

## PROFILE OF REPORTS

File No:239057

Master Contract: 239057

Date: June 6, 2007

Replaces:

Submittor:

3F Electronics Industry Corp.

Qifuni Industry Park

Zhenxing Rd. Lou Village

Gongming Town

Shenzhen,

China

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Factories

Contact No.

4741771

Name & Address

3F Electronics Industry Corp.

No 1 Industry Park

Guangdong Village, Xili Town

Nanshan District

Shenzhen,

China

Inspection Office

CCIC

Factory Contract No

239058

Report

1900607

Project

-

Contact No.

4741771

Subject

June 6, 2007 - Insulating tubing, not-heat-shrinkable PVC, Cat No QFR-PVC, rated 105C, 300V and 600V; heat-shrinkable XLPO, Cat No QFR-h, rated 125C, 600V.

/jj





## CERTIFICATION RECORD

The company named below has been authorized by CSA International to represent the products listed in this record as "CSA Certified" and to affix the CSA Mark to these products according to the terms and conditions of the CSA Service Agreement and applicable CSA program requirements (including additional Markings).

File No: 239057

Class No: 9032 01 INSULATING DEVICES AND MATERIALS Insulating Tubing and Sleeving

### SUBMITTOR

4741708 3F Electronics Industry Corp  
Qifurui Industry Park  
Zhenxing Rd, Lou Village  
Gongming Town  
Shenzhen,  
China

### FACTORIES

4741771 3F Electronics Industry Corp  
No 1 Industry Park  
Guanglong Village, Xili Town  
Nanshan District  
Shenzhen,  
China

June 6, 2007

TO THE REQUIREMENTS OF CSA STANDARD C22.2 NO 198.1-06:

Part No	Voltage Rating (V)	Temp Rating (C)	US Sizes (in)	Metric Sizes (mm)	Optional Flame (VW-1)	Notes
• Flexible, heat-shrinkable, cross-linked polyolefin tubing:						
QFR-h	600	125	-	0.4-14.0	Yes	1
• Not-heat-shrinkable PVC tubing:						
QFR-PVC	300	105	-	1.07-25.4	Yes	2, 3
	600	105	-	1.07-25.4	Yes	2, 3

Notes:

1. In block colour only.
2. In all colours including clear.
3. VW-1 rating applies to black colours only.

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On tags of coated electrical sleeving:

- submitter's identification;
- temperature index in deg C;
- voltage rating;
- catalogue designation;
- VW-1/FT1 flammability (if applicable);
- oil-resistant (if applicable);
- optional marking: factory identification; and
- CSA Monogram.

In addition, equipment intended for display, sale or use in the USA, is required to include other information such as warning statements, installation instructions, etc., as may be specified in the NEC.

/mkc



Class : 9032 01 INSULATING DEVICES AND MATERIALS  
Insulating Tubing and Sleeving

January 15, 2003(Replaces:November 1, 2002)

## COVERAGE:

Insulating tubing that consists primarily of extruded compounds whose characteristic constituents are thermosetting, elastomeric, or thermoplastic polymers. These requirements also cover heat-shrinkable and cross-linked tubing. Insulated sleeving consist of polymer coated closely woven glass fabric made from glass.

This category does not include unimpregnated or uncoated sleeving, perforated type sleeving used primarily for routing wires, fabric tubing, tubing intended only for mechanical protection, or chemically dilated tubing.

## REQUIREMENTS:

CSA Standard C22.2 No 0	General Requirements - Canadian Electrical Code, Part II
CSA Standard C22.2 No 198.1	Extruded Insulating Tubing
CSA Standard C22.2 No 198.3	Coated Electrical Sleeving

The certified equipment appearing in this classification is judged to comply with the applicable requirements of the NFPA 70 National Electrical Code (NEC).

## MARKING:

On tags of extruded insulating tubing:

- submittor's identification;
- catalogue number or equivalent;
- voltage rating;
- temperature rating;
- manufacturer's instructions for heat-shrinking the tubing (for heat-shrinkable tubings);
- date of manufacture;
- any necessary instructions for the proper use of the tubing;
- "OFT" where applicable;
- CSA Monogram;
- flammability (if VW-1);
- "oil resistant" or "oil-res" (if applicable);
- inside diameter (before and after recovery, for heat-shrinkable types); and
- CSA Monogram.



# Certificate of Compliance

Certificate: 1900607

Master Contract: 239057

Project: 1900607

Date Issued: 2007/06/06

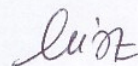
Issued to: 3F Electronics Industry Corp

Qifurui Industry Park  
Zhenxing Rd, Lou Village  
Gongming Town  
Shenzhen,  
China  
Attention: Mr. Dengkai

*The products listed below are eligible to bear the CSA Mark shown*

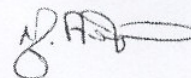


Issued by:



U. Weisz, P. Eng.

Authorized by: Nick Alfano, Operations  
Manager



## PRODUCTS

**CLASS 9032 01** - INSULATING DEVICES AND MATERIALS - Insulating Tubing and  
Sleeving

1. Flexible Heat-Shrinkable Polyolefin Tubing, Cat No QFR-h, rated 125°C, 600V, VW-1.
2. Not-Heat-Shrinkable PVC Tubing - Cat No QFR-PVC, rated 105°C, 300V and 600V.

Note: Cat No QFR-PVC in black colour is rated VW-1.





**Certificate:** 1900607

**Master Contract:** 239057

**Project:** 1900607

**Date Issued:** 2007/06/06

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**APPLICABLE REQUIREMENTS**

CSA Standard C22.2 No 198.1-06 - Extruded Insulating Tubing





## *Supplement to Certificate of Compliance*

**Certificate:** 1900607

**Master Contract:** 239057

*The products listed, including the latest revision described below, are eligible to be marked in accordance with the referenced Certificate.*

### **Product Certification History**

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<b>Project</b>	<b>Date</b>	<b>Description</b>
1900607	2007/06/06	Insulating Tubing - Non Heat Shrinkable PVC, rated 105C, 300V and 600V and Heat Shrinkable XLPO, rated 125C, 600V. Original Certification.

### **History**

### **Supplement Notes**



## Descriptive Report and Test Results

MASTER CONTRACT: 239057

REPORT: 1900607

PROJECT: 1900607

**Edition 1:** June 6, 2007; Project 1900607 – Toronto  
Issued by: U. Weisz, P. Eng.

Report pages reissued

Contents: Certificate of Compliance - Pages 1 of 2  
Supplement to Certificate of Compliance - Pages 1  
Description and Tests - Pages 1 to 4  
Appendix A – Pages 1 to 22 (Attached to the Engineering Report only)

### PRODUCTS

CLASS 9032 01 - INSULATING DEVICES AND MATERIALS - Insulating Tubing and Sleeving

1. Flexible Heat-Shrinkable Polyolefin Tubing, Cat No QFR-h, rated 125°C and 600V.
2. Not-Heat-Shrinkable PVC Tubing – Cat No QFR-PVC, rated 105°C, 300V and 600V.

Note: Cat No QFR-PVC in black colour is rated VW-1.

### APPLICABLE REQUIREMENTS

CSA Standard C22.2 No 198.1-06 - Extruded Insulating Tubing

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**MARKINGS**

Marking on the Product: Not required.

Marking on Tags and Packages

All sizes of extruded insulating tubing shall be marked with the following information on tags attached to both ends of the tubing, on the shipping spool label, or on the smallest unit container:

- Submittor's identification (submittor's name or the CSA Master Contract number "239057");
- Catalogue number;
- Temperature rating;
- Voltage rating;
- The VW-1 flame rating (Cat No QFR-h black, Cat no QFR-PVC all colours including clear);
- Date of manufacture)
- Inside diameter (before and after recovery, cat no QFR-h only); and the
- CSA Mark.

Note: Jurisdictions in Canada may require markings to be also in French. It is the responsibility of the Manufacturer to provide bilingual marking, where applicable, in accordance with the requirements of the Provincial Regulatory Authorities.

**ALTERATIONS**

Markings as noted above.

**FACTORY TESTS**

Conformance of the tubing to the requirements of the following characteristics shall be verified for each lot of product at the time of manufacture:

- Minimum expanded inside diameter in accordance with submittor's specifications;
- The maximum recovered inside diameter: or extruded inside diameter (in the case of not-heat-shrinkable tubing) in accordance with submittor's specifications;
- Minimum recovered wall thickness, or extruded wall thickness (in the case of not-heat-shrinkable tubing) in accordance with item 5 of Tables 7 and 15;
- Maximum longitudinal change in accordance to item 21 of Tables 7 and 15;
- Maximum eccentricity in accordance with item 23 of Tables 7 and 15.

**DESCRIPTION**

Not-Heat-Shrinkable PVC

Cat No	Rating	Metric Sizes (Inside Diameter) mm	Colours	Flammability Rating	Compound Designation/ Manufacturer
QFR-PVC	105C, 300V	1.07 to 25.4	All except clear	VW-1 for black colour only	TI 105 by 3F-Electronics
	105C, 600V	1.07 to 25.4	All except clear	VW-1 for black colour only	TI 105 by 3F-Electronics



**MASTER CONTRACT:** 239057

**REPORT:** 1900607

**PROJECT:** 1900607

**Page No:** 3

**Date Issued:** June 6, 2007

Oil Resistance: None.

The construction of the tubing is identical for both voltages.

Flexible Heat-Shrinkable Cross-linked Polyolefin

Cat No	Rating	Metric Sizes (Inside Diameter) mm	Colours	Flammability Rating	Compound Designation/ Manufacturer
QFR-h	125C, 600V	0.4 to 14.0 (recovered) *	Black	VW-1	EVA designated HSM- 017V by Shanghai Original Enterprise Development Co., Ltd

\* Expanded inside diameter: 0.8 to 30.0 mm

Oil Resistance: None

Recovery Time/Temperature: 3 min/200C

Instructions to Field Representatives:

1. Markings on the tubing (if present) shall comply with Electrical Certification Notice No 405C.
2. Verify the use of listed compounds.



### **TESTS**

The following tests performed by UL Inc. under file E225895, Projects 01CA06446, dated February 27, 2002 (QFR-PVC) and 04CA48713, dated February 22, 2005 (QFR-h), were found acceptable:

- Physical Properties (Elongation and Tensile Strength) of Tubing before and after Aging;
- Flexibility (Cat No QFR-PVC);
- Deformation (Cat No QFR-PVC);
- Corrosion of the bare copper;
- Copper Stability;
- Dielectric Strength and Dielectric Breakdown, Before and After Aging;
- Heat Shock;
- Cold Bend;
- Maximum Secant Modulus;
- Maximum Longitudinal Change (Cat No QFR-h);
- Maximum Eccentricity (Cat No QFR-h);
- Volume Resistivity;
- Restricted Recovery (Cat No QFR-h);
- Flame – All tubing
- Optional VW-1:
  - Cat No QFR-h, sizes 0.4 mm, 6.5 mm and 14.0 mm, black colour;
  - Cat no QFR-PVC, sizes 1.07 mm, 12.7 mm and 25.4 mm black and 1.07 mm only in clear)

Test results are attached to the Engineering Report only (Appendix A).