| Part # | Shrink Ratio | Material | Min Supplied ID | Max Recovered ID | Nom Recovered Wall | Temperature | Ratings |
|---|---|---|---|---|---|---|---|
| FIT-221-1/16 | 2:1 | XLPO | 0.063 | 0.031 | 0.017 | -55 to 135 | AMS DTL-23053/5 CL 1 Colors, AMS DTL-23053/5 CL 2 Clear, CA Prop 65, CSA 198, REACH Regulation (EC 1907/2006), UL 224 |

# PART NO. FIT-221-1/16



Add the performance of Xtra-Guard...

**Xtra-Guard Performance Cable**

Alpha Wire's Xtra-Guard cable brings performance and reliability to the biggest challenges in the toughest environments. No matter what extremes your application faces, you'll find an Xtra-Guard cable that excels in meeting your requirements.



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The perfect accessory...

**Heat Guns**

Alpha heat guns are the perfect complement to our tubing, making it easy to apply FIT tubing quickly and efficiently.



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## Construction

| | |
|---|---|
| 1) Tubing Type | Heat Shrinkable Tubing |
| 2) Tubing Material | Cross Linked Polyolefin |
| 3) Minimum Supplied ID(In) | 0.063 |
| 4) Maximum Recovered ID (In) | 0.031 |
| 5) Nominal Recovered Wall Thickness(In) | 0.017 |
| 6) Color(s) | BLACK, WHITE, CLEAR, RED, YELLOW, BLUE, GREEN |

## Industry Approvals

| | |
|---|---|
| 1) UL | Standard 224 (Except Clear) |
| 2) CSA International | Standard 198 (Except Clear) |
| 3) Other | AMS-DTL-23053/5 Class 1 (Except Clear)<br>AMS-DTL-23053/5 Class 2 (Clear Only) |

## Environmental

| | |
|---|---|
| 1) EU Directive 2002/95/EC(RoHS): | All materials used in the manufacture of this part are in compliance with EU Directive 2002/95/EU regarding the restriction of use of certain hazardous substances in electrical and electronic equipment. Consult Alpha Wire's web site for compliance Date of Manufacture. |
| 2) REACH Regulation (EC 1907/2006): | All materials used in the manufacture of this part do not appear on the EU REACH Substance of Very High Concern (SVHC) candiate list. |
| 3) California Proposition 65: | The outer surface materials used in the manufacture of this part meet the requirements of California Proposition 65. |

## Properties

| | | |
|---|---|---|
| | Physical & Mechanical Properties | |
| 1) Temperature Range | -55 to 135°C | |
| 2) Shrink Ratio | Approximately 2:1 | |
| 3) Full Recovery Temperature | 121°C | |
| 4) Minimum Shrink Temperature | 90°C | |
| 5) Tensile Strength | 1500psi, Min | ASTM D638 |
| 6) Elongation | 200%, Min | ASTM D638 |
| 7) Low Temperature Flex(-55°C) | no cracking | AMS-DTL-23053 |
| 8) Heat Shock(250°C,4hrs) | no cracking | AMS-DTL-23053 |
| 9) Secant Modulus | $2.5x10^{4}$ psi, Min | ASTM D882 |
| 10) Longitudinal Change | +/-5% | AMS-DTL-23053 |
| 11) Specific Gravity(Colors) | 1.35, Max | ASTM D792 |
| Specific Gravity(Clear) | 1.00, Max | |
| 12) Shelf Life | 5 Years @ 0 to 35°C | |
| | Electrical Properties | |
| 1) Dielectric Strength | 500 V/mil, Min | ASTM D876 |
| 2) Volume Resistivity | $1x10^{14}$ ohm-cm, Min | ASTM D876 |
| | Chemical Properties | |
| 1) Water Absorption(Colors) | 0.50%, Max | ASTM D570 |
| Water Absorption(Clear) | 0.20%, Max | |
| 2) Fluid Resistance(23°C,24 Hrs) | 1000 PSI, Min | AMS-DTL-23053 |
| 3) Vacuum Outgassing - CVCM(Colors) | 0.89%, Max | ASTM E595 |
| Vacuum Outgassing - CVCM(Clear) | 0.49%, Max | |
| 3) Vacuum Outgassing - TML(Colors) | 0.16%, Max | ASTM E595 |
| Vacuum Outgassing - TML(Clear) | 0.09%, Max | |
| 4) Halogen Free | Clear only | |
| 5) Lead Free | Yes | |

## Other

**Packaging**

1000 FT, 25X4 FT, 100 FT, 1000X1 IN, 70 FT, 1000X1/2IN, 36X6 IN

Our FIT heat-shrink tubing offers a reliable way to protect and seal terminations or add additional mechanical ruggedness. FIT preferred heatshrink 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.

# CERTIFICATE OF COMPLIANCE

To Whom It May Concern:

Alpha Wire Part Number: FIT-221-1/16

FIT-221-1/16, RoHS-Compliant Commencing With 12/1/2004 Production

*This document certifies that the Alpha part numbers cited above are manufactured in accordance with Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003, better known as the RoHS Directives, with regards to restrictions of the use of certain hazardous substances used in the manufacture of electrical and electronic equipment. The reader is referred to these Directives for the specific definitions and extents of these Directives .* ***No Exemptions are required for RoHS Compliance on this item.***

| **Substance** | **Maximum Control Value** |
|---|---|
| Lead | 0.1% by weight (1000 ppm) |
| Mercury | 0.1% by weight (1000 ppm) |
| Cadmium | 0.01% by weight (100 ppm) |
| Hexavalent Chromium | 0.1% by weight (1000 ppm |
| Polybrominated Biphenyls (PBB) | 0.1% by weight (1000 ppm) |
| Polybrominated Diphenyl Ethers (PBDE) , Including Deca-BDE | 0.1% by weight (1000 ppm) |

*The information provided in this document and disclosure is correct to the best of Alpha Wire's knowledge, information and belief at the date of its release. The information provided is designed only as a general guide for the safe handling, storage, and any other operation of the product itself or the one that it will become part of. The intent of this document is not to be considered a warranty or quality specification. Regulatory information is for guidance purposes only. Product users are responsible for determining the applicability of legislation and regulations based on their individual usage of the product .*

Authorized Signatory for the Alpha Wire Company:



Dave Watson, Director of Engineering & QA 8/10/2009

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