FEDERAL SUPPLY CLASS
9330

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-81914/5 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.

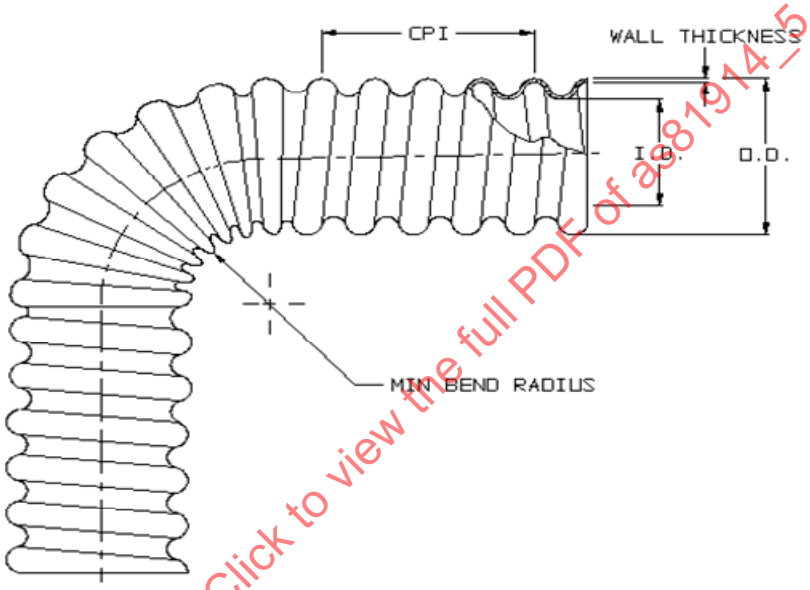
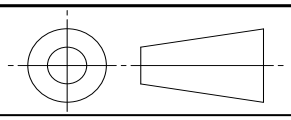


FIGURE 1 - DIMENSIONS AND CONFIGURATION

THIRD ANGLE PROJECTION



ISSUED 2011-01

CUSTODIAN: AE-8/AE-8C1

PROCUREMENT SPECIFICATION: AS81914

SAE Aerospace
An SAE International Group

AEROSPACE STANDARD

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

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) ± 1	Approx. Weight Lbs (kg) Per 100 Feet (30.5 m) Ref.	MIN Bend Radius
01	.188 (4.78)	.181 (4.60)	.320 (8.13)	.018 (0.46)	10	1.4 (0.64)	.31 (7.9)
02	.281 (7.14)	.273 (6.93)	.414 (10.52)	.018 (0.46)	10	1.6 (0.72)	.41 (10.4)
03	.312 (7.92)	.306 (7.77)	.450 (11.43)	.018 (0.46)	10	1.7 (0.77)	.41 (10.4)
04	.375 (9.53)	.359 (9.12)	.510 (12.95)	.018 (0.46)	10	2.0 (0.91)	.50 (12.7)
05	.437 (11.10)	.427 (10.85)	.571 (14.50)	.018 (0.46)	10	3.1 (1.41)	.50 (12.7)
06	.500 (12.70)	.480 (12.19)	.650 (16.51)	.023 (0.58)	9	3.7 (1.68)	.75 (19.1)
07	.625 (15.88)	.603 (15.32)	.770 (19.56)	.023 (0.58)	9	4.4 (1.99)	.75 (19.1)
08	.750 (19.05)	.725 (18.42)	.930 (23.62)	.023 (0.58)	8	5.6 (2.54)	.93 (23.6)
09	.875 (22.23)	.860 (21.84)	1.073 (27.25)	.023 (0.58)	7	7.1 (3.22)	1.25 (31.8)
10	1.000 (25.40)	.970 (24.64)	1.226 (31.14)	.023 (0.58)	7	7.6 (3.45)	1.25 (31.8)
11	1.125 (28.58)	1.105 (28.07)	1.390 (35.31)	.023 (0.58)	7	8.4 (3.81)	1.43 (36.3)
12	1.250 (31.75)	1.205 (30.61)	1.539 (39.09)	.023 (0.58)	6	9.0 (4.08)	1.43 (36.3)
13	1.500 (38.10)	1.437 (36.50)	1.832 (46.53)	.023 (0.58)	5	9.6 (4.35)	1.75 (44.5)
14	1.750 (44.45)	1.688 (42.88)	2.082 (52.88)	.023 (0.58)	5	10.7 (4.85)	2.00 (50.8)
15	2.000 (50.80)	1.937 (49.20)	2.332 (59.23)	.023 (0.58)	5	12.4 (5.62)	2.25 (57.2)

NOTES:

1. DIMENSIONS ARE IN INCHES.
2. UNLESS OTHERWISE SPECIFIED TOLERANCES SHALL BE: .XX = ± .010 (0.25 MM), .XXX = ± .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	200 TO 650
SPECIFIC GRAVITY	1.70 MAX
CRUSH RESISTANCE, HORIZONTAL	12 LBS (4.54KG) MIN.
LOW TEMPERATURE FLEXIBILITY	10 000 CYCLES, NO CRACKING
HEAT SHOCK	176/174 °C (349/345 °F) FOR 4 HOURS. 15% MAX LONGITUDINAL CHANGE. NO DRIPPING, FLOWING OR CRACKING
HEAT AGING	STRESS IN PSI @10% STRAIN, 80% OF INITIAL VALUE. 176/174 °C (349/345 °F) FOR 96 HOURS.
FLUID RESISTANCE	STRESS IN PSI @ 10% STRAIN 80% OF INITIAL VALUE
FLAMMABILITY	NON-FLAMMABLE 1/
FUNGUS RESISTANCE	NON-NUTRIENT 1/
DIELECTRIC BREAKDOWN	12 000 VOLTS, NO BREAKDOWN

1/ PROPERTIES NOT TESTED FOR.