



# 3M™ Expandable Slot Liner ESL-FC190

Data Sheet

May 2025

**Product Description** 3M™ Expandable Slot Liner (ESL) ESL-FC190 is a flexible insulation constructed of a core polyester film with expandable thermosetting adhesive applied to both sides and covered with porous cover layers.

**Potential Applications & Product Features** 3M ESL-FC190 is for use as a slot insulation in direct cooled, hairpin coil design motors. The 3M ESL FC-190 will electrically isolate, mechanically protect, and securely hold the coils in EV motors without the need of added resin impregnation.

- Eliminates the need for liquid resin in the slot and associated impregnation/curing process.
- Expands and cures in 10 minutes when heated to 160°C (rapid ramping)
- The surface cover layer helps prevent adhesive scraping during slot insertion/coil insertion.

## Properties

**Note: Automotive Manufacturing, Design, and Quality Disclaimer.** This product does not fully adhere to all typical automotive design or quality system requirements, such as IATF 16949 or VDA 6.3. This product may not be manufactured in an IATF certified facility. Values are not to be used for specification purposes. Cpk calculations for properties may be made once specification is established for specific application. Customer is solely responsible for evaluating the product and determining whether it is appropriate and suitable for customer's automotive application and for conducting incoming inspections before use of the product. Failure to do so may result in injury, death, and/or harm to property.

| Initial Property                                 | Sample condition | Value      |
|--|------------------|------------|
| Total thickness <sup>1</sup>                     | Uncured          | 0.190 mm   |
| Tensile strength MD <sup>1</sup>                 | Uncured          | 450 N/25mm |
| Elongation MD <sup>1</sup>                       | Uncured          | 40 %       |
| Dielectric Breakdown Voltage <sup>2</sup>        | Uncured          | 12 kV      |
| Partial Discharge Inception Voltage <sup>3</sup> | Cured            | 1500 Vpeak |
| Overlap shear strength in 200°C <sup>4</sup>     | Cured            | 1.6 MPa    |

**Notes:** The technical information and data in this table should be considered representative or typical only and should not be used for specification purposes.

1. ASTM D1000 Test Method- properties measured at room temperature (23+/-5°C) unless otherwise stated
2. ASTM D1000 Test Method- property measured in insulation oil unless otherwise stated
3. 3M internal Test Method - property measured at room temperature (23+/-5°C) with 100pC min.
4. 3M internal Test Method - property measured at 200°C with 5mm/min. of tensile speed

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|                      |   |
|----------------------|---|
| Regulatory           | For Regulatory information including RoHS, REACH, please visit <a href="http://www.3M.com/regs">www.3M.com/regs</a>   |
| Shelf Life & Storage | Cold storage is required. This product has a 6-month shelf life (from the date of manufacture) when stored at $\leq 10^{\circ}\text{C}$ .   |
| Availability         | For availability, please contact your local distributor. Names and addresses are available from <a href="http://www.3M.com/oem">www.3M.com/oem</a> [Where to Buy] or call 1-800-676-8381. |

## Expandable Slot Liner

**Intended Use:** These products are intended for use within electric motors to electrically insulate coil conductor from adjacent conductor or ground in automotive, off-highway, industrial and marine applications. Since there are many factors that can affect a product's use, the customer remains responsible for determining whether the 3M product is suitable and appropriate for the customer's specific application and system, including customer conducting an appropriate risk assessment and evaluating the 3M product in customer's application and system.

**Restricted Use:** 3M advises against the use of this 3M product in any application other than the stated intended use(s), since other applications have not been evaluated by 3M and may result in an unsafe or unintended condition.

## Technical Statement

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