

AMETEK AEROSPACE PRODUCTS INC. WILMINGTON, MA 01887 CAGE CODE: 97424	<u>MATERIALS-PROCESSES-FINISHES</u> <u>INTERNAL SPECIFICATION</u> <u>COVER SHEET</u>
---	--

SPECIFICATION NUMBER: B50AA004

DATE FIRST ISSUED: June 8, 1990

Rev. S1: March 8, 2005

TITLE: INSULATED SINGLE CONDUCTOR THERMOCOUPLE WIRE

PREPARED BY:

DESIGN ENGINEERING	<u>G. R. OLSON</u> NAME	<u>06/05/90</u> DATE	<u>E8</u> UNIT
DESIGN ASSURANCE & STANDARDS	<u>E. WESOLOWSKI</u> NAME	<u>06/05/90</u> DATE	<u> </u> UNIT

APPROVED BY:

DESIGN ENGINEERING	<u>R. S. THURLOW</u> NAME	<u>06/08/90</u> DATE	<u>E8</u> UNIT
DESIGN ASSURANCE & STANDARDS	<u>D. P. GONDELA</u> NAME	<u>06/08/90</u> DATE	<u> </u> UNIT

AMETEK Aerospace
WILMINGTON, MA 01887
CAGE CODE: 97424

MATERIALS-PROCESSES-FINISHES

INTERNAL SPECIFICATION

B50AA004

CONTRACT NUMBERS

Mar. 8, 2005

SPECIFICATION AND PROPERTIES
INSULATED SINGLE CONDUCTOR THERMOCOUPLE WIRE

Material B50AA004 identifies fiberglass and polytetrafluoroethylene (PTFE) insulated single conductor thermocouple wire as follows:

<u>AAPI Material Designation</u>	<u>Description</u>
B50AA004A	Stranded flexible, insulated, Type KN wire
B50AA004B	Stranded flexible, insulated, Type KP wire

MATERIAL REQUIREMENTS:

Conductors - Type KP wire shall conform to the latest specification requirements of Material B50WB002B9.
Type KN wire shall conform to the latest specification requirements of Material B50WB003B9.

Insulation - Primary insulation shall be polytetrafluoroethylene (PTFE) applied as a tape or by extrusion and may be solid or laminated in structure. A laminated structure shall be fused under heat and pressure into a homogeneous wall during processing. The PTFE shall be covered with fiberglass braid impregnated with silicone varnish. Insulation shall be free of cuts, nicks, pinholes, splits, and other defects.

Color Coding - The positive conductor outer insulation shall be color coded white. The negative conductor outer insulation shall be color coded green.

PROPERTIES:

Loop resistance -

	<u>Ohm/ft @ 70°F</u>
Type KP wire	.1429 to .1579
Type KN wire	.0598 to .0661

Electrical continuity - Each conductor shall have electrical continuity throughout its spool length. Both ends of a spool length of wire shall be brought out of the spool to a length of five feet for test purposes.

Dielectric strength - Insulation shall withstand 1000 volts for one minute between two conductors with tests made on random ten-foot samples.

Thermal emf - The thermal emf shall meet the requirements of B50WB002B9 and B50WB003B9 and shall not be changed by the application of the insulation.

Heat resistance - After heating for 96 hours at 500 to 510°F, the wire ends shall be exposed not more than 1/8 inch. Wind five complete turns of the heat-aged wire on a 3 X O.D. mandrel and immerse the coil in room temperature water for at least one hour. The insulation shall withstand 1000 volts AC for one minute.

Cold Bend Test - After conditioning for four hours at -65 to -70°F, bend the wire at that temperature around a one inch diameter mandrel. Immerse the bent wire in room temperature water for at least one hour. The insulation shall withstand 1000 volts AC for one minute.

Mar. 8, 2005

SPECIFICATION AND PROPERTIES
INSULATED SINGLE CONDUCTOR THERMOCOUPLE WIRE

MANUFACTURE:

Size and stranding - Unless otherwise specified, individual conductors shall be 16 AWG wire consisting of 7 strands of AWG 24 wire twisted together with a one-inch left hand lay.

~~Stripping - The insulation shall strip freely and easily from the conductor.~~

Splicing - Splicing shall be kept to an absolute minimum. When splicing is required during the insulation of the wire, the ends of the conductors shall be butt welded.

Insulation - The polytetrafluoroethylene insulation shall be homogeneous in character, tough, elastic and applied concentrically about the conductor. The insulation shall not be so loose as to slide readily from the conductor in the handling of short cut lengths of wire.

DIMENSIONS AND TOLERANCES:

Thickness of the PTFE insulation, inch	0.015 to 0.018
Insulated conductor diameter maximum, inch	0.109

WINDING AND IDENTIFICATION:

Winding - All cable shall be wound on spools under sufficient tension to provide an even and compact winding. A soft body of cable shall be considered unsatisfactory.

Identification - Each spool shall be legibly marked with the manufacturer's name, size, length of cable, and the material designation.

CERTIFICATE OF TEST:

When requested, the supplier shall submit promptly to the purchaser at the point of delivery, a Certificate of Test in triplicate showing that the material conforms to this specification. This certificate shall be addressed to the section, unit or person specified on the purchase order and shall include the material designation and the purchase order number so that the certificate may be identified with the shipment.

PACKING AND MARKING:

Spools shall be packed in commercial containers to protect them from loss or damage during shipment and storage.

Each container shall be legibly marked with the purchase order number, the manufacturer's name, size of the cable, and the material designation.

Mar. 8, 2005

SPECIFICATION AND PROPERTIES
INSULATED SINGLE CONDUCTOR THERMOCOUPLE WIRE

Material B50AA004 identifies fiberglass and polytetrafluoroethylene (PTFE) insulated single conductor thermocouple wire as follows:

<u>AAPI Material Designation</u>	<u>Description</u>
B50AA004A wire	Stranded flexible, insulated, Type KN
B50AA004B wire	Stranded flexible, insulated, Type KP

Orders for this material should specify:

Material name - Fiber glass and polytetrafluoroethylene (PTFE) insulated Type
KP/KN Thermocouple wire
Designation - AMETEK Material B50AA004 (Add proper suffix)
Specification - B50AA004-S1⁽¹⁾
Quantity -

Approved Source(s) of Supply:⁽²⁾

<u>AAPI Designation</u>	<u>Supplier</u>	<u>Supplier's Designation</u>
B50AA004A	Specialty Cable Corp. 2 Tower Dr. - PO Box 50 Wallingford, CT 06492 CAGE Code: 60685	816-498-5552
B50AA004B	Specialty Cable Corp. 2 Tower Dr. - PO Box 50 Wallingford, CT 06492 CAGE Code: 60685	816-498-5560

NOTES:

- (1) Specifications B50WB002 and B50WB003 are also required for complete definition of this material. Furnish copies when placing an order, unless supplier is known to have them on file.
- (2) Only the items described in this and the referenced specifications, when procured from the supplier(s) listed therein, are approved by AMETEK Aerospace Products Inc. (AAPI) for use in their products. A substitute shall not be used without prior testing and approval by AAPI Engineering.