FIT®

Preferred Heat Shrink Products

Simple, Comprehensive Tubing Solutions

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Alpha Wire Company

FIT® Preferred Heat Shrink Products

Preferred Quality

FIT® Preferred Heat Shrink Products are made from premium compounds under the tightest manufacturing controls. This means **FIT** will consistently have excellent physical characteristics such as low longitudinal shrinkage and wide temperature ranges while providing an elegant appearance when used alone or on OEM equipment.

Preferred Solutions

The **FIT Preferred Heat Shrink Product** line consists of 23 different tubing types each designed with unique attributes which offer tubing solutions for the broadest possible range of applications and environments.

Preferred Reliability

The **FIT** brand name is widely recognized wherever heat shrink products are used. Users prefer **FIT Heat Shrink Products** more than any other source and ask for them by name.

Preferred Convenience

The entire **FIT** heat shrink offering has been designed to make product selection and identification as simple as possible. There's nothing easier! **FIT** part numbers are easy to remember and clearly identify shrink ratios and sizes.

Preferred Availability

Alpha Wire provides the highest service level in the industry and **FIT** is no exception. **FIT** products are always in stock and come in an unprecedented variety of package sizes. **FIT** orders received by 4 p.m. (EST) will ship the same day! And, as with all Alpha Wire products, technical support and free product samples are always available.

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IRRADIATED POLYOLEFIN

	Features & Benefits	Applications	Characteristics
FIT®-221 / FIT®-221B **General Purpose, Irradiated Polyolefin** MIL-DTL-23053/5C, Class 1, 2 Recognized Component Underwriters Laboratories Inc. Certified Canadian Standards Association	• General purpose protection & repair • Identification & beautifying substrates • Insulation from environment • Reduced longitudinal shrinkage • Resistance to water, fungus, UV light* • Large, economical, bulk packages (FIT-221B) *black color only	• General purpose insulation & repair • Wire & cable harnessing & bundling • Cable & connector protection • Wire & tubing splicing & connecting • XTRA•GUARD® 1 applications • Automated cutting machines (spools)	• Shrink Ratio: 2:1 @ 121°C • Temperature: –55°C to 135°C • Longitudinal Shrinkage: –5% • Size: 3/64" – 4 in • Packages: 4ft lengths, spools & cut pieces • Colors: Black, White, Clear**, Red, Yellow, Blue, Green **Not UL Recognized, CSA Certified
FIT®-221V **Low Shrink Temp, Flame Retardant, Irradiated Polyolefin** MIL-DTL-23053/5C, Class 1, 3 CSA OFT Flame Test Recognized Component Underwriters Laboratories Inc. Certified Canadian Standards Association Passes UL VW-1 Flame Test Underwriters Laboratories Inc.	• Lowest shrink temperature (90°C) • Fastest recovery time • UL VW-1 & CSA OFT flame retardancy • Resistance to water, fungus, UV light* • Large, economical, bulk packages • New colors available! *black color only	• Where substrates are heat sensitive • Where reduced shrink time saves costs • Flame retardancy requirements • Industrial applications • Cable & connector protection • Automated cutting machines (spools)	• Shrink Ratio: 2:1 @ 90°C • Temperature: –40°C to 125°C • Longitudinal Shrinkage: –5% • Size: 3/64" – 2 in • Packages: 4ft lengths, spools & cut pieces • Colors: Black, White, Red, Yellow, Green, Blue
FIT®-260 **Irradiated Polyolefin Ground Identification** NEC Article 250-57B, Exception 3 Recognized Component Underwriters Laboratories Inc. Certified Canadian Standards Association Passes UL VW-1 Flame Test Underwriters Laboratories Inc.	• Color coding leads as a ground circuit • Same physical characteristics as FIT-221	• Approved for use by NFPA for 600 volt ground lead identification • E-OEM component identification • Wire harness identification • Automated cutting machines (spools)	• Shrink Ratio: 2:1 @ 121°C • Temperature: –55°C to 135°C • Longitudinal Shrinkage: –5% • Size: 1/8" – 1 in • Packages: Spools • Colors: Green with Yellow stripe. Each color covers a minimum of 30% surface area.
FIT®-295 **Semi-Rigid Irradiated Polyolefin** MIL-DTL-23053/6D, Class 1, 2 Recognized Component Underwriters Laboratories Inc. (except for clear) Certified Canadian Standards Association (black only)	• 30% stronger than standard polyolefin • 25% stiffer than standard polyolefin • Low water absorption • Resistance to water, fungus, UV light	• Strength & stiffness make it excellent for strain relief applications • Heavy duty cable/connector protection • Electrical cable splices • Crimp terminals • Solder joints	• Shrink Ratio: 2:1 @ 135°C • Temperature: –55°C to 135°C • Longitudinal Shrinkage: –5% • Size: 3/64" – 1/2" • Packages: 4ft lengths & cut pieces • Colors: Multiple

FIT® Preferred Heat Shrink Products

Compliments XTRA•GUARD®!

XTRA•GUARD® 1 –
Extra Premium Grade PVC Jacket For Extended Cable Life

XTRA•GUARD® 2 –
Industrial Strength Extra Rugged Polyurethane Jacket

XTRA•GUARD® 3 –
Extra Durable, Outdoor, Direct Burial Cable

XTRA•GUARD® 4 –
Extra Protection High/Low Temperature TPE Jacketed Cables

XTRA•GUARD® 5 –
Extra High-Temperature/Chemical Resistant FEP Teflon Jacket

XTRA•GUARD® Flexible Cables –
Multi-Purpose & Continuous Use Flexible Control Cables

XTRA•GUARD® 1	
In general purpose OEM wiring or cable assemblies	FIT-221/ FIT-221B
In cable assemblies, sensitive equipment and flame retardant applications	FIT-221V
In outdoor applications	FIT-321
With oversized connectors in flame retardant applications	FIT-321V
In general purpose OEM wiring or cable assemblies	FIT-105

HIGH SHRINK RATIO

	Features & Benefits	Applications	Characteristics
FIT®-321 **Medium Wall, Adhesive Lined, Irradiated Polyolefin** MIL-DTL-23053/4D, Class 3	• Expanded to a 3 to 1 shrink ratio • Increased wall thickness for durability • Water resistant adhesive inner lining • Permanent bonding adhesive	• Connectorized cable repair • Water resistance & encapsulation • Environmental & outdoor protection • **XTRA•GUARD® 1, 2 & 3** applications	• Shrink Ratio: 3:1 @ 125°C • Temperature: –55°C to 110°C • Longitudinal Shrinkage: –15% • Size: 1/8" – 1-1/2 in • Packages: 4ft lengths & cut pieces • Color: Black
FIT®-321V **Low Shrink Temp, Flame Retardant, Irradiated Polyolefin** CSA OFT Flame Test Recognized Component Underwriters Laboratories Inc. Certified Canadian Standards Association Passes UL VW-1 Flame Test Underwriters Laboratories Inc.	• Expanded to a 3 to 1 shrink ratio • Lowest shrink temperature (90°C) • Fastest recovery time • Reduced wall thickness • UL VW-1 & CSA OFT flame retardancy	• Connectorized cable repair • Where substrates are heat sensitive • Delicate & intricate electronics protection • Industrial applications • Flame retardancy requirements • Automated cutting machines	• Shrink Ratio: 3:1 @ 90°C • Temperature: –55°C to 125°C • Longitudinal Shrinkage: –5% • Size: 3/32" – 1 in • Packages: Spools • Colors: Black, White
FIT®-421 **Over Expanded, Irradiated Polyolefin** MIL-DTL-23053/5C, Class 1 Overexpanded	• Over expanded to a 4 to 1 shrink ratio • Large supplied diameter sizes • Resistance to water, fungus, UV light • Shrinks to 25% of its original size • Conforms to odd shapes	• D-Sub connector strain relief • RS-232 25 pin connector to cable coverage • Covers the most irregular shapes & connectors • PC board coverage/protection	• Shrink Ratio: 4:1 @ 121°C • Temperature: –55°C to 135°C • Longitudinal Shrinkage: –10% • Size: 1 in – 4 in • Packages: 4ft lengths • Color: Black
FIT®-621 **Heavy Wall, Adhesive Lined, Irradiated Polyolefin**	• Over expanded to a 6 to 1 shrink ratio • Shrinks to 1/6 its original size • Heavy duty adhesive inner lining • Low water absorption • Excellent durability & toughness • Resistant to oils & chemicals • Convenient pre-cut 6 inch lengths	• Protection in severe environments • Large to small connector-to-cable protection • Underground utility splice protection • Corrosion protection of metal parts • Protects substrates in direct burial applications • Heavy duty abrasion resistance	• Shrink Ratio: 6:1 @ 120°C • Temperature: –40°C to 125°C • Longitudinal Shrinkage: –10% • Size: 5/8" – 4 in • Packages: 6 inch lengths • Color: Black

XTRA•GUARD® 2

Where connectors need to be permanently isolated from cutting fluids, oils or solvents	FIT-321
On machine tool equipment cables exposed to oil and cutting fluids	FIT-750

XTRA•GUARD® 3

600 volt, temporary outdoor applications	FIT-700

XTRA•GUARD® 4

In high flammability environments	FIT-350
In wide temperature range environments or where exposed to chemicals	FIT-400
In low temperature flexing applications or when exposed to chemicals	FIT-600

XTRA•GUARD® 5

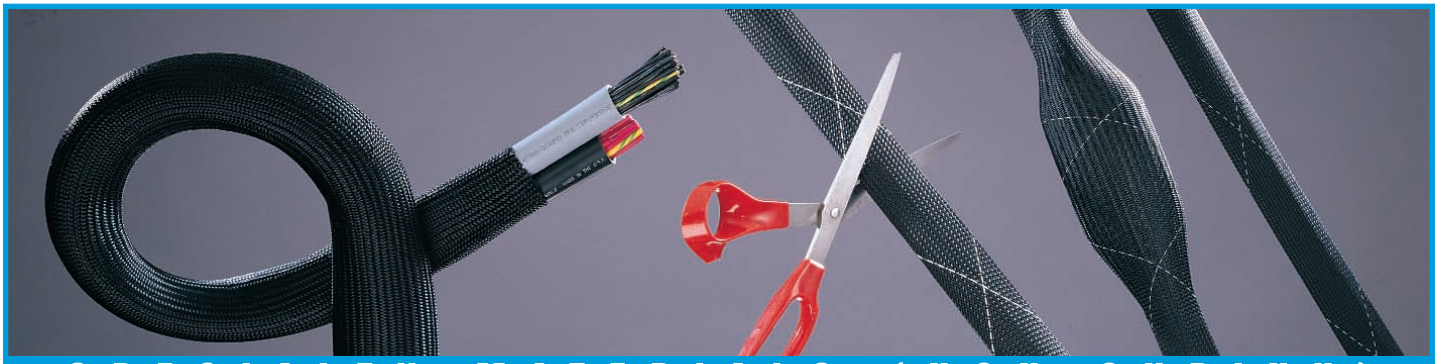
In wide temperature range environments or where exposed to chemicals	FIT-400
In harsh temperature environments, exposed to chemicals requiring increased pliability	FIT-650

XTRA•GUARD® Flexible Cables

In flexing applications when exposed to oil	FIT-600
In heavy duty, high speed flexing applications	FIT FLEX
On equipment in motion where cables and pnuematic tubing must be dressed along machinery framework	GRP-110 & 120 SLEEVING
In robotic and flexible cable harnessing for routing and abrasion protection	GRP-110NF & 120NF SLEEVING

DUAL WALL / ADHESIVE LINED

	Features & Benefits	Applications	Characteristics
FIT®-300 **Surface Irradiated/Dual Extruded Polyolefin** MIL-DTL-23053/4D, Class 1 Recognized Component Underwriters Laboratories Inc. (black only)	• Meltable inner wall • Encapulates without adhesive • Temporary sealing without sticky residue • Increased wall thickness for added protection • High shrink ratios • Excellent dielectric properties	• Substrates requiring filled interstices • Digital electronics where adhesive is unacceptable • Temporary applications requiring encapsulation	• Shrink Ratio: 3:1 - 6:1 (depending on size) @ 135°C • Temperature: –55°C to 110°C • Longitudinal Shrinkage: –10% • Size: 1/8" – 3/4" • Packages: 4ft lengths, cut pieces • Colors: Multiple
FIT®-700 **Bonding, Mastic Lined, Irradiated Polyolefin**	• Bonding adhesion to most materials • Environmental & water-tight seal • Prevents wicking & fills interstices • Tubing sizes match 14AWG-2000MCM sizes • Superior strength • High voltage • Pre-cut 12 inch pieces	• High voltage splices (up to 2 kV) • Water resistant connections • Underground utility applications • Direct burial • Outdoor insulation & protection • **XTRA•GUARD® 3** applications	• Shrink Ratio: 3:1 @ 121°C • Temperature: –55°C to 90°C • Longitudinal Shrinkage: –5% • Size: 3/4" – 4-1/2 in (14AWG-2000MCM) • Packages: 12 inch cut pieces • Color: Black
FIT®-750 **Bonding, Adhesive Lined, Irradiated Polyolefin** MIL-DTL-23053/4D, Class 2 Recognized Component Underwriters Laboratories Inc.	• Bonding to substrates • Similar to **FIT-221** with adhesive liner • Total encapsulation • Reduced diameters • Permanent water & corrosion protection • Internal isolation of individual substrates – "pinching"	• Moisture protection of substrates • Permanent sealing of substrates • Wire isolation within a harness • Permanent joint splice repair • General purpose usage with adhesive • **XTRA•GUARD® 2** applications	• Shrink Ratio: 2:1 @ 121°C • Temperature: –55°C to 110°C • Longitudinal Shrinkage: –5% • Size: 1/4" – 1-1/2 in • Packages: 4ft lengths • Color: Black



SPECIALTY MATERIALS (NON SHRINK)

	Features & Benefits	Applications	Characteristics
GRP-110 & 120 SLEEVING **Expandable, Braided Polyester Sleeving** MIL-I-631D Recognized Component Underwriters Laboratories Inc. Passes UL VW-1 Flame Test Underwriters Laboratories Inc.	• Lightweight, flexible routing • Flexibility in wide temperature range, – 70°C to 125°C • Abrasion & cut-through resistance • Expansion & contraction of sleeving diameter • Flame retardancy	• Protective covering for wire, cable & tubing • Robots & automation equipment dressing • Wire bundling & harnessing • **XTRA•GUARD® Flexible Cable** applications • Fiber optic cable bundles • Note: Hot knife must be used to prevent tubing from fraying	• Temperature: –70°C to 125°C • Size: 1/8" – 2 in • Packages: Spools • Colors: Black, White (GRP-120 has a white tracer)
GRP-110NF & 120NF SLEEVING **Non-Fraying Expandable, Braid Sleeving** MIL-I-631D Recognized Component Underwriters Laboratories Inc. Passes UL VW-1 Flame Test Underwriters Laboratories Inc.	• **FRAYLESS CUTS WITHOUT A HOT KNIFE!** • Cuts with scissors without fraying ends • Lightweight, flexible routing • Flexibility in wide temperature range, –70°C to 125°C • Abrasion & cut-through resistance • Expansion & contraction of sleeving diameter • Flame retardancy	• Field installation without a hot knife • Protective covering for wire, cable & tubing • Robots & automation equipment dressing • Wire bundling & harnessing • **XTRA•GUARD® Flexible Cable** applications • Fiber optic cable bundles	• Temperature: –70°C to 125°C • Size: 1/8" – 1-1/2 in • Packages: Spools • Color: Black (GRP-120NF has a white tracer)

SPECIALTY MATERIALS

	Features & Benefits	Applications	Characteristics
FIT®-105 **Irradiated PVC** MIL-DTL-23053/2C, Class 1* CSA OFT Flame Test Recognized Component Underwriters Laboratories Inc. Certified Canadian Standards Association Passes UL VW-1 Flame Test Underwriters Laboratories Inc. *Inactive for new design, no longer used by the DOD except for replacement purposes	• Low shrink temperature (100°C) • 30% stronger than standard polyolefin • UL VW-1 & CSA OFT flame retardancy • Low water absorption & UV resistant • Multiple package availability	• Use with PVC cable • With heat sensitive substrates • Fast recovery time • Wire harnesses & cable assemblies • Flame retardant requirements • **XTRA•GUARD® 1** applications • Automated cutting machines (spools)	• Shrink Ratio: 2:1 @ 100°C • Temperature: –35°C to 105°C • Longitudinal Shrinkage: –15% • Size: 3/64" – 2 in • Packages: 4ft lengths, spools & cut pieces • Color: Black
FIT®-350 **Flame Retardant Irradiated Kynar**** MIL-DTL-23053/8C CSA OFT Flame Test Recognized Component Underwriters Laboratories Inc. Certified Canadian Standards Association Passes UL VW-1 Flame Test Underwriters Laboratories Inc. *Teflon® is a registered trademark of E.I. DuPont Co. **Kynar is a trademark of ELF Atochem, North America, Inc.	• Chemical resistance • 3 times the tensile strength of standard polyolefin • Excellent flame retardancy • Excellent heat resistance • Excellent chemical resistance	• High temperature environments • Faster recovery time than Teflon* • Exposure to chemicals • Use with high temperature wire • Caustic environments • **XTRA•GUARD® 4** applications	• Shrink Ratio: 2:1 @ 175°C • Temperature: –55°C to 175°C • Longitudinal Shrinkage: –10% • Size: 3/64" – 1 in • Packages: 4ft lengths & cut pieces • Color: Transparent
FIT®-400 **Temperature/Chemical Resistant FEP Teflon*** MIL-DTL-23053/11C, Class 1 *Teflon® is a registered trademark of E.I. DuPont Co.	• Excellent chemical resistance • Extreme temperature range of –67°C to 200°C • Unmatched dielectric properties • Thinnest wall thickness available • Lower recovery temp than TFE Teflon*	• Fiber optic applications • High temperature cable • Limited space applications • **XTRA•GUARD® 4 & 5** applications • Digital electronics (signal sensitive equip.) • Extremely caustic environments • Fast recovery time • Data & FEP Teflon* cable applications	• Shrink Ratio: 1.2:1 @ 176°C • Temperature: –67°C to 200°C • Longitudinal Shrinkage: –15% • Size: 0.03" – 0.44" (24AWG-0AWG) • Packages: 4ft lengths & 2ft lengths • Color: Natural
FIT®-500 **Temperature/Chemical Resistant TFE Teflon*** MIL-DTL-23053/12C, Class 3 *Teflon® is a registered trademark of E.I. DuPont Co.	• Supreme chemical resistance • Most extreme temperature range of –67°C to 250°C • High tensile strength • Unmatched dielectric properties • Extremely thin wall thickness • Low friction coefficient	• Fiber optic applications • TFE Teflon* cable applications • Limited space applications • Digital electronics (signal sensitive equip.) • Extremely caustic environments	• Shrink Ratio: 1.5:1 @ 327°C • Temperature: –67°C to 250°C • Longitudinal Shrinkage: –20% • Size: 0.034" – 0.047" (30AWG-0AWG) • Packages: 2ft lengths • Color: Natural
FIT®-600 **Highly Flexible, Irradiated Elastomer** MIL-DTL-23053/1C, Class 2† MIL-R-46846 Type 1, Class 1† CSA OFT Flame Test Recognized Component Underwriters Laboratories Inc. Certified Canadian Standards Association Passes UL VW-1 Flame Test Underwriters Laboratories Inc. †FIT-600 does not contain any polychloroprene/neoprene but meets the physical properties of MIL-DTL-23053/1C, Class 2 and MIL-R-46846 Type 1, Class 1 specifications.	• Improved flexibility • More than twice the tensile strength of silicone rubber • Large tubing diameters • Oil resistance & flame retardancy • Abrasion resistance	• Military & commercial harnesses • Cold temperature flexing • Machine tool & automation equipment • **XTRA•GUARD® 4** applications • **XTRA•GUARD® Flexible Cable** applications	• Shrink Ratio: 1.75:1 @ 135°C • Temperature: –70°C to 121°C • Longitudinal Shrinkage: –10% • Size: 1/4" – 3in • Packages: Spools • Color: Black
FIT®-650 **Chemical and Temperature Resistant Irradiated Viton*** MIL-DTL-23053/13B *Viton® is a registered trademark of Dupont Dow Elastomers	• Extreme temperatures –40°C to 200°C • Excellent chemical resistance (water, oil, acid & fuels) • Flexibility	• Chemical production applications • Military electronics/aircraft • In hostile environments requiring some flexibility • **XTRA•GUARD® 5** applications • **XTRA•GUARD® Flexible Cable** applications	• Shrink Ratio: 2:1 @ 175°C • Temperature: –40°C to 200°C • Longitudinal Shrinkage: –20% • Size: 1/8" – 1 in • Packages: Spools • Color: Black
FIT® FLEX **Highly Flexible, Irradiated Silicone Rubber** Recognized Component Underwriters Laboratories Inc. Passes UL VW-1 Flame Test Underwriters Laboratories Inc.	• Highest flexibility available • Flexibility in widest temperature range, –75°C to 200°C • Scrape abrasion resistance • Pliability when substrate requires "give" • Flame retardancy	• Robotics cables • Automation equipment dressing • Environments with varied temperatures • **XTRA•GUARD® Flexible Cable** applications • Fiber optic cable bundles • Assemblies & harnesses requiring flexibility	• Shrink Ratio: 1.7:1 @ 135°C • Temperature: –75°C to 200°C • Longitudinal Shrinkage: –15% • Size: 0.112" – 1.217" • Packages: Spools • Color: Gray

Simple, Comprehensive Tubing Solutions

PROTECT
substrates from moisture, UV light, corrosion, oxidation, dust, chemicals, abrasion, environmental conditions, solder joints and encapsulate.

INSULATE
wire terminations and connections, entire PC boards, from temperature and ambient conditions.

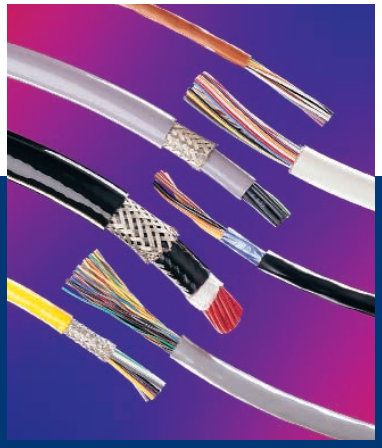
REPAIR
cable splices, reinsulate, cable jackets, connections, permanent or emergency quick fix.

BUNDLE & HOLD
wire harness, cable, tubing and hose dressing on OEM equipment, breakouts, bundle in small spaces, conform to odd shapes.

SEAL
moisture protect, fill spaces/interstices, permanent or temporary, “pinching”.

IDENTIFY & BEAUTIFY
circuit/ground indicator, color coding, organize, personalize/label, conceal mechanical attachments, improve physical appearance.

FLEXIBILITY
with robotics cable, strain relief, prevent bending.



FIT® Compliments XTRA•GUARD®!

When the cable you install must withstand the environmental abuses of heat or cold, intermittent or continuous motion, abrasion, chemical exposure or EMI/RFI interference, specify XTRA•GUARD High Performance Electronic Cable.
And when heat shrinkable tubing is required, FIT Compliments XTRA•GUARD!
A preferred FIT Shrinkable Tubing product has been recommended for many XTRA•GUARD cable applications.

MOLDED SHAPES AND ACCESSORIES

FIT® MOLDED END CAPS
Protect standard and fiber optic cable ends from dust, water and damage.

FIT®-BOOTS
Shapes molded specifically to fit a variety of D-subminiature and other connectors.

FIT® WRAP
Irradiated polyolefin sheets for cable jacket repair when cable disconnect is impossible.

FIT® SOLDER SLEEVES
A cable shield ground termination system with a built in soldered connection which is completely insulated and encapsulated.

FIT®-PRINT
Identification system enabling tubing to be printed on directly from a desk top printer. **FIT®-PRINT** is designed to work with any PC software.

FIT® CRIMP SPLICES
Crimp splices with an outer covering of heat shrink tubing for splicing single conductors.

FIT® GUN-1 and 3
Dual-temperature heat guns that are lightweight in design and ideal for industrial use.

FIT® FBT-1
A flameless butane torch for field application of heat shrinkable tubing.

Simple, Comprehensive Tubing Solutions

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