

# SAE AS5419 Thermocouple Cables

The new **SAE AS5419** standard replaces the cancelled MIL-W-5846 specification. This standard defines thermocouple cables with a wide variety of insulation, shielding, and jacket materials.

This standard includes cables with parallel or spiral laid component wires. If shielded and/or jacketed, they can have single or double shields and jackets.

Part numbers are generated from the desired component materials and cable construction.

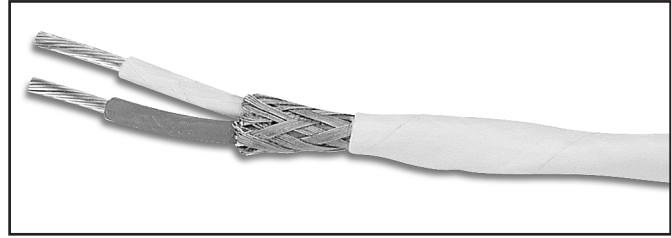
Versions with PTFE tape jackets are available with our unique **Seamless Wrap** PTFE tape (see page 2 for details).

**Performance:**

**Voltage rating:** Dependent on component wire.

**Temperature ratings:**

Dependent on lowest-rated component material.



**Construction Details**

**Component wire conductor:**

Positive: Stranded 90% nickel, 10% chromium.  
 Negative: Stranded 95% nickel, 5% aluminum.

**Component wire insulation:**

As used on MIL-DTL-22759, 25038, or 81822 wires (see part numbering chart).

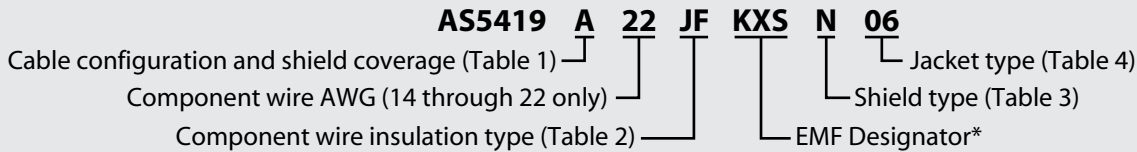
**Shield:** Flat or round wires of copper, high-strength copper alloy, 27% nickel-coated copper, or stainless steel; with nickel, silver, or tin plating (see part numbering chart).

**Jacket:** Wide variety of materials, tape or extruded (see part numbering chart).

**Component wire color:** Positive wire: White.  
 Negative wire: Green.

**Jacket color:** White or natural material color (see part numbering chart).

**SAE AS5419 Part Numbering**



\*EMF shall conform to ANSI/MC96.1; type KPS and KNS are used for standard EMF limits, type KPH and KNH for special limits.

**Table 1—SAE AS5419 Cable Configuration and Shield coverage**

These letters specify both wire lay and shield coverage.

85% shield coverage		90% shield coverage	
<b>A:</b> Spiral-laid cable configuration		<b>C:</b> Spiral-laid cable configuration	
<b>B:</b> Duplex parallel cable configuration		<b>D:</b> Duplex parallel cable configuration	

**Table 2—SAE AS5419 Component Wire Insulation Codes**

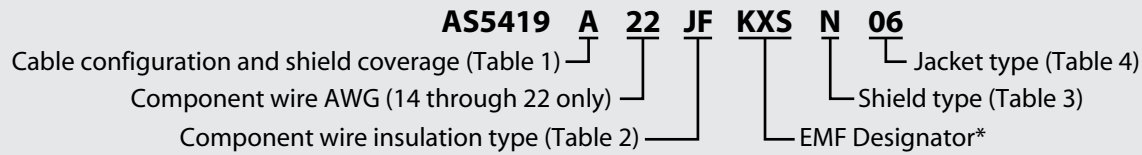
Component wires have conductors as noted above, with insulation matching that of the wires shown below.

Insulation Type	Code	Insulation Type	Code	Insulation Type	Code	Insulation Type	Code	Insulation Type	Code
M22759/5	VA	M22759/18	TG	M22759/80	WB	M22759/91	WP	M81381/13	NA
M22759/6	WA	M22759/19	TH	M22759/81	WC	M22759/92	WR	M81381/14	NB
M22759/7	SA	M22759/20	TK	M22759/82	WE	M25038/1	JA	M81381/17	NE
M22759/8	TA	M22759/21	TL	M22759/84	WG	M25038/3	JF	M81381/18	NF
M22759/9	LE	M22759/22	TM	M22759/85	WH	M81381/7	MR	M81381/19	NG
M22759/10	LH	M22759/23	TN	M22759/86	WJ	M81381/8	MS	M81381/20	NH
M22759/11	RC	M22759/28	JB	M22759/87	WK	M81381/9	MT	M81381/21	NK
M22759/12	RE	M22759/29	JC	M22759/88	WL	M81381/10	MV	M81381/22	NL
M22759/16	TE	M22759/30	JD	M22759/89	WM	M81381/11	MW		
M22759/17	TF	M22759/31	JE	M22759/90	WN	M81381/12	MY		

See following page for shield and jacket material tables.

## SAE AS5419 Cables—part numbering, continued

### SAE AS5419 Part Numbering



\*EMF shall conform to ANSI/MC96.1; type KPS and KNS are used for standard EMF limits, type KPH and KNH for special limits.

**Table 3—SAE AS5419 Shield Codes**

When both double shield and double jacket are specified, the inner jacket is between the two layers of shield.

Shield Material , Wire shape	Temperature limit, °C	Single shield	Double shield
No shield	—	U	U
Nickel-plated copper, round	260	N	Y
Silver-plated copper, round	200	S	W
Tin-plated copper, round	150	T	V
Nickel-clad copper (27%), round	400	C	R
Stainless steel, round	400	F	Z
Nickel-plated high-strength copper alloy, round	260	P	L
Silver-plated high-strength copper alloy, round	200	M	K
Nickel-plated copper, flat	260	*	#
Silver-plated copper, flat	200	G	A
Tin-plated copper, flat	150	J	D
Nickel-plated high-strength copper alloy, flat	260	E	X
Silver-plated high-strength copper alloy, flat	200	H	B
Nickel-chromium alloy, flat	400	I	Q

**Table 4—SAE AS5419 Jacket Codes**

Temperature limits are for information only; other cable components may determine the temperature limit for the finished cable.

Jacket material and color	Temp. limit, °C	Single jacket	Double jacket
No jacket	—	00	00
<b>ETFE (Ethylene Tetrafluoroethylene) jackets:</b>			
ETFE, extruded, clear	150	15	65
ETFE, extruded, white	150	14	64
<b>FEP (Fluorinated Ethylene Propylene) jackets:</b>			
FEP, extruded, clear	200	05	55
FEP, extruded, white	200	09	59
<b>PFA (Perfluoroalkoxy) jackets:</b>			
PFA, extruded, clear	260	21	71
PFA, extruded, white			
<b>Polyester jackets:</b>			
Polyester braid impregnated with high-temperature finishers over polyester tape	150	04	54
<b>Polyimide/FEP (Fluorinated Ethylene Propylene) jackets:</b>			
Natural polyimide / clear FEP tape, wrapped and heat sealed, with FEP outer surface	200	11	61
Natural polyimide / FEP tape, wrapped and heat sealed, with polyimide outer surface	200	12	62
Opaque polyimide / clear FEP tape, wrapped and heat sealed, with polyimide outer surface	200	22	72
<b>PTFE (Polytetrafluoroethylene) jackets:</b>			
PTFE, taped and fused, white*	260	06	56
PTFE tape, white, wrapped over a tape layer of natural polyimide combined with FEP and heat sealed*	260	24	74
PTFE-coated glass braid impregnated with PTFE finisher over presintered PTFE tape, white	260	07	57
Braid of aromatic polyamide with high-temperature finisher over presintered PTFE tape	200	16	66

\*These cables can be provided with **Seamless Wrap** PTFE tape jackets (see page 2 for details).