

## RATIONALE

THIS DOCUMENT COMPLETELY REVISED, INCLUDING RE-FORMATTING TO AN AEROSPACE STANDARD (AS) UNDER THE JURISDICTION OF SAE AE8-C1 FROM AN AEROSPACE MATERIAL SPECIFICATION UNDER THE JURISDICTION OF SAE AMS 'P' COMMITTEE, TO PROPERLY CLASSIFY AND SUPERSEDE AMS-T-81914/6 MATERIAL SPECIFICATION INCLUDING THE INCORPORATION OF COMMENTS RECEIVED FROM GOVERNMENT AND INDUSTRY, UP-DATE SPECIFICATION REFERENCES, ALIGN WITH SAE GUIDELINES AS NEEDED, INCORPORATE MATERIAL UPDATES, CLARIFY PART NUMBERING, ADD METRICS AND REVIEW FOR KNOWN TECHNICAL PROBLEMS.

## NOTICE

THE REQUIREMENTS FOR ACQUIRING THE TUBING DESCRIBED HEREIN SHALL CONSIST OF THIS DOCUMENT AND THE LATEST ISSUE IN EFFECT OF SAE AS81914.

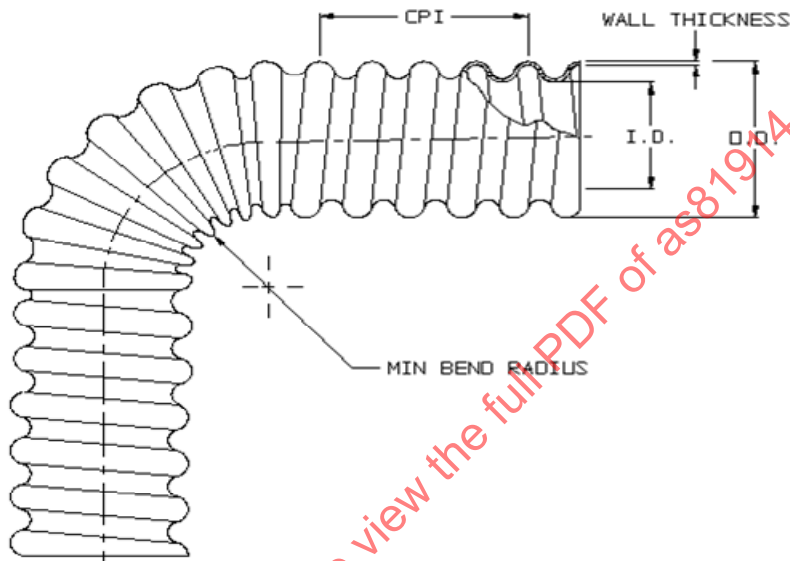
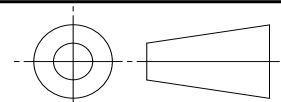


FIGURE 1 - DIMENSIONS AND CONFIGURATION

SAE values your input. To provide feedback on this Technical Report, please visit <http://www.sae.org/technical/standards/AS81914/6>

THIRD ANGLE PROJECTION



CUSTODIAN: AE-8/AE-8C1

PROCUREMENT SPECIFICATION: AS81914

**SAE Aerospace**  
An SAE International Group

### AEROSPACE STANDARD

TUBING, PLASTIC, FLEXIBLE, CONVOLUTED, HELICAL  
ETHYLENE TETRAFLUOROETHYLENE (ETFE),  
STANDARD CONVOLUTION

**SAE AS81914/6**  
SHEET 1 OF 4

TABLE 1 – FIGURE 1 DIMENSIONS

| Dash Number | MAX Inside Dia. (I.D.) | MIN Inside Dia. (I.D.) | MAX Outer Dia. (O.D.) | MAX Wall Thickness | Convolutions Per Inch (CPI) $\pm 1$ | Approx. Weight Lbs (kg) Per 100 Feet (30.5 m) Ref. | MIN Bend Radius |
|-------------|------------------------|------------------------|-----------------------|--------------------|-------------------------------------|----------------------------------------------------|-----------------|
| 01          | .188<br>(4.78)         | .181<br>(4.60)         | .320<br>(8.13)        | .018 (0.46)        | 8                                   | 1.2<br>(0.54)                                      | .50<br>(12.7)   |
| 02          | .281<br>(7.14)         | .273<br>(6.93)         | .414<br>(10.52)       | .018 (0.46)        | 8                                   | 1.4<br>(0.64)                                      | .75<br>(19.1)   |
| 03          | .312<br>(7.92)         | .306<br>(7.77)         | .450<br>(11.43)       | .018 (0.46)        | 8                                   | 1.5<br>(0.68)                                      | .75<br>(19.1)   |
| 04          | .375<br>(9.53)         | .364<br>(9.25)         | .510<br>(12.95)       | .018 (0.46)        | 8                                   | 1.8<br>(0.82)                                      | .88<br>(22.4)   |
| 05          | .437<br>(11.10)        | .427<br>(10.85)        | .571<br>(14.50)       | .018 (0.46)        | 8                                   | 2.5<br>(1.13)                                      | .88<br>(22.4)   |
| 06          | .500<br>(12.70)        | .485<br>(12.32)        | .650<br>(16.51)       | .023 (0.58)        | 7                                   | 3.2<br>(1.45)                                      | 1.25<br>(31.8)  |
| 07          | .625<br>(15.88)        | .608<br>(15.44)        | .770<br>(19.56)       | .023 (0.58)        | 7                                   | 3.9<br>(1.77)                                      | 1.50<br>(38.1)  |
| 08          | .750<br>(19.05)        | .730<br>(18.54)        | .930<br>(23.62)       | .023 (0.58)        | 6                                   | 4.9<br>(2.22)                                      | 1.75<br>(44.5)  |
| 09          | .875<br>(22.23)        | .860<br>(21.84)        | 1.073<br>(27.25)      | .023 (0.58)        | 5                                   | 5.6<br>(2.54)                                      | 2.00<br>(50.8)  |
| 10          | 1.000<br>(25.40)       | .975<br>(24.77)        | 1.226<br>(31.14)      | .023 (0.58)        | 5                                   | 6.8<br>(3.08)                                      | 2.37<br>(60.2)  |
| 11          | 1.125<br>(28.58)       | 1.105<br>(28.07)       | 1.390<br>(35.31)      | .023 (0.58)        | 5                                   | 7.5<br>(3.40)                                      | 2.37<br>(60.2)  |
| 12          | 1.250<br>(31.75)       | 1.210<br>(30.73)       | 1.539<br>(39.09)      | .023 (0.58)        | 4                                   | 8.8<br>(3.99)                                      | 2.75<br>(69.9)  |
| 13          | 1.500<br>(38.10)       | 1.437<br>(36.50)       | 1.832<br>(46.53)      | .023 (0.58)        | 4                                   | 10.2<br>(4.63)                                     | 3.38<br>(85.9)  |
| 14          | 1.750<br>(44.45)       | 1.688<br>(42.88)       | 2.082<br>(52.88)      | .023 (0.58)        | 4                                   | 11.9<br>(5.40)                                     | 3.88<br>(98.6)  |
| 15          | 2.000<br>(50.80)       | 1.937<br>(49.20)       | 2.332<br>(59.23)      | .023 (0.58)        | 4                                   | 13.5<br>(6.12)                                     | 4.25<br>(108.0) |

## NOTES:

1. DIMENSIONS ARE IN INCHES.
2. UNLESS OTHERWISE SPECIFIED TOLERANCES SHALL BE: .XX =  $\pm .010$  (0.25 MM), .XXX =  $\pm .005$  (0.13 MM).
3. METRIC EQUIVALENTS ARE GIVEN FOR GENERAL INFORMATION ONLY AND ARE BASED ON 25.4 MM = 1 INCH.
4. METRIC DIMENSIONS IN PARENTHESES ARE SHOWN IN MILLIMETERS.

## REQUIREMENTS:

1. DIMENSIONS AND CONFIGURATION: SEE FIGURE 1 AND TABLE 1.
2. CONVOLUTION TYPE: HELICAL
3. LENGTHS SHALL BE SPECIFIED IN FEET BY THE PROCURING ACTIVITY AND DOES NOT FORM A PART OF THE IDENTIFYING PART NUMBER. MINIMUM ORDER LENGTH SHALL BE 3 FEET (0.914 M) AND THE TUBING ORDER LENGTH TOLERANCES SHALL BE AS SPECIFIED IN TABLE 2. TUBING SHALL BE PROCURED AS COILS.

TABLE 2 – ORDER LENGTH TOLERANCE

| ORDER LENGTH RANGE         |                                       |
|----------------------------|---------------------------------------|
| LENGTH IN FEET (METERS)    | TOLERANCE IN INCHES (MM)              |
| 3 – 12 (0.914 M – 3.66 M)  | + 2.0 / - 0.0 (+ 50.8 MM / - 0.0 MM)  |
| 13 – 50 (3.96 M – 15.24 M) | + 4.0 / - 0.0 (+ 101.6 MM / - 0.0 MM) |
| 51 AND UP (15.55 M AND UP) | + 6.0 / - 0.0 (+ 152.4 MM / - 0.0 MM) |

4. CONTINUOUS OPERATING TEMPERATURE: -67 °C (-88 °F ) TO 150 °C (302 °F).
5. COLOR: UNLESS OTHERWISE SPECIFIED, THE SUPPLIED COLOR SHALL BE CLEAR, NATURAL.
6. PHYSICAL PROPERTIES: GENERAL PHYSICAL REQUIREMENT VALUES ALONG WITH ASSOCIATED TEST CONDITIONS ARE LOCATED IN TABLE 3.
7. SHELF LIFE: THE STORAGE/SHELF LIFE SHALL BE 20 YEARS. SEE SAE AS81914.

TABLE 3 – PHYSICAL PROPERTIES

| PROPERTY                     | REQUIREMENT                                                                                        |
|------------------------------|----------------------------------------------------------------------------------------------------|
| CONSTRUCTION DETAILS         | IN ACCORDANCE WITH TABLE 1                                                                         |
| STRESS IN PSI @ 10% STRAIN   | 150 TO 750                                                                                         |
| SPECIFIC GRAVITY             | 1.70 MAX                                                                                           |
| CRUSH RESISTANCE, HORIZONTAL | 12 LBS (4.54KG) MIN.                                                                               |
| LOW TEMPERATURE FLEXIBILITY  | 10 000 CYCLES, NO CRACKING                                                                         |
| HEAT SHOCK                   | 177/173 °C (351/343 °F) FOR 4 HOURS. 15% MAX LONGITUDINAL CHANGE. NO DRIPPING, FLOWING OR CRACKING |
| HEAT AGING                   | STRESS IN PSI @10% STRAIN, 80% OF INITIAL VALUE. 177/173 °C (351/343 °F) FOR 96 HOURS.             |
| FLUID RESISTANCE             | STRESS IN PSI @ 10% STRAIN 80% OF INITIAL VALUE                                                    |
| FLAMMABILITY                 | NON-FLAMMABLE <u>1/</u>                                                                            |
| FUNGUS RESISTANCE            | NON-NUTRIENT <u>1/</u>                                                                             |
| DIELECTRIC BREAKDOWN         | 12 000 VOLTS, NO BREAKDOWN                                                                         |

1/ PROPERTIES NOT TESTED.