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# Customer Specification

## PART NO. 5199/20C

### Construction

|                   |        | Diameters (In)                                                                                                                                                                                                                                                                                                                  |              |                    |                   |
|-------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------|-------------------|
| 1) Component 1    |        | 20 X 1 COND                                                                                                                                                                                                                                                                                                                     |              |                    |                   |
| a) Conductor      |        | 22 (7/30) AWG Tinned Copper                                                                                                                                                                                                                                                                                                     |              | 0.030              |                   |
| b) Insulation     |        | 0.010" Wall, Nom. PVC, Semi Rigid                                                                                                                                                                                                                                                                                               |              | 0.050              |                   |
| (1) Color Code    |        | Alpha Wire Color Code E                                                                                                                                                                                                                                                                                                         |              |                    |                   |
| Cond              | Color  | Cond                                                                                                                                                                                                                                                                                                                            | Color        | Cond               | Color             |
| 1                 | BLACK  | 8                                                                                                                                                                                                                                                                                                                               | VIOLET       | 15                 | WHITE/YELLOW      |
| 2                 | BROWN  | 9                                                                                                                                                                                                                                                                                                                               | SLATE        | 16                 | WHITE/GREEN       |
| 3                 | RED    | 10                                                                                                                                                                                                                                                                                                                              | WHITE        | 17                 | WHITE/BLUE        |
| 4                 | ORANGE | 11                                                                                                                                                                                                                                                                                                                              | WHITE/BLACK  | 18                 | WHITE/VIOLET      |
| 5                 | YELLOW | 12                                                                                                                                                                                                                                                                                                                              | WHITE/BROWN  | 19                 | WHITE/SLATE       |
| 6                 | GREEN  | 13                                                                                                                                                                                                                                                                                                                              | WHITE/RED    | 20                 | WHITE/BLACK/BROWN |
| 7                 | BLUE   | 14                                                                                                                                                                                                                                                                                                                              | WHITE/ORANGE |                    |                   |
| 2) Cable Assembly |        | 20 Components Cabled                                                                                                                                                                                                                                                                                                            |              |                    |                   |
| a) Twists:        |        | 4.0 Twists/foot (min)                                                                                                                                                                                                                                                                                                           |              |                    |                   |
| b) Orientation:   |        | Components to be arranged from INSIDE LAYER to OUTSIDE LAYER                                                                                                                                                                                                                                                                    |              |                    |                   |
| c) Core Wrap      |        | Nonwoven Polyester Tape, 25% Overlap, Min.                                                                                                                                                                                                                                                                                      |              |                    |                   |
| 3) Shield:        |        | Alum/Mylar Tape, 25% Overlap, Min.                                                                                                                                                                                                                                                                                              |              |                    |                   |
| a) Foil Direction |        | Foil Facing In                                                                                                                                                                                                                                                                                                                  |              |                    |                   |
| b) Drain Wire     |        | 22 (7/30) AWG Tinned Copper                                                                                                                                                                                                                                                                                                     |              |                    |                   |
| 4) Jacket         |        | 0.032" Wall, Nom.,PVC                                                                                                                                                                                                                                                                                                           |              | 0.335 (0.353 Max.) |                   |
| a) Color(s)       |        | Slate, Black, Yellow, Orange, Blue, Green, Red, Sand Beige, White                                                                                                                                                                                                                                                               |              |                    |                   |
| b) Ripcord        |        | 1 End 810 Denier Nylon                                                                                                                                                                                                                                                                                                          |              |                    |                   |
| c) Print          |        | ALPHA WIRE-* P/N 5199/20C 20C 22 AWG<br>XTRAGUARD(R) 1 SHIELDED (UL) TYPE CM 105C OR AWM<br>2464 80C 300V OR AWM 21894 105C 300V SUN RES 60C<br>OIL VW-1 --- LLXXXXXX CSA 105C TYPE CMG FT4<br>CE ROHS (SEQ FOOTAGE)<br>* = Factory Code<br>[Note: Product may have c(UL) or CSA markings depending upon plant of manufacture.] |              |                    |                   |

### Applicable Specifications

|                      |                                     |                              |
|----------------------|-------------------------------------|------------------------------|
| 1) UL                |                                     |                              |
| a) Component 1       | AWM/STYLE 10002                     | 105°C / 300 V <sub>RMS</sub> |
| b) Overall           | AWM/STYLE 21894                     | 105°C / 300 V <sub>RMS</sub> |
|                      | SUN RES                             |                              |
|                      | 60C OIL                             |                              |
|                      | AWM/STYLE 2464                      | 80°C / 300 V <sub>RMS</sub>  |
|                      | CM                                  | 105°C                        |
|                      | VW-1                                |                              |
| 2) CSA International | CMG                                 | 105°C                        |
|                      | FT4                                 |                              |
| 3) IEC               | EN 60332-1 Flame Behavior           |                              |
|                      | EN 60332-2 Flame Behavior           |                              |
| 4) CE:               | EU Low Voltage Directive 2014/35/EC |                              |

## Environmental

|                                                                          |                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1) CE: EU Directive 2011/65/EU(RoHS2), EU Directive 2015/863/EU (RoHS3): |                                                                                                                                                                                                                                                             |
|                                                                          | This product complies with European Directive 2011/65/EU (RoHS Directive) of the European Parliament and of the Council of 8 June 2011 and the amending Directive 2015/863/EU of 4 June 2015 . No Exemptions are required for RoHS Compliance on this item. |
| 2) REACH Regulation (EC 1907/2006):                                      |                                                                                                                                                                                                                                                             |
|                                                                          | This product does not contain Substances of Very High Concern (SVHC) listed on the European Union's REACH candidate list in excess of 0.1% mass of the item.                                                                                                |
| 3) California Proposition 65:                                            |                                                                                                                                                                                                                                                             |
|                                                                          | Exempt from warning labels based on the Consent Judgment. Please see Alpha's CA Prop 65 Statement for more information.                                                                                                                                     |

## Properties

|                                                       |                                                 |
|-------------------------------------------------------|-------------------------------------------------|
| Physical & Mechanical Properties                      |                                                 |
| 1) Temperature Range                                  | -35 to 105°C                                    |
| 2) Bend Radius                                        | 10X Cable Diameter                              |
| 3) Pull Tension                                       | 115 Lbs, Maximum                                |
| 4) Sunlight Resistance                                | Yes                                             |
| Electrical Properties (For Engineering purposes only) |                                                 |
| 1) Voltage Rating                                     | 300 V <sub>RMS</sub>                            |
| 2) Capacitance                                        | 36 pF/ft @1 kHz, Nominal Conductor to Conductor |
| 3) Ground Capacitance                                 | 65 pF/ft @1 kHz, Nominal                        |
| 4) Inductance                                         | 0.18 µH/ft, Nominal                             |
| 5) Conductor DCR                                      | 16.6 Ω/1000ft @20°C, Nominal                    |
| 6) OA Shield DCR                                      | 10.4 Ω/1000ft @20°C, Nominal                    |

## Other

| Packaging              | Flange x Traverse x Barrel (inches)         |
|------------------------|---------------------------------------------|
| a) 1000 FT             | 18 x 12 x 8 Continuous length               |
| b) 500 FT              | 16 x 11 x 8 Continuous length               |
| c) 100 FT              | 12 x 10 x 5 Continuous length               |
| d) Bulk(Made-to-order) |                                             |
|                        | <i>[Spool dimensions may vary slightly]</i> |

www.alphawire.com

Alpha Wire | 711 Lidgerwood Avenue, Elizabeth, NJ 07207  
Tel: 1-800-52 ALPHA (25742)

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# EU/China ROHS CERTIFICATE OF COMPLIANCE

To Whom It May Concern:

Alpha Wire Part Number: 5199/20C

5199/20C , RoHS-Compliant Commencing With 8/1/2005 Production

Note: all colors and put-ups

This document certifies that the Alpha part number cited above is manufactured in accordance with Directive 2011/65/EU of the European Parliament, better known as the RoHS Directive (commonly known as RoHS 2), with regards to restrictions of the use of certain hazardous substances used in the manufacture of electrical and electronic equipment. This certification extends to amending Directive 2015/863/EU which expanded the list of restricted substances to 10 items (commonly known as RoHS 3) The reader is referred to these Directives for the specific definitions and extents of the Directives. **No Exemptions are required for RoHS Compliance on this item.** Additionally, Alpha certifies that the listed part number is in compliance with China RoHS "Marking for Control of Pollution by Electronic Information Products" standard SJ/T 11364-2014.

| 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)  |
| Bis(2-ethylhexyl) phthalate (DEHP)      | 0.1% by weight (1000 ppm)  |
| Butyl benzyl phthalate (BBP)            | 0.1% by weight (1000 ppm)  |
| Dibutyl phthalate (DBP)                 | 0.1% by weight (1000 ppm)  |
| Diisobutyl phthalate (DIBP)             | 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:

Dave Watson, Director of Engineering & QA

4/25/2020

Alpha Wire

711 Lidgerwood Ave.

Elizabeth, NJ 07207

Tel: 1-908-925-8000



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#### Как с нами связаться

**Телефон:** 8 (812) 309 58 32 (многоканальный)

**Факс:** 8 (812) 320-02-42

**Электронная почта:** [org@eplast1.ru](mailto:org@eplast1.ru)

**Адрес:** 198099, г. Санкт-Петербург, ул. Калинина, дом 2, корпус 4, литера А.