



Data Sheet: SG200

Grade FHT

Flexible, High-Temperature Laminate

- Highly Flexible
- Excellent Dielectric Strength
- High Heat Resistance
- Ideal For Dry-Type Transformers
- Easily Fabricated
- Asbestos-Free

Grade FHT (Flexible High Temperature) Laminate provides numerous high-performance features and benefits, such as high flexibility and excellent dielectric strength at elevated temperatures. It also exhibits the highest UL® temperature index in the industry for a flexible glass-reinforced polyester in 1/32 inch and 1/16 inch thicknesses:

- 1/32" – 190° C Electrical • 1/16" – 200° C Electrical
- 1/32" – 190° C Mechanical • 1/16" – 200° C Mechanical

With its high resistance to heat, FHT Laminate offers a cost-effective alternative to aramid paper in 220°C insulation systems. Typical applications include layer and core insulation for dry-type transformers.

Grade SG-200

High-Strength & High-Temperature Laminate

- Extremely Strong
- Excellent Retention Of Properties At Elevated Temperatures
- Ideal For High Temperature Application
- Easily Fabricated
- Asbestos-Free

Grade SG-200 High-Strength & High-Temperature Laminate offers the same high-performance features and benefits as FHT Laminate. In addition, SG-200 offers much higher mechanical strengths than FHT with temperature ratings of up to 210° C.

Because of its capabilities, SG-200 is ideal for a wide variety of product applications requiring high-temperature NEMA GPO-1 products. Grade SG-200 is also a superior replacement material for epoxy-bonded mica in layer insulation applications. SG-200 has a UL Temperature Index of 210° C Electrical and 210° C Mechanical.

Grade SG-200 is available in thicknesses of 1/32" to 2 1/2". Special sheet sizes of 64" x 64" are available for large lifting magnets.



Ventilated Dry-Type Transformer Coil. Both SG-200 and FHT Laminates are used in a wide variety of dry-type transformer



ELECTRICAL INSULATION COMPANY

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Grades FHT & SG-200

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| | UNIT | ASTM/UL Number | Grade FHT | Grade SG-200 |
|--|---------------------------------|----------------|--------------------------------|------------------------------|
| General Information | | | | |
| Part Number | | | 1888 | 1988 |
| Standard Color | | | Natural/Cream | Natural/Tan |
| Mechanical Properties | | | | |
| NEMA Grade Li 1-1989 | | | — | GPO-1 |
| Tensile Strength | Psi | D638 | 10,500 | 12,500 |
| Tensile Modulus | Psi X 10 ³ | D638 | — | 1.7 |
| Flexural Strength | Psi | D790 | — | 29,000 |
| Compressive Strength | Psi | D695 | 14,000 | 36,000 |
| Shear Strength | Psi | D732 | — | 11,100 |
| (ZOD Impact Strength (notched) | ft. lb./in. | D256 | 10 | 12 |
| Water Absorption | % by wt. | D570 | 1.1 | 0.3 |
| Specific Gravity | — | D792 | 1.8 | 1.7 |
| Electrical Properties | | | | |
| Electrical Strength – Perpendicular S/T in Air | Vpm | D149 | 450 | 500 |
| Electrical Strength – Perpendicular S/T in Oil | Vpm | D149 | 570 | 625 |
| Electrical Strength – Parallel S/S in Oil | kV | D149 | 60 | 50 |
| Arc Resistance | Sec. | D495 | 139 | 120/180* |
| IEC Track Resistance (CTI) @ 3 mm thickness | V. | UL746A | >500 | >500 |
| UL High Voltage Track Rate | In./Min. | UL746A | 0 | 0 |
| Permittivity, 60 Hz | — | D150 | 6.4 | 4.6 |
| Dissipation Factor, 60 Hz | — | D150 | 0.070 | 0.37 |
| Permittivity, MHz | — | D150 | 4.2 | 3.7 |
| Dissipation Factor, MHz | — | D150 | 0.033 | 0.013 |
| Insulation Resistance | Ohm x 10 ¹² | D257 | — | 145 |
| Flame Resistance Properties | | | | |
| UL Subject 94 | — | UL94 | HB | HB |
| UL Hot Wire Ignition | Sec. | UL746A | 0.028 in./49 0.058 in./102 | 0.028 in./35 0.058 in./39 |
| UL High Amp Ignition | # Exposure | UL746A | 200+ | 200+ |
| Oxygen Index | %O ₂ | D2863 | 21.8 | 21.8 |
| Thermal Properties | | | | |
| Coefficient of Thermal Expansion | In/In/°C x 10 ⁻⁴ | D696 | 2 | 2 |
| Thermal Conductivity | BTU/HR./Ft ² /In./°F | C177 | 1.7 | 1.7 |
| UL Temperature Index | | | | |
| – Electrical | °C | UL 746B | 0.028 in./150 0.058 in./200 | 210 |
| – Mechanical | °C | UL 746B | 0.028 in./150 0.058 in./200 | 210 |
| UL Recognition File Number | — | — | E81928 | E81928 |

Typical average values for testing 0.063" thick material. Values will vary somewhat from thickness to thickness within a material grade.

Motors

Generators

Transformers

Automotive