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## Contact us

Tel: +86-755-8981 8866 Fax: +86-755-8427 6832

Email & Skype: info@chipsmall.com Web: www.chipsmall.com

Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China



# 3M™ Medium-Wall Heat Shrink Tubing IMCSN

Data Sheet

November 2017

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**Product Description** 3M™ Medium-Wall Heat Shrink Tubing IMCSN is designed to provide reliable performance for electrical splices, connections, and terminations, as well as mechanical and environmental protection. 3M IMCSN tubing 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.

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**Agency Approvals & Self Certifications** For RoHS information, please visit [www.3M.com/ROHS](http://www.3M.com/ROHS)

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**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.
- Resist acids and alkalis.
- Bonds to a wide variety of substrates.
- Reliable and proven.
- UV resistant.

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**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.

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**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.

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# 3M™ Medium-Wall Heat Shrink Tubing IMCSN

## Characteristics and Test Data

Property	Requirements*	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 max.	14,000 psi
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)	1 0 <sup>13</sup> min.	1 0 <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™ Medium-Wall Heat Shrink Tubing IMCSN

## 3M™ IMCSN Selection Guide

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 - 3 AWG (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 - 2/0 AWG (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 - 4/0 AWG (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 - 400 kcmil (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 - 500 kcmil (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 / 1.50" (109,2 / 38,1 mm)	3.60 - 1.50" (91,5 - 38,1 mm)

Note: 3M IMCSN tubing 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 increases	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

# 3M™ Medium-Wall Heat Shrink Tubing IMCSN

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**Maintenance** 3M™ Medium-Wall Heat Shrink Tubing IMCSN is not impaired by freezing or overheating due to ambient temperature found in storage or shipping. Normal storage and stock rotation are recommended.

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**Installation Techniques** Exact instructions are available on a separate sheet. The following is a summary of instructions:

1. Thoroughly clean and prepare cable.
2. Cut 3M IMCSN tubing 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.

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**Availability** 3M IMCSN tubing is available from your electrical distributor.

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# 3M™ Medium-Wall Heat Shrink Tubing IMCSN

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**Electrical Markets Division**

6801 River Place Blvd.  
Austin, TX 78726-9000  
800.245.3573  
FAX: 800.245.0329  
[www.3M.com/electrical](http://www.3M.com/electrical)

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