



# IMCSN

## Medium Wall Heat Shrink Tubing

### Product Description

3M™ IMCSN Medium Wall Heat Shrink Tubing is designed to provide reliable performance for electrical splices, connections, and terminations, as well as mechanical and environmental protection. IMCSN is fabricated from cross-linked polyolefin. The tubing is highly split resistant, and fast-shrinking to provide rapid installation. The tubing comes standard with a factory-applied adhesive/sealant.

### Product Features

- Fast and easy installation
- Resists puncture and abrasion damage
- Complete environmental protection
- Versatile, a minimum number of sizes cover the entire range of applications
- Shrink ratio 3:1
- Resists acids and alkalies
- Bonds to a wide variety of substrates
- Reliable and proven
- UV resistant

### Applications

- Primary electrical insulation for solid dielectric wire and cable rated to 1000 volts
- For indoor, outdoor or overhead use
- Direct buried or submersible
- Insulating secondary splices
- Physical protection and moisture sealing of high voltage air insulated connectors and lugs, such as lug connections to bus bars
- Relocation of service
- Dig-in repairs

### Product Selection

Selecting 3M IMCSN tubing is easy and straightforward. The largest tubing that provides a tight fit when fully recovered will produce the maximum wall thickness. Final wall thickness is proportional to the degree of tubing recovery.

### Physical and Electrical Typical Properties

Property	Requirement*	Test Results
Continuous Operating Temperature Range	-55°C to 110°C	-55°C to 110°C
Color	Black	Black
Longitudinal Change	+ 1%, - 10%	Pass
Low Temperature Flexibility (4 hours @ -55°C)	No Cracking	Pass
Heat Shock (4 hours @ 255°C)	No Cracking, Flowing or Dripping	Pass
2% Secant Modulus	25,000 psi min.	14,000psi
Color Stability (24 hours @ 175°C)	Remain Stable	Pass
Tensile Strength	1,200 psi min.	2,400 psi
Ultimate Elongation	200% min.	475%
Dielectric Strength (V/ mil)	200 min.	500
Volume Resistivity (ohm-cm)	10 <sup>13</sup> min.	10 <sup>14</sup>

\* Based on MIL-I-23053/15A Class 2

### Fluid Resistance / MIL-I-23053

- Minimum tensile strength, 750 psi
- Minimum dielectric strength, 200 V/mil
- Twenty-four hours at 25°C

Fluids	Tensile Strength	Dielectric Strength
Hydraulic Fluid	Pass	Pass
JP-4 Fuel	Pass	Pass
Lube Oil	Pass	Pass
5% NaCl Solution	Pass	Pass
Deicing Fluid	Pass	Pass

### Engineering/Architectural Specifications

The tubing must be usable both indoors and outdoors, in overhead, direct-buried, or submerged applications on cables rated up to 1000 volts. It is not adversely affected by moisture, mild acids and alkalies, fuels, oils, ozone, or ultraviolet light. It must be compatible with and adhere to all types of cable jackets, including rubber, plastic, or lead. It must conform to the requirements of UL 486 D and sections 3.4 and 4.3 of ANSI C119.1 1986.

## 3M™ IMCSN Selection Chart

Product Number	Cable Size Range	Minimum Expanded / Maximum Recovered I.D.		Cable O.D. Use Range Maximum - Minimum	
IMCSN-0400-48A	12 - 6 AWG (4 - 10 mm <sup>2</sup> )	0.40 / 0.15"	10,2 / 3,8 mm	0.35 - 0.15"	8,8 - 3,8 mm
IMCSN-0800-48A	8 - 3AWG (10 - 25 mm <sup>2</sup> )	0.80 / 0.22"	20,3 / 5,6 mm	0.70 - 0.22"	18 - 5,6 mm
IMCSN-1100-48A	2 - 2/0AWG (35 - 60 mm <sup>2</sup> )	1.10 / 0.37"	27,9 / 9,4 mm	0.95 - 0.37"	24 - 9,4 mm
IMCSN-1300-48A	1 - 4/0AWG (50 - 100 mm <sup>2</sup> )	1.30 / 0.43"	33,0 / 10,9 mm	1.10 - 0.43"	28 - 10,8 mm
IMCSN-1500-48A	1/0 - 250 kcmil (60 - 120 mm <sup>2</sup> )	1.50 / 0.50"	38,1 / 12,7 mm	1.30 - 0.50"	33 - 12,1 mm
IMCSN-1700-48A	4/0 - 400kcmil (120 - 200 mm <sup>2</sup> )	1.70 / 0.60"	43,2 / 15,2 mm	1.45 - 0.60"	37 - 15,2 mm
IMCSN-2000-48A	300 - 500kcmil (185 - 250 mm <sup>2</sup> )	2.00 / 0.75"	50,8 / 19,1 mm	1.75 - 0.75"	44,5 - 19,0 mm
IMCSN-3000-48A	600 - 1250 kcmil (325 - 625 mm <sup>2</sup> )	3.00 / 1.00"	76,2 / 25,4 mm	2.50 - 1.00"	63,5 - 25,4 mm
IMCSN-4300-48A	1000 - 2500 kcmil (625 - 1000 mm <sup>2</sup> )	4.30 / 1.16"	109,2 / 38,1 mm	3.60 - 1.50"	91,5 - 38,1 mm

Note: 3M IMCSN is supplied in 48-inch lengths with adhesive. Uncoated products available on special order.

### Performance Tests

- Meets MIL-I-23053/15A Class 2.

Property	Requirement *	Test Results
<b>Corrosion</b> (16 hours @ 121°C) – Copper Mirror – Copper Contact	No corrosion No corrosion or pitting	Pass Pass
<b>Flammability</b> (Five 15-second Bunsen burner applications)	Nonburning	Pass
<b>Water Absorption</b> (24 hours @ 25°C)	0.5% Maximum weight increase	0.02%
<b>Heat Aging</b> (7 days @ 175°C) – Ultimate Elongation – Tensile Strength	100% Minimum 1000 psi Minimum	225% 1820 PSI
<b>Fungus Resistance</b>	Non-nutrient	Pass
<b>Shelf Life</b>	Storage @ 40°C for 2 years with maintenance of dimensions	Pass

\* Based on MIL-I-23053/15A Class 2

### Maintenance

3M IMCSN medium wall heat shrinkable tubing is not impaired by freezing or overheating due to ambient temperature found in storage or shipping. Normal storage and stock rotation are recommended.

### Important Notice

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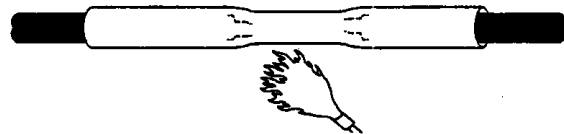
### Installation Techniques

Exact instructions are available on a separate sheet. The following is a summary of the instructions.

1. Thoroughly clean and prepare cable.
2. Cut 3M IMCSN to required size, per instructions.
3. Slide 3M IMCSN tubing onto cable.
4. Install connector, if applicable.
5. Center tubing.



6. Shrink tubing from center.



7. Heat until tubing is completely shrunk and adhesive/sealant (if applicable) is squeezed from ends.

### Availability

3M IMCSN medium wall heat shrink tubing is available from your electrical distributor.

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