

**VERY FLEXIBLE POLYVINYLIDENE FLUORIDE  
FOR USE WITH SUMIMARK I & II MARKING SYSTEMS  
2 : 1 Shrink Ratio**

**MILITARY SPECIFICATION**



**RoHS/RoHS2 Compliant**



**Lead-Free**

**TYPICAL FEATURES**

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| <p>1) SUMIMARK SM31 is a very flexible, highly flame retarded heat-shrinkable PVDF tubing. SM31, when used in conjunction with the Sumimark marking machine, provides marked sleeves that meet or exceed the print adherence requirements of SAE-AS5942. <i>SM31 tubing is not compatible with Sumimark III and IV marking systems. For these systems, it is necessary to use SM3-31 tubing.</i></p> <p>2) SUMIMARK SM31 is tough and abrasion resistant in mechanical environments and has excellent resistance to solvents.</p> | <p>3) The shrink temperature of SUMIMARK SM31 is 90° C.</p> <p>4) SUMIMARK SM31 is recommended for marked tubing applications where the properties of standard PVDF are desirable. Operating temperature range is -55° C to +150° C.</p> <p>5) SUMIMARK SM31 meets or exceeds the requirements of AMS-DTL-23053/18, Class 3.</p> |
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**STANDARD SIZES**

SIZE	INSIDE DIAMETER AS SUPPLIED (MIN)		INSIDE DIAMETER AFTER RECOVERY (MAX)		WALL THICKNESS AFTER RECOVERY (NOM)	
	INCH	(MM)	INCH	(MM)	INCH	(MM)
1/16	.063	(1.6)	.031	(0.8)	.010	(0.25)
3/32	.093	(2.4)	.046	(1.2)	.010	(0.31)
1/8	.125	(3.2)	.062	(1.6)	.010	(0.31)
3/16	.187	(4.8)	.093	(2.4)	.010	(0.31)
1/4	.250	(6.4)	.125	(3.2)	.012	(0.36)
3/8	.375	(9.5)	.187	(4.8)	.012	(0.36)
1/2	.500	(12.7)	.250	(6.4)	.012	(0.36)
3/4	.750	(19.1)	.375	(9.5)	.017	(0.43)
1	1.000	(25.4)	.500	(12.7)	.019	(0.48)

**Standard Colors:** White, (Clear available upon request)

**Standard Package:** Spooled (S)

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

**Example:** SM31 1/4 White S

# SM31 SPECIFICATION VALUES

PROPERTY (UNITS)	TEST METHOD	REQUIREMENT
<b>Physical:</b> Tensile strength (psi) Elongation (%) Specific gravity Low temperature flex (-55° C) Heat shock (250° C, 4 hrs.) Heat resistance (175° C, 168 hrs.) Elongation (%) Secant modulus (psi) Longitudinal change (%)	ASTM D638 ASTM D638 ASTM D792 AMS-DTL-23053 AMS-DTL-23053  ASTM D638 ASTM D882 AMS-DTL-23053	1500 min. 200 min. 2.0 max.. no cracking no cracking  100 min. 2.5 X 10 <sup>4</sup> max. ±10
<b>Electrical:</b> Dielectric strength (volts/mil) Volume resistivity (ohm-cm)	ASTM D876 ASTM D876	400 min. 1.0 X 10 <sup>11</sup> min.
<b>Print Adherence:</b> Abrasion Fluid resistance Isopropyl Alcohol/Mineral Spirits Blend Terpene Defluxer H <sub>2</sub> O / PGME / Monoethanolamine	SAE-AS5942 MIL-STD-202 Method 215J	20 rubs  10 rubs (x3) 10 rubs (x3) 10 rubs (x3)
<b>Chemical:</b> Copper stability (180° C 168 hrs.) Elongation (%) Water absorption (%) Fluid resistance (23° C, 24 hrs.) Tensile strength (psi) Flammability Shrink temperature, nominal	UL224 ASTM D570  AMS-DTL-23053 UL 224 VW-1	70% of unaged value min. 0.5 max.  1000 min. Pass 90° C

**Specification reference:** AMS-DTL-23053/18, Class 3.  
 SAE-AS5942 (Replaces cancelled specification SAE-AS81531)



915 Armorlite Drive  
 San Marcos, CA 92069

Telephone: (800) 758-3515  
 FAX: (800) 758-3517