



Electrical Markets Division Global New Product Release: 3M™ Electrical Filament Tape 1076

Product Description

3M™ Electrical Filament Tape 1076 is made of an electrical-grade paper backing, reinforced with scrim glass filaments and an oil-compatible acrylic pressure-sensitive adhesive. Unlike conventional film-backed tapes, this product's paper backing construction provides for complete impregnation and saturation of the tape in adjacent layers of insulation. This key feature minimizes the possibility of impregnation voids leading to corona discharges, with subsequent deterioration of insulating materials.

Polyester film used in making traditional designed filament tapes does not absorb transformer oil. The unique coating on the back side of the 1076 tape promotes exceptional bonding of the diamond paper insulation epoxy during the transformer baking process.

Product Applications

The primary application for 1076 filament tape is holding down magnet wire, copper strips (sheets) and insulation materials during the demanding coil winding process. Once in place in the transformer coil, the tape provides a second key performance attribute by saturating in the transformer oil. These attributes together make 1076 filament tape the right choice for oil-filled transformers.

A transformer coil is manufactured one of two ways, first by winding magnet wire on a core with layers of secondary insulation between the layers of magnet wire and secondly by using copper sheets on a core

with layers of primary insulation between the layers of copper sheets.

A core application for 1076 filament tape is holding down the magnet wire at the beginning and end of each layer. This is also referred to as the start and finish between magnet wire turns. In addition, 1076 filament tape is used to hold down the insulation sheet layers between magnet wire layers.



Filament tape 1076 is particularly well suited for these applications because of the product's high tensile strength. This allows the tape to withstand the stress applied to the

tape when the windings are being applied at high winding machine speeds.

The process of applying magnet wire or copper strips is a “hands on” process that requires the tape to be durable with a good bond to the substrate. 3M™ Electrical Filament Tape 1076 has been specially designed to meet these demanding holding requirements.



Summary of key Features, Advantages & Benefits

Filament tape 1076 provides five core performance benefits for critical oil-filled transformer applications.

1. Good initial adhesion of the tape to magnet wire, strip copper and insulation materials
2. Stable adhesion even after long exposure to transformer fluids
3. Stiffness for excellent handling, which promotes operator efficiency during application of the tape during coil winding operations
4. Saturable backing for air entrapment resistance which minimizes the trapped air between adhesive layers in the applied tape

5. Compatibility with diamond paper insulation thermal bonding with back side of tape
6. Easy consistent unwind to promote operator efficiency

| Feature | Advantage | Benefit |
|---|---|--|
| Paper-Backing with Scrim Filaments and Acrylic Adhesive | Consistent Thickness | Application and Dielectric performance |
| | Good adhesion and cohesive strength | Product reliability and physical robustness |
| | Good Conformability | Reliable application contact |
| | Good physical strength | Promotes operator efficiency |
| | Specially designed for transformer oil saturation | Minimizes entrapped air to prevent corona discharge during transformer use |
| Roll form | Custom slit widths | Adaptability for specific customer needs |
| | Custom die cut shapes | Adaptability for specific customer needs |

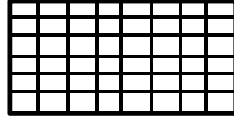
Product Typical Performance Attributes

| US Stock Number | Description |
|-----------------|--|
| 80-6114-7167-5 | 1076 Filament Tape 24.5" x 60 yds Paper Core |
| 80-6114-7168-3 | 1076 Filament Tape 24.5" x 60 yds Plastic Core |

Product numbers 1076 Filament Tape
 In the diagrams below you will see two products, 3M Filament Tape 1276 product with linear glass strands that run down web, and the new 1076 filament tape product with a scrim woven glass mat. The core difference in these products is the orientation of the glass reinforcement in the product's backing construction.



3M Filament Tape
1276 reinforcing
fibers are linear
down the roll



3M Filament Tape
1076 reinforcing
scrim provides
additional
reinforcement

Please note that the only physical property difference seen in comparing the two products is in the total thickness. This is the result of using a woven glass scrim in 3M™ Electrical Filament Tape 1076 compared to the linear glass strands in 3M Filament Tape 1276.

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| Properties | 1076 | 1276 |
|---------------------------------|-----------------------------|-----------------------------|
| Thickness | 10 mils (0,253 mm) | 9 mils (0,228 mm) |
| Breaking Strength (at break) | 275 lb/inch (481 N/10mm) | 275 lb/inch (481 N/10mm) |
| Elongation (at break) | 5% | 5% |
| Adhesion to Steel | 40 oz/inch (4.4 N/10 mm) | 40 oz/inch (4.4 N/10 mm) |
| Dielectric Breakdown | 3,500 V | 3,500 V |
| Temperature Class | 105°C | 105°C |
| Insulation Resistance | | |
| Electrolytic Corrosion | 1.0 | 1.0 |

Note: The above **typical technical data**, according to 3M test methods, should be considered representative and should not be used for specification purposes.

Important Notice

Before using this product, you must evaluate it and determine if it is suitable for your intended application. You assume all risks and liability associated with such use.

Warranty; Limited Remedy; Limited Liability.

This product will be free from defects in material and manufacture at the time of purchase. 3M MAKES NO OTHER WARRANTIES INCLUDING, BUT NOT



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