

# Sleeving, Coated Electrical - Component

See General Information for Sleeving - Component

The materials covered under this category are incomplete in certain constructional features or restricted in performance capabilities and are intended for use as components of complete equipment submitted for investigation rather than for direct separate installation in the field. THE FINAL ACCEPTANCE OF THE COMPONENT IS DEPENDENT UPON ITS INSTALLATION AND USE IN EQUIPMENT SUBMITTED TO UL

## GENERAL

This category covers coated electrical sleeving intended for use as part of the internal wiring of electrical devices and appliances in air, dry and damp locations, in accordance with NFPA 70, National Electric Code (NEC). Sleeving may be used for insulating one or more inadequately insulated conductors, bus bars, component leads, or assemblies of electronic components.

Sleeving is usually round in cross-section and consists of closely woven braid made from glass, cotton linen, or other fibrous material which may be thoroughly impregnated, saturated, or equivalently treated with a suitable varnish, compound, or sizing agent prior to being coated with acrylic, silicone, or vinyl polymers.

Coated electrical sleeving is typically used for applications with the following considerations:

Coating Material	Temperature Rating, (°C)	Voltage Rating, (V)
Polyvinyl chloride	105	600
Polymer	130	600
Polyvinyl chloride	Determined from thermal aging test	300
Acrylic	155	600
Polymer	180	600
Acrylic	Determined from thermal aging test	300
Silicone polymer	200	600
Silicone polymer	220	600
Silicone polymer	240	600
Silicone polymer	Determined from thermal aging test	300
A product used for temperatures greater than indicated above or made from a different polymer coating or fiber may be acceptable thereafter a long term heat aging evaluation.		

## CONDITIONS OF ACCEPTABILITY

Acceptability of the coated electrical sleeving in any particular device or appliance depends on the conditions that prevail in actual service. Accordingly, for a particular application, the coated electrical sleeving will in some cases be affected by the requirements for the device or appliance in which the sleeving will be used, and it will be necessary to employ a coated electrical

sleeving having features other than, or in addition to, those specified in these requirements. For example, coated electrical sleeving may be required to have a heavier wall thickness or a cross-section other than round; or it may be required to have an inherent resistance to the effects of immersion in water, oil, solvents, or other liquids or their vapors; or it may be required to be resistant to the development of fungi and similar organisms.

Consideration is to be given to the following Conditions of Acceptability when these components are employed in the end-use equipment:

1. A standard insulating conductor intended specifically for the purpose shall be employed prior to using coated electrical sleeving as an insulation where it is feasible (e.g., appliance wiring material).
2. Sleeving is intended to be used in dry and damp locations only as defined in ANSI/NFPA 70, "National Electrical Code."
3. Minimum wall thickness and the published ratings of the sleeving shall be considered in the end-product investigation and standard.
4. Sleeving marked "VW-1" has been investigated for resistance to ignition and propagation of flame using a vertical fine wire flame test.
5. Sleeving marked with an Oil Resistance Temperature "60°C" or "80°C" is suitable for intermittent or occasional contact with oil, not exceeding the oil rating.
6. Sleeving may not be relied upon in applications where it will be subjected to ultraviolet light radiation.
7. Sleeving may not be relied upon in applications where it will be in contact with sharp edges, corners, projections or burrs, or where subject to tension, compression, abrasion, repeated flexing.
8. Sleeving may not be relied upon in applications with respect to its resistance to ignition from electrical sources.

Additional Conditions of Acceptability may be included in the Report available from the manufacturer.

### Minimum Wall Thickness

Thickness of coating is critical to maintain the performance of the sleeving and shall not be less than that referred to in the respective tables within [UL 1441](#), "Coated Electrical Sleeving".

### Temperature Rating

Temperature rating of the sleeving shall be equivalent to the normal operating conditions of the appliance wiring for which it is providing insulation. The rated temperature is determined through thermal endurance tests for critical properties dependent on the material and grade of the sleeving.

### Voltage Rating

Voltage rating of the sleeving shall be equivalent to the normal operating conditions of the appliance wiring for which it is providing insulation. The rated temperature is determined through thermal endurance tests for critical properties dependent on the material and grade of the sleeving.

### Flammability

Coated electrical sleeving has been investigated to a minimum of the Horizontal specimen flame test. Sleeving may additionally be investigated to the VW-1 (vertical wire) flame test described in [UL 1441](#), "Coated Electrical Sleeving".

### Oil Resistance

Coated electrical sleeving may be investigated for intermediate or occasional contact with oil and reference a specific Oil Resistance Class dependent on the dielectric breakdown following immersion in IRM 902 oil.

- Oil Resistance at 60°C – Immersed for 96 hours at 100°C
- Oil Resistance at 80°C – Immersed for 60 days at 80°C

## PRODUCT MARKINGS

All coated electrical sleeving shall be marked with the following or equivalent information on the outside of the spool, on a separate tag on each end of the sleeving, on the bundling wrappers, or on the outside of the smallest unit container:

1. Company name, company ID, trade name, trademark, or private labeller's name (if applicable),
2. Manufacturer's name or ID (if different from Item 1),
3. Catalog number or equivalent,
4. Temperature rating in °C,

- 5. Voltage rating,
- 6. Date of manufacture (or a lot number, if the date of manufacture can be traced from this number),
- 7. Flammability rating (if VW-1),
- 8. "Oil Resistant 60°C" or "Oil Resistance 80°C", (if applicable).

### RELATED PRODUCTS

See:

- Tubing, Extruded Insulating ([YDPU2](#))
- Tubing, Flame Retardant ([YDOS2](#))
- Miscellaneous Tubing, Polymeric ([YDTU2](#))
- Tubing, Sealable Channel, Insulating ([YDSW2](#))
- Sleeving, Flame Retardant ([UZIQ2](#))
- Sleeving, Miscellaneous ([UZKX2](#))
- Tubing, Mechanical Protection and Fittings ([YDRQ2](#))
- Insulating Tape ([QANZ](#) and [QANZ2](#))
- Miscellaneous Tape ([OARC2](#))

This category does not cover tubing consisting entirely of extruded thermoplastic material, that may or may not be heat shrinkable and may or may not be made of a material which is a cross-linked polymer. These materials are covered under Tubing, Extruded Insulating ([YDPU2](#)).

This category does not cover flexible, nonmetallic tubing used for mechanical protection. These materials are covered under Tubing, Mechanical Protection and Fittings ([YDRQ2](#)).

### REQUIREMENTS

The basic standard used to investigate products in this category is [UL 1441](#), "Coated Electrical Sleeving."

### UL MARKING

Components Recognized under UL's Component Recognition Program are identified by significant markings consisting of the Recognized company's identification and catalog, model or other product designation printed on the central paper core or outer package that correspond with the marking specified in UL's published records. Only those components that actually bear the "Marking" shown in the individual Recognitions should be considered as being covered under the Component Recognition Program.

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