



REVISIONS

DOC. NO. SPC-F004 \* Effective: 7/8/02 \* DCP No: 1398

| DCP # | REV | DESCRIPTION                  | DRAWN | DATE     | CHECKD | DATE     | APPRVD | DATE     |
|-------|-----|------------------------------|-------|----------|--------|----------|--------|----------|
| 1199  | C   | Renamed—was PHD—***—****—*** | JWM   | 9/24/01  | JC     | 10/16/01 | JC     | 10/16/01 |
| 1857  | D   | RoHS Added                   | DCM   | 12/12/05 | JWM    | 3/17/06  | JWM    | 3/17/06  |



The PHD series is a flexible, polyolefin, thin wall tubing which offers the advantages of an integral adhesive lining. Provides excellent environmental protection for electronic components.

**Shrink Ratio: 2:1 Shrink Temp: 121°C (250°F) Operating Temp: -55°C~100°C (-67°F~230°F)**

| Dimensions |                     |                      |                                  | Standard Packages( Color: Black) |       |               |                           |                  |               |
|------------|---------------------|----------------------|----------------------------------|----------------------------------|-------|---------------|---------------------------|------------------|---------------|
| Size       | Expanded I.D. (Min) | Recovered I.D. (Max) | Recovered Nominal Wall Thickness | 4 Foot Lengths (+1", -0")        |       |               | 6 Inch Lengths ( ± .125") |                  |               |
|            |                     |                      |                                  | Type No.                         | Pcs   | Total Footage | Type No.                  | Pcs              | Total Footage |
|            |                     |                      |                                  | 1/8"                             | .125" | .063"         | .027"                     | PHD-008-4025-BLK | 25            |
| 3/16"      | .187"               | .093"                | .027"                            | PHD-012-4025-BLK                 | 25    | 100 FT        | PHD-012-6025-BLK          | 24               | 12 FT         |
| 1/4"       | .250"               | .125"                | .030"                            | PHD-016-4025-BLK                 | 25    | 100 FT        | PHD-016-6020-BLK          | 20               | 10 FT         |
| 3/8"       | .375"               | .187"                | .031"                            | PHD-024-4025-BLK                 | 25    | 100 FT        | PHD-024-6016-BLK          | 16               | 8 FT          |
| 1/2"       | .500"               | .250"                | .032"                            | PHD-032-4005-BLK                 | 5     | 20 FT         | PHD-032-6014-BLK          | 14               | 7 FT          |
| 3/4"       | .750"               | .375"                | .037"                            | PHD-048-4005-BLK                 | 5     | 20 FT         | PHD-048-6012-BLK          | 12               | 6 FT          |
| 1"         | 1.000"              | .500"                | .046"                            | PHD-064-4005-BLK                 | 5     | 20 FT         | PHD-064-6008-BLK          | 8                | 4 FT          |
| 1 1/2"     | 1.500"              | .750"                | .049"                            | PHD-096-4005-BLK                 | 5     | 20 FT         | PHD-096-6005-BLK          | 5                | 2.5 FT        |
| 2"         | 2.000"              | 1.000"               | .060"                            | PHD-128-4002-BLK                 | 2     | 8 FT          | PHD-128-6002-BLK          | 2                | 1 FT          |

**TYPICAL PROPERTIES**

**Physical**

Tensile Strength 2100 PSI  
 Ultimate Elongation 450%  
 Longitudinal Change +1%, -5%  
 Secant Modulus (2%) 17,000 PSI  
 \*Heat Aging Elongation 175%  
 (168 hrs @ 175°C)  
 \*Heat Shock No dripping,  
 (4 hrs @ 250°C) cracking, or flowing  
 \*Low Temp Flexibility No cracking  
 (4 hrs @ -55°C)  
 \*\*Flexibility: 3  
 Flammability: Self-extinguishing, meets UL 224  
 All-Tubing Flame Test (jacket)

**Electrical**

Dielectric Strength 800 V/mil  
 Volume Resistivity 10<sup>14</sup> ohm-cm

**Chemical**

Corrosive Effect Non-corrosive  
 Water Absorption 0.3%  
 Fungus Resistance Non-nutrient  
 Fluid Resistance Excellent  
 Applicable Specifications: MIL-DTL-23053/4 Class 2

**Adhesive**

Peel Strength, pli  
 Polyethylene 30  
 PVC 10  
 Lead 15  
 Aluminum 40



Corrosive Effect (Copper Mirror) Non-corrosive

\*Outer wall only.

\*\*Flexibility: The materials are rated on a scale of 1~10. (1=most flexible and 10=most rigid)

The technical information provided consists of typical product data and should not be used for specification purposes.

SPC-F004.DWG Unless otherwise noted, all tests are performed at room temperature.

|  |              |         |   |                     |                 |        |
|--|--------------|---------|---|---------------------|-----------------|--------|
| TOLERANCES:<br>UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE FOR REFERENCE PURPOSES ONLY. | DRAWN BY:    | DATE:   | DRAWING TITLE:                                    |                     |                 |        |
|  | JAP          | 1/17/92 | PHD Series—Flame Retardant, Adhesive—Lined Tubing |                     |                 |        |
|  | CHECKED BY:  | DATE:   | SIZE  | DWG. NO.            | ELECTRONIC FILE | REV    |
|  | JC           | 1/27/92 | A   | TA-410              | TA-410.dwg      | D      |
|  | APPROVED BY: | DATE:   | SCALE:  | U.O.M.: INCHES [mm] | SHEET:          | 1 OF 1 |
|  | JC           | 1/27/92 | NTS   |                     |                 |        |

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