 55.2 | 70.3 | 44.8 | 55.2 | 72.4 | 55.2 | 72.4 | 86.5 | 65.5 | 51.0 | 55.2 | |
| | | | kpsi | 8.5 | 12.1 | 13.3 | 13.9 | 5.9 | 8.0 | 10.2 | 6.5 | 8.0 | 10.5 | 8.0 | 10.5 | 12.5 | 9.5 | 7.4 | 8.0 | |
| | Elongation at Break -40°C (-40°F) 23°C (73°F) 90°C (194°F) 150°C (300°F) | ASTM D638 | % | 2.1 | 2.5 | 1.7 | 1.5 | 1.8 | 1.6 | 3.0 | 3.0 | 3.2 | 1.9 | 2.5 | 1.9 | 1.7 | 1.3 | 1.4 | 1.2 | |
| | | | % | 2.3 | 2.7 | 2.1 | 1.6 | 2.0 | 1.9 | 3.3 | 6.0 | 5.0 | 2.1 | 2.6 | 2.1 | 1.8 | 1.5 | 1.4 | 1.2 | |
| | | | % | 6.0 | 5.7 | 4.5 | 3.5 | 5.0 | 5.5 | 7.0 | 13 | 8.5 | 3.5 | 4.7 | 3.5 | 4.3 | 3.0 | 4.0 | 3.0 | |
| | | | % | 7.0 | 6.5 | 6.0 | 4.0 | 7.0 | 6.5 | 7.5 | 14 | 8.5 | 4.0 | 6.7 | 4.0 | 5.5 | 4.5 | 5.0 | 4.0 | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Stiffness and Creep | Tensile Modulus -40°C -40°F 23°C 73°F 90°C 194°F 150°C 300°F | ASTM D638 | MPa | 8,280 | 11,300 | 16,400 | 20,500 | 11,200 | 13,900 | 9,790 | 6,400 | 10,900 | 12,500 | 7,100 | 12,500 | 17,100 | 15,700 | 16,400 | 15,800 | |
| | | | kpsi | 1,200 | 1,640 | 2,380 | 2,970 | 1,620 | 2,010 | 1,420 | 928 | 1,580 | 1,810 | 1,030 | 1,810 | 2,480 | 2,280 | 2,380 | 2,290 | |
| | | | MPa | 7,240 | 10,700 | 15,500 | 17,900 | 9,930 | 11,600 | 9,310 | 4,220 | 7,590 | 11,000 | 6,890 | 11,000 | 16,500 | 11,900 | 12,300 | 14,500 | |
| | | | kpsi | 1,050 | 1,550 | 2,250 | 2,590 | 1,440 | 1,680 | 1,350 | 612 | 1,100 | 1,590 | 999 | 1,590 | 2,390 | 1,720 | 1,780 | 2,100 | |
| | | | MPa | 3,370 | 4,540 | 8,410 | 9,100 | 3,170 | 4,450 | 3,280 | 1,830 | 3,240 | 5,580 | 3,040 | 5,580 | 8,210 | 6,470 | 5,900 | 4,920 | |
| | | | kpsi | 488 | 658 | 1,220 | 1,320 | 460 | 645 | 475 | 265 | 470 | 809 | 441 | 809 | 1,190 | 939 | 857 | 713 | |
| | Shear Strength 23°C 73°F | ASTM D732 | MPa | — | 79.0 | 86.5 | 82.7 | 53.7 | 60.7 | — | 40.0 | 38.0 | 60.0 | 52.0 | 60.0 | 58.6 | 55.2 | 48.3 | 52.0 | |
| | | | kpsi | — | 11.5 | 12.5 | 12.0 | 7.8 | 8.8 | — | 5.8 | 5.5 | 8.7 | 7.5 | 8.7 | 8.5 | 8.0 | 7.0 | 7.5 | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Stiffness and Creep | Flexural Strength -40°C -40°F 23°C 73°F 90°C 194°F 150°C 300°F | ASTM D790 | MPa | 200 | 269 | 324 | 345 | 176 | 261 | 266 | 210 | 276 | 262 | 179 | 262 | 310 | 227 | 210 | 207 | |
| | | | kpsi | 29.0 | 39.0 | 47.0 | 50.0 | 25.5 | 37.9 | 38.6 | 30.5 | 40.0 | 38.0 | 26.0 | 38.0 | 45.0 | 33.0 | 30.5 | 30.0 | |
| | | | MPa | 172 | 235 | 283 | 290 | 141 | 198 | 193 | 93.1 | 145 | 200 | 158 | 200 | 248 | 186 | 154 | 165 | |
| | | | kpsi | 25.0 | 34.0 | 41.0 | 42.0 | 20.5 | 28.7 | 28.0 | 13.5 | 21.0 | 29.0 | 23.0 | 29.0 | 36.0 | 27.0 | 22.3 | 24.0 | |
| | | | MPa | 90.3 | 114 | 141 | 159 | 62.1 | 73.1 | 86.2 | 48.3 | 69.0 | 107 | 69.0 | 107 | 138 | 103 | 95.2 | 96.5 | |
| | | | kpsi | 13.1 | 16.5 | 20.5 | 23.0 | 9.0 | 10.6 | 12.5 | 7.0 | 10.0 | 15.5 | 10.0 | 15.5 | 20.0 | 15.0 | 13.8 | 14.0 | |
| | Flexural Modulus -40°C -40°F 23°C 73°F 90°C 194°F 150°C 300°F | ASTM D790 | MPa | 7,590 | 10,300 | 15,200 | 20,700 | 11,700 | 13,200 | 8,900 | 5,860 | 8,970 | 11,000 | 6,550 | 11,000 | 15,200 | 14,500 | 14,500 | 13,800 | |
| | | | kpsi | 1,100 | 1,500 | 2,200 | 3,000 | 1,700 | 1,920 | 1,290 | 850 | 1,300 | 1,600 | 950 | 1,600 | 2,200 | 2,100 | 2,100 | 2,000 | |
| | | | MPa | 6,480 | 8,960 | 17,900 | 17,900 | 9,600 | 11,700 | 8,280 | 3,600 | 6,890 | 10,300 | 5,860 | 10,300 | 14,500 | 13,100 | 11,700 | 12,400 | |
| | | | kpsi | 940 | 1,300 | 2,000 | 2,600 | 1,400 | 1,700 | 1,200 | 525 | 1,000 | 1,500 | 850 | 1,500 | 2,100 | 1,900 | 1,690 | 1,800 | |
| | | | MPa | 2,690 | 3,580 | 5,510 | 9,210 | 3,370 | 3,580 | 3,010 | 1,280 | 2,480 | 4,650 | 2,410 | 4,650 | 6,890 | 5,860 | 4,480 | 5,860 | |
| | | | kpsi | 390 | 520 | 800 | 1,330 | 489 | 520 | 436 | 185 | 360 | 674 | 350 | 674 | 1,000 | 850 | 650 | 850 | |
| Compressive Strength 23°C 73°F | ASTM D695 | MPa | 172 | 227 | 235 | 241 | 141 | 175 | 148 | 93.0 | 81.0 | 200 | 172 | 200 | 231 | 193 | 168 | 193 | | |
| | | kpsi | 25.0 | 33.0 | 34.0 | 35.0 | 20.5 | 25.4 | 21.5 | 13.5 | 11.7 | 29.0 | 24.9 | 29.0 | 33.5 | 28.0 | 24.4 | 28.0 | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| Deformation Under Load 27.6 MPa (4,000 psi) 23°C (73°F) 50°C (122°F) | ASTM D621 | % | — | 0.4 | 0.4 | — | — | 0.6 | — | 2.2 | 2.8 | 0.3 | 0.3 | 0.5 | 0.1 | 0.3 | 0.4 | 0.3 | | |
| | | % | — | 1.6 | 1.2 | — | — | 1.5 | — | 4.4 | 4.6 | 1.7 | 1.1 | 1.2 | 0.3 | 1.7 | 1.2 | 0.8 | | |
| | | | | | | | | | | | | | | | | | | | | |
| Flexural Creep 27.6 MPa (4,000 psi) 5,000 hr 23°C (73°F) 60°C (60°F) 125°C (257°F) | ASTM D2990 | % | — | 0.56 | 0.32 | 0.19 | 0.50 | 0.51 | — | 1.98 | 1.22 | 0.37 | 0.70 | 0.46 | 0.37 | 0.39 | 0.46 | 0.40 | | |
| | | % | — | 1.18 | 0.70 | — | 0.91 | 1.29 | — | 2.94 | 1.43 | 0.87 | 1.18 | 1.01 | 0.63 | 0.72 | 0.87 | 0.50 | | |
| | | % | — | 1.65 | 1.14 | 0.81 | 2.50 | 1.80 | — | — | 2.84 | 1.59 | 2.99 | 1.86 | 1.39 | 1.48 | 1.83 | 1.20 | | |
| Heat Deflection Temp. 1.8 MPa (264 psi) 0.46 MPa (66 psi) | ASTM D648 | °C | 210 | 224 | 226 | 229 | 215 | 211 | 220 | 207 | 220 | 222 | 215 | 224 | 224 | 220 | 200 | 225 | | |
| | | °F | 410 | 435 | 440 | 445 | 420 | 412 | 428 | 405 | 428 | 432 | 420 | 435 | 435 | 428 | 392 | 437 | | |
| | | °C | 240 | 247 | 248 | 246 | 241 | 241 | 240 | 235 | 246 | 247 | 244 | 246 | 247 | 245 | 237 | 250 | | |
| | | °F | 465 | 477 | 478 | 475 | 466 | 466 | 465 | 454 | 475 | 477 | 471 | 475 | 477 | 473 | 459 | 482 | | |

(continued)

¹ These values are for natural color (NC010) resins only (except 940 BK505). Colorants or other additives may alter some or all of these properties. The data listed here fall within the normal range of product properties, but they should not be used to establish specification limits nor used alone as the basis of design.

Table 2
Typical Properties of Rynite® PET (continued)

| | Property ¹ | Method | Unit | General-Purpose | | | | Low Warp | | Toughened | | | Flame-Retardant | | | | | | | |
|---|---|--|--|-----------------|------------------|------------------|----------------|------------------|------------------|------------------|------------------|-------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|-------------|
| | | | | Rynite® 520 | Rynite® 530 | Rynite® 545 | Rynite® 555 | Rynite® 935 | Rynite® 940 | Rynite® 408 | Rynite® 415HP | Rynite® SST 35 | Rynite® FR330 | Rynite® FR515 | Rynite® FR530 | Rynite® FR543 | Rynite® FR943 | Rynite® FR945 | Rynite® FR946 | |
| Toughness | Unnotched Impact Strength -40°C -40°F | ASTM D4812 | J/m ft lb/in | 385 | 750 | 800 | 585 | 280 | 415 | 960 | 640 | 1,070 | 535 | 350 | 535 | 510 | 385 | 285 | 375 | |
| | 23°C 73°F | | | 510 | 960 | 1,000 | 855 | 425 | 530 | 960 | 855 | 1,200 | 695 | 530 | 585 | 750 | 480 | 375 | 375 | |
| | Izod Impact Strength -40°C -40°F | | | ASTM D256 | J/m ft lb/in | 53 | 96 | 123 | 107 | 43 | 69 | 101 | 69 | 160 | 85 | 59 | 80 | 91 | 53 | 43 |
| 23°C 73°F | 69 | 101 | 117 | | | 107 | 64 | 75 | 133 | 133 | 235 | 91 | 69 | 91 | 96 | 64 | 48 | 48 | | |
| Fatigue Endurance at 10 ⁶ Cycles | ASTM D671 | MPa kpsi | — — | | | 40.7 5.9 | 51.0 7.4 | 53.8 7.8 | 33.1 4.8 | 42.7 6.2 | 34.5 5.0 | 20.7 3.0 | 26.9 3.9 | 41.3 6.0 | 44.1 6.4 | 41.3 6.0 | 50.2 7.3 | 45.0 6.5 | 38.0 5.5 | 37.2 5.4 |
| Thermal | Melting Point | DSC | °C °F | 254 489 | 254 489 | 254 489 | 254 490 | 252 485 | 250 482 | 254 489 | 250 482 | 250 482 | 254 489 | 254 489 | 254 489 | 254 489 | 250 482 | 250 482 | 254 489 | |
| | Coeff. of Linear Thermal Expansion Flow Direction -40° to 23°C -40° to 73°F 23 to 55°C 73 to 131°F 55 to 160°C 131 to 320°F | ASTM E831 | 10 ⁻⁴ mm/mm/°C 10 ⁻⁴ in/in/°F | 0.31 | 0.22 | 0.18 | 0.13 | 0.26 | 0.22 | 0.24 | 0.40 | 0.21 | 0.21 | 0.33 | 0.22 | 0.16 | 0.21 | 0.17 | 0.19 | |
| | | | | 0.17 | 0.12 | 0.10 | 0.07 | 0.14 | 0.12 | 0.13 | 0.22 | 0.12 | 0.12 | 0.18 | 0.12 | 0.09 | 0.12 | 0.09 | 0.11 | |
| | | | | 0.25 | 0.10 | 0.13 | 0.08 | 0.16 | 0.15 | 0.14 | 0.20 | 0.06 | 0.16 | 0.18 | 0.19 | 0.11 | 0.19 | 0.13 | 0.14 | |
| | | | | 0.14 | 0.06 | 0.07 | 0.04 | 0.09 | 0.08 | 0.08 | 0.11 | 0.03 | 0.09 | 0.10 | 0.11 | 0.06 | 0.11 | 0.07 | 0.08 | |
| | | | | 0.11 | 0.04 | 0.05 | 0.01 | 0.14 | 0.06 | 0.08 | 0.32 | 0.13 | 0.06 | 0.12 | 0.10 | 0.07 | 0.06 | 0.03 | 0.07 | |
| | | | | 0.06 | 0.02 | 0.03 | 0.01 | 0.08 | 0.03 | 0.04 | 0.18 | 0.07 | 0.03 | 0.07 | 0.06 | 0.04 | 0.03 | 0.02 | 0.04 | |
| | Cross Flow -40° to 23°C -40° to 73°F 23 to 55°C 73 to 131°F 55 to 160°C 131 to 320°F | ASTM E831 | 10 ⁻⁴ mm/mm/°C 10 ⁻⁴ in/in/°F | 0.72 | 0.67 | 0.54 | 0.54 | 0.53 | 0.54 | 0.85 | 0.98 | 1.13 | 0.62 | 0.70 | 0.68 | 0.55 | 0.51 | 0.49 | 0.35 | |
| | | | | 0.40 | 0.37 | 0.30 | 0.30 | 0.29 | 0.30 | 0.47 | 0.54 | 0.63 | 0.34 | 0.39 | 0.38 | 0.31 | 0.28 | 0.27 | 0.19 | |
| | | | | 0.93 | 0.81 | 0.71 | 0.75 | 0.52 | 0.60 | 0.85 | 1.17 | 1.26 | 0.76 | 0.88 | 0.92 | 0.79 | 0.65 | 0.65 | 0.36 | |
| 0.52 | | | | 0.45 | 0.39 | 0.42 | 0.29 | 0.33 | 0.47 | 0.65 | 0.70 | 0.42 | 0.49 | 0.51 | 0.44 | 0.36 | 0.36 | 0.20 | | |
| 0.90 | | | | 1.07 | 0.95 | 0.95 | 0.81 | 0.84 | 0.92 | 1.09 | 1.12 | 0.72 | 1.05 | 0.98 | 0.96 | 0.84 | 0.82 | 0.59 | | |
| 0.50 | | | | 0.59 | 0.53 | 0.53 | 0.45 | 0.47 | 0.51 | 0.61 | 0.62 | 0.40 | 0.58 | 0.54 | 0.53 | 0.47 | 0.46 | 0.33 | | |
| Thermal Conductivity | ASTM C177 | W/m K Btu/hr/ft ² /°F/in | — — | 0.29 2.0 | 0.32 2.2 | 0.33 2.3 | 0.26 1.8 | — — | 0.26 1.8 | — — | — — | 0.25 1.7 | 0.23 1.6 | 0.25 1.7 | 0.22 1.49 | 0.31 2.3 | 0.24 1.65 | 0.37 2.6 | | |
| Electrical | Volume Resistivity | ASTM D257 | ohm-cm | — | 10 ¹⁵ | 10 ¹⁵ | — | 10 ¹⁵ | 10 ¹⁵ | 10 ¹⁵ | 10 ¹³ | 10 ¹⁴ | 10 ¹⁵ | 10 ¹⁵ | 10 ¹⁵ | 10 ¹⁵ | 10 ¹⁵ | 10 ¹⁵ | | |
| | Surface Resistivity | ASTM D257 | ohm/Sq | — | 10 ¹⁴ | 10 ¹⁴ | — | 10 ¹⁴ | 10 ¹⁴ | 10 ¹⁴ | 10 ¹³ | 10 ¹³ | 10 ¹³ | 10 ¹³ | 10 ¹⁴ | 10 ¹³ | 10 ¹³ | 10 ¹⁴ | | |
| | Dielectric Strength, 500 V/s, Short Time in Oil 1.59 mm at 23°C 1/8 in disk at 73°F 1.59 mm at 95°C 1/8 in disk at 203°F 1.59 mm at 150°C 1/8 in disk at 300°F 3.18 mm at 23°C 1/4 in disk at 73°F 3.18 mm at 95°C 1/4 in disk at 203°F 3.18 mm at 150°C 1/4 in disk at 300°F | ASTM D149 | kV/mm V/mil | 25.0 | 25.5 | 24.5 | 24.5 | 29.5 | 23.0 | 26.5 | 24.0 | 25.5 | 25.0 | 26.0 | 25.0 | 23.5 | 25.0 | 24.5 | 24.5 | |
| | | | | 635 | 650 | 620 | 620 | 750 | 585 | 675 | 610 | 650 | 635 | 660 | 635 | 600 | 635 | 620 | 620 | |
| | | | kV/mm V/mil | 22.5 | 22.5 | 22.5 | 22.5 | 25.5 | 19.0 | 24.0 | 15.5 | 16.0 | 23.5 | 26.5 | 23.5 | 26.5 | 21.5 | 23.0 | 23.0 | 24.5 |
| | | | | 570 | 570 | 570 | 570 | 650 | 485 | 610 | 395 | 405 | 600 | 675 | 600 | 550 | 585 | 585 | 620 | |
| | | | kV/mm V/mil | 14.5 | 15.5 | 16.0 | 16.5 | 14.5 | 15.0 | 14.5 | 8.5 | 9.5 | 13.0 | 13.0 | 13.0 | 13.5 | 12.0 | 13.0 | 22.0 | |
| | | | | 375 | 395 | 405 | 420 | 375 | 380 | 375 | 215 | 240 | 330 | 330 | 330 | 340 | 300 | 330 | 560 | |
| | kV/mm V/mil | 20.0 | 20.5 | 20.0 | 20.0 | 23.5 | 16.5 | 21.5 | 18.0 | 19.5 | 18.0 | 18.5 | 18.0 | 17.0 | 18.0 | 17.0 | 18.0 | | | |
| | | 510 | 520 | 510 | 510 | 600 | 415 | 550 | 460 | 495 | 460 | 470 | 460 | 430 | 460 | 430 | 460 | | | |
| kV/mm V/mil | 17.5 | 16.5 | 17.5 | 17.0 | 19.5 | 14.0 | 17.5 | 11.0 | 10.5 | 18.0 | 22.0 | 18.0 | 16.0 | 18.0 | 17.5 | 20.5 | | | | |
| | 445 | 420 | 445 | 430 | 495 | 355 | 445 | 280 | 270 | 460 | 560 | 460 | 405 | 460 | 445 | 520 | | | | |
| kV/mm V/mil | 11.5 | 12.0 | 12.5 | 12.5 | 12.0 | 10.5 | 12.0 | 6.5 | 7.5 | 9.0 | 11.0 | 9.0 | 12.0 | 10.5 | 10.5 | 17.0 | | | | |
| | 295 | 300 | 320 | 320 | 300 | 265 | 300 | 170 | 190 | 230 | 280 | 230 | 300 | 265 | 265 | 430 | | | | |
| Step by Step 3.18 mm at 23°C 1/4 in disk at 73°F | — | kV/mm V/mil | — — | 17.5 445 | 17.5 445 | — — | 21.0 530 | 19.0 485 | — — | 16.5 420 | 17.0 430 | 16.0 405 | 17.0 430 | 14.0 355 | 15.0 380 | 17.0 430 | 15.0 380 | 15.5 395 | | |
| Dielectric Constant 10 ² Hz 10 ⁶ Hz | ASTM D150 | | 3.2 | 3.6 | 4.0 | — | 3.8 | 3.8 | 3.4 | 3.9 | — | 3.3 | 3.1 | 3.8 | 4.1 | 4.1 | 4.1 | 3.7 | | |
| | | | 3.0 | 3.5 | 3.9 | — | 3.7 | 3.7 | 3.3 | 3.7 | 4.1 | 3.3 | 3.0 | 3.7 | 4.1 | 4.1 | 4.1 | 4.0 | 3.6 | |
| Dissipation Factor 10 ² Hz 10 ⁶ Hz | ASTM D150 | | 0.010 | 0.005 | 0.005 | — | 0.008 | 0.007 | 0.010 | 0.019 | — | 0.005 | 0.004 | 0.011 | 0.009 | 0.010 | 0.009 | 0.007 | | |
| | | | 0.015 | 0.012 | 0.011 | — | 0.010 | 0.015 | 0.015 | 0.022 | 0.023 | 0.014 | 0.015 | 0.018 | 0.017 | 0.015 | 0.017 | 0.017 | 0.014 | |
| Arc Resistance | ASTM D495 | S | 300– 360 | 120– 180 | 120– 180 | 120– 180 | 120– 180 | — | — | 60– 120 | — | 60– 120 | 60– 120 | 60– 120 | 120– 180 | 60– 120 | 120– 180 | 60– 120 | | |

(continued)

¹These values are for natural color (NC010) resins only (except 940 BK505). Colorants or other additives may alter some or all of these properties. The data listed here fall within the normal range of product properties, but they should not be used to establish specification limits nor used alone as the basis of design.

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