

# ALPHA WIRE COMPANY

## CUSTOMER PRODUCT SPECIFICATION

**Part Number: FIT221**  
**Page 1 of 2 Pages**

**Issue: 6**  
**Issue Date: 12/31/2008**  
**Effective Date: 3/1/2009**

### A. Construction

- |                    |                                               |
|--------------------|-----------------------------------------------|
| 1) Tubing Type     | Heat Shrinkable Tubing                        |
| 2) Tubing Material | Cross Linked Polyolefin                       |
| 3) Color(s)        | BLACK, WHITE, CLEAR, RED, YELLOW, BLUE, GREEN |

| Part Number  | Minimum Supplied ID (In) | Maximum Recovered ID (In) | Nominal Recovered Wall Thickness (In) |
|--------------|--------------------------|---------------------------|---------------------------------------|
| FIT221-3/64  | 0.046                    | 0.023                     | 0.016                                 |
| FIT221-1/16  | 0.063                    | 0.031                     | 0.017                                 |
| FIT221-3/32  | 0.093                    | 0.046                     | 0.020                                 |
| FIT221-1/8   | 0.125                    | 0.062                     | 0.020                                 |
| FIT221-3/16  | 0.187                    | 0.093                     | 0.020                                 |
| FIT221-1/4   | 0.250                    | 0.125                     | 0.025                                 |
| FIT221-3/8   | 0.375                    | 0.187                     | 0.025                                 |
| FIT221-1/2   | 0.500                    | 0.250                     | 0.025                                 |
| FIT221-3/4   | 0.750                    | 0.375                     | 0.030                                 |
| FIT221-1IN   | 1.000                    | 0.500                     | 0.035                                 |
| FIT221-1 1/2 | 1.500                    | 0.750                     | 0.040                                 |
| FIT221-2IN   | 2.000                    | 1.000                     | 0.045                                 |
| FIT221-3IN   | 3.000                    | 1.500                     | 0.050                                 |
| FIT221-4IN   | 4.000                    | 2.000                     | 0.055                                 |

### B. 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)<br>REACH Regulation (EC 1907/2006)                                                                                                                                                            |
| 4) 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. |
| 5) California Proposition 65:     | The outer surface materials used in the manufacture of this part meet the requirements of California Proposition 65.                                                                                                                                                         |

### C. 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 <sup>4</sup> 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          |               |

### D. Electrical Properties

- |                        |                |           |
|------------------------|----------------|-----------|
| 1) Dielectric Strength | 500 V/mil, Min | ASTM D876 |
|------------------------|----------------|-----------|

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- |                       |                                |           |
|-----------------------|--------------------------------|-----------|
| 2) Volume Resistivity | 1x10 <sup>14</sup> ohm-cm, Min | ASTM D876 |
|-----------------------|--------------------------------|-----------|
- E. 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      | 0.1%, Max        | ASTM E595     |
| 4) Halogen Free                  | Yes – Clear Only |               |
| 5) Lead Free                     | Yes – Clear Only |               |
- F. Other**
- 1) Packaging
    - a) FIT221-3/64  
1000 FT, 25X4 FT, 1000X1 IN, 1000X1/2IN, 40X6 IN
    - b) FIT221-1/16  
1000 FT, 25X4 FT, 100 FT, 1000X1 IN, 70 FT, 1000X1/2IN, 36X6 IN
    - c) FIT221-3/32  
500 FT, 25X4 FT, 100 FT, 1000X1 IN, 65 FT, 1000X1/2IN, 32X6 IN
    - d) FIT221-1/8  
500 FT, 100 FT, 25X4 FT, 1000X1 IN, 60 FT, 1000X1/2IN, 28X6 IN
    - e) FIT221-3/16  
500 FT, 25X4 FT, 100 FT, 1000X1 IN, 50 FT, 1000X1/2IN, 24X6 IN
    - f) FIT221-1/4  
250 FT, 100 FT, 25X4 FT, 1000X1 IN, 40 FT, 1000X1/2IN, 20X6 IN
    - g) FIT221-3/8  
200 FT, 25X4 FT, 1000X1 IN, 50 FT, 35 FT, 1000X1/2IN, 16X6 IN
    - h) FIT221-1/2  
150 FT, 50 FT, 32 FT, 5X4 FT, 14X6 IN
    - i) FIT221-3/4  
250 FT, 50 FT, 24 FT, 5X4 FT, 12X6 IN
    - j) FIT221-1IN  
250 FT, 50 FT, 5X4 FT, 16 FT, 8X6 IN
    - k) FIT221-11/2  
125 FT, 5X4 FT, 5X6 IN
    - l) FIT221-2IN  
125 FT, 5X4 FT, 3X6 IN
    - m) FIT221-3IN  
100 FT, 2X4 FT, 2X6 IN
    - n) FIT221-4IN  
50 FT, 2X4 FT

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