



## HEAT SHRINK PRODUCTS

### HEAT SHRINK THIN WALL TUBING

Part Number	Material	Product Type	Shrink Ratio	Operating Temp. & Voltage Rating	Min. Shrink Temp.	Full Recovery Temp.	Flame Retardant	Agency Certification	Military Standard	General Description
<a href="#">QBG</a>	Polyolefin	Thin Wall	2:1	-55°C to +105°C, 600V	90°C	110°C	-	-	-	Flexible, Thin Wall Tubing for Flexible Gas Pipes mm Sizes: 23 to 76.2mm
<a href="#">Q1</a>	Polyolefin	Thin Wall	2:1	-55°C to +105°C, 600V	80°C	100°C	-	-	-	Non Flame-Retardant, General Purpose, Flexible, Glossy Black or Clear mm Sizes: 1.0 to 50mm, Inch Sizes: 3/64" to 2"
<a href="#">Q2-CB</a>	Polyolefin	Ultra Thin Wall	2:1	-55°C to +125°C, 300V	70°C	100°C	VW-1	CSB 242540	-	No PBB's, PBBE's, PBBO's, Low Cadmium and Lead mm Sizes: 1.0 to 10mm, Inch Sizes: 3/64" to 1/2"
<a href="#">Q2-F</a>	Polyolefin	Thin Wall	2:1	-55°C to +135°C, 600V	70°C	100°C	VW-1	cULUS E236137 242540	SAE-AMS-DTL 23053/5 Class 1 & 3	No PBB's, PBBE's, PBBO's, Very Flexible, Highly Flame-Retardant mm Sizes: 1.2 to 151mm, Inch Sizes: 3/64" to 6"
<a href="#">Q2-F3X</a>	Polyolefin	Thin Wall	3:1	-55°C to +135°C, 600V	70°C	100°C	VW-1	cULUS E236137 242540	SAE-AMS-DTL 23053/5 Class 1 & 3	No PBB's, PBBE's, PBBO's, Very Flexible, High Shrink Ratio, Highly Flame-Retardant mm Sizes: 1.5 to 39mm, Inch Sizes: 1/16" to 1 1/2"
<a href="#">Q2-F4X</a>	Polyolefin	Thin Wall	4:1	-55°C to +135°C, 600V	70°C	100°C	VW-1	cULUS E236137 242540	SAE-AMS-DTL 23053/5 Class 1 & 3	No PBB's, PBBE's, PBBO's, Very Flexible, High Shrink Ratio, Highly Flame-Retardant mm Sizes: 19.1 to 115mm, Inch Sizes: 3/4" to 4 1/2"
<a href="#">Q2-F2X(YG)</a> <a href="#">Q2-F3X(YG)</a>	Polyolefin	Thin Wall	2:1, 3:1	-55°C to +135°C, 600V	70°C	100°C	VW-1	cULUS E236137 242540	SAE-AMS-DTL 23053/5 Class 1 & 3	Yellow-Green Striped, Flexible, Flame-Retardant Tubing 2:1 - mm Sizes: 1.2 to 101.6mm, Inch Sizes: 3/64" to 4", 3:1 - 1.6 to 39mm, Inch Sizes: 1/16" to 1 1/2"
<a href="#">Q2-HF</a>	Polyolefin	Thin Wall	2:1	-55°C to +105°C, 600V	70°C	100°C	-	CSB 242540	SAE-AMS-DTL 23053/5	Halogen Free Polyolefin Tubing, Low Smoke mm Sizes: 1.0 to 150mm
<a href="#">Q2-LS</a>	Polyolefin	Thin Wall	2:1	-45°C to +125°C, 600V	65°C	95°C	MVSS 302	CSB 242540	-	Very Flexible, Low Shrink Temperature, Halogen Free Polyolefin Tubing mm Sizes: 1.6 to 50.8mm, Inch Sizes: 1/16" to 2"
<a href="#">Q2-R</a>	Polyolefin	Semi-Rigid Thin Wall	2:1	-45°C to +135°C, 600V	90°C	130°C	Self-extinguish in 30 seconds	cULUS E236137 242540	SAE-AMS-DTL 23053/5 Class 1 & 3	Semi-Rigid Flame-Retardant Tubing, Resistant to Common Chemicals and Solvents mm Sizes: 1.2 to 25.4mm, Inch Sizes: 3/64" to 1"
<a href="#">Q2-Z</a>	Polyolefin	Thin Wall	2:1	-55°C to +125°C, 600V	70°C	100°C	VW-1	cULUS E236137 242540	-	Environment Friendly, Flexible, Flame-Retardant mm Sizes: 1.0 to 150mm, Inch Sizes: 3/64" to 6"
<a href="#">Q2-3X</a>	Polyolefin	Thin Wall	3:1	-55°C to +125°C, 600V	70°C	100°C	VW-1	cULUS E236137 242540	-	Flexible, High Shrink Ratio, Highly Flame-Retardant mm Sizes: 1.5 to 39mm, Inch Sizes: 1/16" to 1 1/2"
<a href="#">Q2-XT</a> <a href="#">Q2-XT(HF)</a>	Polyolefin	Thin Wall	Non-Shrink	-55°C to +125°C, 600V	80°C	80°C	VW-1	-	-	No PBB's, PBBE's, PBBO's, Non-Shrink, Irradiated Flexible, Flame-Retardant, (HF) Version is Halogen Free Size: AWG 18 to 1/2"
<a href="#">Q-150K</a>	Modified PVDF	Flexible Thin Wall	2:1	-55°C to +150°C, 600V	135°C	150°C	VW-1	cULUS E245010	SAE-AMS-DTL 23053/18	Black, Flexible, High Temperature, Chemical Resistant, Polyvinylidene Fluoride(PVDF) Kynar® mm Sizes: 1.2 to 38.1mm, Inch Sizes: 3/64" to 1 1/2"
<a href="#">Q-175K</a>	PVDF	Semi-Rigid Thin Wall	2:1	-55°C to +175°C, 600V	175°C	-	VW-1	cULUS E245010	SAE-AMS-DTL 23053/8	Clear, High Temperature, Chemical Resistant, Polyvinylidene Fluoride(PVDF) Kynar® mm Sizes: 1.2 to 25.4mm, Inch Sizes: 3/64" to 1"
<a href="#">Q-200E</a> <a href="#">Q-200E(TW)</a>	Modified Fluorelastomer Viton®	Very Flexible Thin Wall	2:1	-55°C to +200°C, 600V	150°C	175°C	VW-1	cULUS E245010	SAE-AMS-DTL 23053/13	Flexible, Elastic, High Temperature, Solvent Resistant, Viton® Q-200E - mm Sizes: 3.2 to 50.8mm, Inch Sizes: 1/8" to 2", Q-200E(TW) - mm Sizes: 9.5 to 50.8, Inch Sizes: 3/8" to 2"
<a href="#">Q-PTFE</a>	Modified PTFE	Semi-rigid Thin Wall	2:1	-65°C to +260°C, 600V	-	350°C	Self-extinguish	-	SAE-AMS-DTL 23053/12	Polytetrafluoroethylene Tubing Sizes: AWG 20 to AWG 0
<a href="#">QDR</a> <a href="#">QDR(TW)</a>	Modified Elastomer	Very Flexible Thin Wall	2:1	-75°C to +150°C, 600V	-	175°C	VW-1	-	SAE-AMS-DTL 23053/16	Diesel Resistant Elastomer QDR - mm Sizes: 3.2 to 76.2, Inch Sizes: 1/8" to 3"; QDR(TW) - mm Sizes: 2.4 to 38.1, Inch Sizes: 3/32" to 1 1/2"

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

<a href="#">Q5-2X</a>	Polyolefin	Dual Wall	2:1	-45°C to +125°C, 600V	100°C	125°C	Self-extinguish in 30 seconds	cULUS E236137 242540	SAE-AMS-DTL 23053/4	Adhesive-Lined, Flexible, High Shrink Ratio, Flame-Retardant Tubing mm Sizes: 3.2 to 38.1mm, Inch Sizes: 1/8" to 1 1/2"
<a href="#">Q5-3X</a>	Polyolefin	Dual Wall	3:1	-45°C to +125°C, 600V	80°C	120°C	Self-extinguish in 30 seconds	cULUS E236137 242540	SAE-AMS-DTL 23053/4	Adhesive-Lined, Flexible, High Shrink Ratio, Flame-Retardant Tubing mm Sizes: 3.0 to 50.0mm, Inch Sizes: 1/8" to 2"
<a href="#">Q5-4X</a>	Polyolefin	Dual Wall	4:1	-45°C to +125°C, 600V	80°C	125°C	Self-extinguish in 30 seconds	cULUS E236137 242540	SAE-AMS-DTL 23053/4	Adhesive-Lined, Flexible, High Shrink Ratio, Flame-Retardant Tubing mm Sizes: 4.0 to 52.0mm, Inch Sizes: 3/16" to 2"
<a href="#">Q5-F3X</a>	Polyolefin	Dual Wall	3:1	-55°C to +125°C, 600V	100°C	-	Self-extinguish in 30 seconds	cULUS E236137 242540	SAE-AMS-DTL 23053/4	Adhesive-Lined, Flexible, Polyolefin Tubing mm Sizes: 3.0 to 40mm, Inch Sizes: 1/8" to 1 1/2"
<a href="#">Q5-F4X</a>	Polyolefin	Dual Wall	4:1	-55°C to +125°C, 600V	100°C	-	Self-extinguish in 30 seconds	cULUS E236137 242540	SAE-AMS-DTL 23053/4	High Shrink Ratio, Adhesive-Lined, Flexible, Flame-Retardant Tubing mm Sizes: 4 to 52mm, Inch Sizes: 3/16" to 2"

# Q2-F4X



**HIGH SHRINK RATIO, HIGHLY FLEXIBLE  
FLAME RETARDANT POLYOLEFIN TUBING  
SHRINK RATIO 4:1**

## Features/Applications

Manufactured with specially developed formulation and technology, it can easily fit over a large diameter connector or transition and shrink down onto a smaller diameter jacket. Because of its outstanding physical, chemical and electrical properties it's widely used in some important fields such as military, aerospace and fine electronic instruments for insulating or repairing harnesses, cables and connectors.

- Operating temperature: -55°C to +135°C
- Minimum shrink temperature: 70°C
- Full recovery temperature: 100°C
- Approval: File No. E236137, 242540, 125°C
- Meets: SAE-AMS-DTL-23053/5 Class 1 & 3, Sony-SS-00259
- Standard color: Black
- Special Colors: Red, blue, yellow, green
- RoHS Compliant



## Technical Data

Property	Test Method	Typical Data
Tensile Strength	ASTM D 2671	14 MPa
Elongation at Break	ASTM D 2671	800%
Tensile Strength After Aging (175°C, 168 hrs.)	ASTM D 2671	14 MPa
Elongation After Aging (175°C, 168 hrs.)	ASTM D 2671	350%
Flammability	UL 224, VW-1 SAE-AMS-DTL-23053/5	Pass
Heat Shock (250°C, 4 hrs.)	ASTM D 2671	No cracking
Cold Bend Test (-55°C, 4 hrs.)	ASTM D 2671	No cracking
Dielectric Strength	ASTM D 150	20 kV/mm
Volume Resistance	ASTM D 876	10 <sup>14</sup> Ω.cm
Copper Corrosion	UL 224	Pass
Water Absorption	ASTM D 570	0.15%
Chemical Resistance	SAE-AMS-DTL-23053/5	Pass
Longitudinal Shrinkage	UL 224	0 ± 5%
Eccentricity	UL 224	> 30%

## Product Dimensions

Size		As Supplied (mm)	After Recovered (mm)		Standard Packaging	
		Inside Diameter (min.)	Inside Diameter (max.)	Wall Thickness (min.)	Cut to Length Pcs. *(QB) Qty per bag	
Inch	mm				6"	48"
3/4	19.1/4.6	19.1	4.6	1.7	12	5
1	25.4/7.0	25.4	7.0	1.7	8	5
1 1/2	38.1/9.5	38.1	9.5	1.7	5	5
2	50.8/14.0	50.8	14.0	1.7	3	5
3	76.2/20.6	76.2	20.6	1.7	2	2
4	102/26.7	102.0	26.7	1.7	1	2
4 1/2	115/36.8	115.0	36.8	1.7	1	2