

## HIGH TEMPERATURE FLEXIBLE FLUID RESISTANT FLUOROPOLYMER MARKER SLEEVES, THIN WALL

### MILITARY SPECIFICATION / LOW OUTGASSING



RoHS Compliant



Lead-Free

### TYPICAL FEATURES

- 1) SUMIMARK SM 48 is a highly flexible and fluid resistant, flame retarded fluoropolymer heat-shrinkable tubing which meets the material & functional requirements of military specification AMS-DTL-23053/18, Class 3. When used in conjunction with the SUMIMARK marking machine, SM 48 tubing provides marked sleeves that meet or exceed the mark permanence requirements of SAE-AS81531.
- 4) Operating temperature range is -70°C to +200°C and up to 300°C for short periods.
- 2) SUMIMARK SM 48 meets the stringent low outgassing requirements of NASA SP-R-0022A.
- 5) SUMIMARK SM 48 is recommended for applications where thin walls and resistance to aggressive solvents and high temperatures is required. Bundling, harnessing and environmental protection within engine compartments is one such application.
- 3) Shrink temperature is 130°C.

### STANDARD SIZES

NOMINAL SIZE	INSIDE DIAMETER AS SUPPLIED (MIN)		INSIDE DIAMETER AFTER RECOVERY (MAX)		WALL THICKNESS AFTER RECOVERY (NOM)	
	INCH	(MM)	INCH	(MM)	INCH	(MM)
	1/8	.125	3.2	.062	1.6	.010
3/16	.187	4.8	.093	2.4	.010	0.25
1/4	.250	6.4	.125	3.2	.012	0.30
3/8	.375	9.5	.187	4.8	.012	0.30
1/2	.500	12.7	.250	6.4	.012	0.30
3/4	.750	19.1	.375	9.5	.017	0.43
1	1.000	25.4	.500	12.7	.019	0.48

**Standard Color:** Clear. (Black and white available as special order).

**Standard Package:** Spooled (S)

**How to Order:** (Type of material) (Size) (Color) (Packaging)

**Example:** SM 48 1/4 Clear S

# SM 48 SPECIFICATION VALUES

PROPERTY (UNITS)	TEST METHOD	REQUIREMENT
<b>Physical:</b> Tensile strength (psi) Elongation (%)  Low temperature flexibility (-70°C) Heat shock (300°C, 4 hrs.) Heat resistance (250°C, 168 hrs.) Elongation (%) Tensile strength (psi) Longitudinal change (%)	ASTM D 638 ASTM D 638  AMS-DTL-23053 AMS-DTL-23053  ASTM D 638 ASTM D 638 AMS-DTL-23053	1500 min. 250 min.  no cracking no cracking  200 min. 1200 min. -10 max.
<b>Mark Permanence:</b> Abrasion Fluid Resistance Isopropyl Alcohol/Mineral Spirits Terpene Defluxer H2O/PGME/Monoethanolamine	SAE-AS81531  MIL-STD-202F Method 215J	20 rubs  10 rubs (x3) 10 rubs (x3) 10 rubs (x3)
<b>Electrical:</b> Dielectric strength (volts/mil) Volume resistivity (ohm-cm)	ASTM D 876 ASTM D 876	500 min. 1.0 X 10 <sup>13</sup> min.
<b>Chemical:</b> Vacuum outgassing, TML / CVCM, % Copper mirror corrosion (175°C, 16 hrs.) Water absorption (%) Fluid resistance (23°C, 24 hrs.) Tensile strength (psi) Elongation (%) Flammability Shrink temperature, nominal	NASA SP-R-0022A AMS-DTL-23053 ASTM D 570  AMS-DTL-23053 AMS-DTL-23053 AMS-DTL-23053 -----	1.0 / 0.1 max. no corrosion 0.1 max.  1200 min. 250 min. 15 sec. max.. 130°C

**Specification references:** AMS-DTL-23053/18, Class 3  
 NASA SP-R-0022A  
 SAE-AS81531



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