

## HEAT SHRINK THIN WALL TUBING

Part Number	Material	Product Type	Shrink Ratio	Operating Temp. & Voltage Rating	Min. Shrink Temp.	Full Recovery Temp.
Q2-CB	Polyolefin	Ultra Thin Wall	2:1	-55°C to +125°C, 300V	70°C	100°C
Q2-F	Polyolefin	Thin Wall	2:1	-55°C to +135°C, 600V	70°C	100°C
Q2-F3X	Polyolefin	Thin Wall	3:1	-55°C to +135°C, 600V	70°C	100°C
Q2-F4X	Polyolefin	Thin Wall	4:1	-55°C to +135°C, 600V	70°C	100°C
Q2-F2XYG Q2-F3XYG	Polyolefin	Thin Wall	2:1, 3:1	-55°C to +135°C, 600V	70°C	100°C
Q2-HF	Polyolefin	Thin Wall	2:1	-55°C to +105°C, 600V	70°C	100°C
Q2-LS	Polyolefin	Thin Wall	2:1	-55°C to +125°C, 600V	65°C	95°C
Q2-R	Polyolefin	Semi-Rigid Thin Wall	2:1	-55°C to +135°C, 600V	70°C	130°C
Q2-Z	Polyolefin	Thin Wall	2:1	-55°C to +125°C, 600V	70°C	100°C
Q2-3X	Polyolefin	Thin Wall	3:1	-55°C to +125°C, 600V	70°C	100°C
Q-150K	Modified PVDF	Flexible Thin Wall	2:1	-55°C to +150°C, 600V	135°C	150°C
Q-175K	PVDF	Semi-Rigid Thin Wall	2:1	-55°C to +175°C, 600V	-	175°C
Q-200E	Modified Fluoroelastomer Viton®	Very Flexible Thin Wall	2:1	-55°C to +200°C, 600V	150°C	175°C
QPTFE	Modified PTFE	Semi-Rigid Thin Wall	2:1	-65°C to +260°C, 600V	-	350°C

## HEAT SHRINK MEDIUM / HEAVY WALL TUBING - ADHESIVE LINED

Part Number	Material	Product Type	Shrink Ratio	Operating Temp. & Voltage Rating	Min. Shrink Temp.	Full Recovery Temp.
Q5-2X	Polyolefin	Dual Wall	2:1	-45°C to +125°C, 600V	100°C	125°C
Q5-3X	Polyolefin	Dual Wall	3:1	-55°C to +125°C, 600V	80°C	110°C
Q5-4X	Polyolefin	Dual Wall	4:1	-55°C to +125°C, 600V	80°C	110°C
Q5-F3X	Polyolefin	Dual Wall	3:1	-55°C to +125°C, 600V	70°C	110°C
Q5-F4X	Polyolefin	Dual Wall	4:1	-55°C to +125°C, 600V	70°C	110°C
Q5-4XR	Polyolefin	Semi-Rigid Dual Wall	4:1	-55°C to +125°C, 600V	110°C	135°C
Q5-3XM	Polyolefin	Heavy Dual Wall	3:1	-55°C to +125°C, 600V	80°C	110°C
QRA-6X	Polyolefin	Heavy Dual Wall	6:1	-55°C to +110°C, 600V	120°C	120°C
QBTM QBTH	Non-Halogen Polymer	Bus Bar	-	-55°C to +105°C, 24-36kV	120°C	-

## END CAPS

Part Number	Material	Product Type	Shrink Ratio	Operating Temp. & Voltage Rating	Min. Shrink Temp.	Full Recovery Temp.
QSEC	Polyolefin	Cable End Caps	-	-55°C to +110°C, 1000V	120°C	-

## SHRINK TUBE KITS, REFILL BAGS, Q BOX & MINI SPOOLS

# Q2-F



**ENVIRONMENT FRIENDLY, FLEXIBLE,  
HIGHLY FLAME RETARDANT, HEAT SHRINKABLE TUBING  
SHRINK RATIO 2:1**

## Features/Applications

Provides both commercial and military applications electrical insulation and protects in-line components, disconnect terminals and splices with its high strength and excellent resilience. Bundles wires for very flexible light-duty harnesses. Identifies or color-codes wires, cables, terminals and components.

- Operating temperature: -55°C to +135°C
- Minimum shrink temperature: 70°C
- Full recovery temperature: 100°C
- Approvals<sup>4</sup>: File No. E236137, File No. 242540, 125°C, VW-1, 600V
- Meets: SAE-AMS-DTL-23053/5 Class 1 & 3, Sony-SS-00259
- Material: No PBB's, PBBO's, PBBE's, Free of Cadmium & Lead
- Standard colors: Black, red, blue, yellow, green, white, clear (class 2)
- RoHS Compliant



## Technical Data

Property	Test Method	Typical Data
Operating Temperature	IEC 216	-55°C to +135°C
Tensile Strength	ASTM D 2671	>14 MPa
Ultimate Elongation	ASTM D 2671	> 600%
Longitudinal Shrinkage	UL 224	0 ± 5%
Eccentricity	UL 224	< 30%
Heat Aging Tensile Strength Ultimate Elongation	175°C, 168 hrs.	> 11 MPa > 350 %
Flammability	VW-1	Pass
Dielectric Strength	ASTM D 150	>20kV / mm
Voltage Withstand	ASTM D 2671 / AC2500V. 1 min.	No Breakdown
Volume Resistance	ASTM D 876	>10 <sup>14</sup> Ω.cm
Copper Stability	UL 224	Pass
Copper Corrosion	UL 224	No Corrosion

## Product Dimensions

Size		As Supplied (mm)	After Recovered (mm)		Standard Packaging				
		Inside Diameter (min.)	Inside Diameter (max.)	Wall Thickness (min.)	Mini Spool *(MS) (Feet)	Standard Spool *(SS) (Feet)	Box Length *(QX) (Feet)	Cut to Length Pcs. *(QB) Qty per bag	
Inch	mm							6"	48"
3/64	1.2	1.2	0.6	0.40	100	1000	50	40	25
1/16	1.6	1.6	0.8	0.40	100	1000	50	36	25
3/32	2.4	2.4	1.2	0.48	100	500	50	32	25
1/8	3.2	3.2	1.6	0.48	100	500	50	28	25
3/16	4.8	4.8	2.4	0.48	100	500	30	24	25
1/4	6.4	6.4	3.2	0.56	100	500	30	20	25
5/16	8.0	8.0	4.0	0.62	100	250	30	18	24
3/8	9.5	9.5	4.8	0.62	100	250	30	16	25
1/2	12.7	12.7	6.4	0.62	100	200	15	14	5
5/8	15.9	15.9	8.0	0.68	50	200	15	14	5
3/4	19.1	19.1	9.5	0.68	50	200	15	12	5
1	25.4	25.4	12.7	0.87	50	200	15	8	5
1 1/4	31.8	31.8	15.9	1.00	50	100	-	8	5
1 1/2	38.1	38.1	19.1	1.00	50	100	-	5	5
2	50.8	50.8	25.4	1.10	50	100	-	3	5
3	76.2	76.2	38.1	1.20	-	100	-	2	2
4	102.0	102.0	50.8	1.35	-	100	-	1	2
5	125.0	125.0	63.5	1.40	-	50	-	1	2
6	151.0	151.0	75.0	1.40	-	50	-	1	2

### Notes:

- \* See page 12 - Part Number Guide for standard packaging codes.
- Cross Reference Guide located on page 3.
- Special sizes, packaging, colors and cut pieces are available upon request
- Clear tubing is not flame retardant, UL or CSA approved.

# QKITS, REFILL BAGS, Q BOX & MINI SPOOLS

## Q2-F TYPE TUBING KIT, 6" LENGTH PCS.

ASSORTED SIZES / KITS 1 & 2 BLACK, KIT 4 ASSORTED COLORS

THIN WALL, ENVIRONMENT FRIENDLY, HIGHLY FLAME RETARDANT, POLYOLEFIN TUBING

SHRINK RATIO 2:1, OPERATING TEMPERATURE: -55°C to +135°C, MILITARY STANDARD: 23053/5



### SMALL SIZES



Q2-F KIT 1  
180 PCS.

P/N Q2-F-QK1-01-6IN-180  
Q2-F Kit 1 consists of 180 pcs.

Size		QTY	Color
Inch	mm		
3/64	1.6	40 pcs.	Black
1/16	2.0	36 pcs.	Black
3/32	3.1	32 pcs.	Black
1/8	3.7	28 pcs.	Black
3/16	5.2	24 pcs.	Black
1/4	6.8	20 pcs.	Black

### REFILL BAGS



6" LENGTH

Q2-F, Kit 1 Refill Bags  
Consist of 6" length pcs.

Part Number	QTY	Color
Q2-F-RK1-3/64-01-6IN-40	40 pcs.	Black
Q2-F-RK1-1/16-01-6IN-36	36 pcs.	Black
Q2-F-RK1-3/32-01-6IN-32	32 pcs.	Black
Q2-F-RK1-1/8-01-6IN-28	28 pcs.	Black
Q2-F-RK1-3/16-01-6IN-24	24 pcs.	Black
Q2-F-RK1-1/4-01-6IN-20	20 pcs.	Black

### LARGE SIZES



Q2-F KIT 2  
82 PCS.

P/N Q2-F-QK2-01-6IN-82  
Q2-F Kit 2 consists of 82 pcs.

Size		QTY	Color
Inch	mm		
5/16	8.8	18 pcs.	Black
3/8	10.7	16 pcs.	Black
1/2	13.7	14 pcs.	Black
5/8	16.7	14 pcs.	Black
3/4	20.5	12 pcs.	Black
1	25.4	8 pcs.	Black

### REFILL BAGS



6" LENGTH

Q2-F, Kit 2 Refill Bags  
Consist of 6" length pcs.

Part Number	QTY	Color
Q2-F-RK2-5/16-01-6IN-18	18 pcs.	Black
Q2-F-RK2-3/8-01-6IN-16	16 pcs.	Black
Q2-F-RK2-1/2-01-6IN-14	14 pcs.	Black
Q2-F-RK2-5/8-01-6IN-14	14 pcs.	Black
Q2-F-RK2-3/4-01-6IN-12	12 pcs.	Black
Q2-F-RK2-1-01-6IN-8	8 pcs.	Black

### ASSORTED COLORS



Q2-F KIT 4  
141 PCS.

P/N Q2-F-QK4-11-6IN-141  
Q2-F Kit 4 consists of 141 pcs.

Size		QTY	Color
Inch	mm		
1/16	2.0	39 pcs.	Assorted
1/8	3.7	31 pcs.	Assorted
1/4	6.8	23 pcs.	Assorted
3/8	10.7	19 pcs.	Assorted
1/2	13.7	19 pcs.	Assorted
1	25.4	10 pcs.	Assorted

### REFILL BAGS



6" LENGTH

Q2-F, Kit 4 Refill Bags  
Consist of 6" length pcs.

Part Number	QTY	Color
Q2-F-RK4-1/16-11-6IN-39	39 pcs.	Assorted
Q2-F-RK4-1/8-11-6IN-31	31 pcs.	Assorted
Q2-F-RK4-1/4-11-6IN-23	23 pcs.	Assorted
Q2-F-RK4-3/8-11-6IN-19	19 pcs.	Assorted
Q2-F-RK4-1/2-11-6IN-19	19 pcs.	Assorted
Q2-F-RK4-1-11-6IN-10	10 pcs.	Assorted

## Q BOX

### Q BOX



VARIOUS LENGTHS  
PER SIZE

Part Number	Size (Inch)	Box Length (Feet)
Q2-F-3/64-01-QX50FT	3/64	50
Q2-F-1/16-01-QX50FT	1/16	50
Q2-F-3/32-01-QX50FT	3/32	50
Q2-F-1/8-01-QX50FT	1/8	50
Q2-F-3/16-01-QX30FT	3/16	30
Q2-F-1/4-01-QX30FT	1/4	30
Q2-F-5/16-01-QX30FT	5/16	30
Q2-F-3/8-01-QX30FT	3/8	30
Q2-F-1/2-01-QX15FT	1/2	15
Q2-F-5/8-01-QX15FT	5/8	15
Q2-F-3/4-01-QX15FT	3/4	15



## MINI SPOOLS

Part Number	Size (Inch)	Spool Length (Feet)
Q2-F-3/64-01-MS100FT	3/64	100
Q2-F-1/16-01-MS100FT	1/16	100
Q2-F-3/32-01-MS100FT	3/32	100
Q2-F-1/8-01-MS100FT	1/8	100
Q2-F-3/16-01-MS100FT	3/16	100
Q2-F-1/4-01-MS100FT	1/4	100
Q2-F-5/16-01-MS100FT	5/16	100
Q2-F-3/8-01-MS100FT	3/8	100
Q2-F-1/2-01-MS100FT	1/2	100
Q2-F-5/8-01-MS50FT	5/8	50
Q2-F-3/4-01-MS50FT	3/4	50
Q2-F-1-01-MS50FT	1	50
Q2-F-1 1/2-01-MS50FT	1 1/2	50
Q2-F-2-01-MS50FT	2	50

## Q2-F3X TYPE TUBING KIT, 6" LENGTH PCS.

ASSORTED SIZES / BLACK

THIN WALL, HIGHLY FLEXIBLE, FLAME RETARDANT POLYOLEFIN TUBING

SHRINK RATIO 3:1, OPERATING TEMPERATURE: -55°C to +135°C, MILITARY STANDARD: 23053/5



### ASSORTED SIZES



Q2-F3X KIT 1  
106 PCS.

P/N Q2-F3X-QK1-01-6IN-106  
Q2-F3X Kit 1 consists of 106 pcs.

Size		QTY	Color
Inch	mm		
1/16	2.0	28 pcs.	Black
1/8	3.7	24 pcs.	Black
1/4	6.8	20 pcs.	Black
1/2	10.7	14 pcs.	Black
3/4	13.7	12 pcs.	Black
1	25.4	8 pcs.	Black

### REFILL BAGS



6" LENGTH

Q2-F3X, Kit 1 Refill Bags  
Consist of 6" length pcs.

Part Number	QTY	Color
Q2-F3X-RK1-1/16-01-6IN-28	28 pcs.	Black
Q2-F3X-RK1-1/8-01-6IN-24	24 pcs.	Black
Q2-F3X-RK1-1/4-01-6IN-20	20 pcs.	Black
Q2-F3X-RK1-1/2-01-6IN-14	14 pcs.	Black
Q2-F3X-RK1-3/4-01-6IN-12	12 pcs.	Black
Q2-F3X-RK1-1-01-6IN-8	8 pcs.	Black