CHANGE NOTICES ARE NOT CUMULATIVE
AND SHALL BE RETAINED UNTIL SUCH
TIME AS THE ENTIRE STANDARD IS REVISED.
RETAIN CHANGE NOTICES 1, 2, 3, AND 4.

INCH-POUND
FED-STD-228
14 April 1967
CHANGE NOTICE 5
1 December 2000

FEDERAL STANDARD

CABLE AND WIRE, INSULATED; METHODS OF TESTING

The following changes, which form a part of FED-STD-228, dated 14 April 1967, are approved by the General Services Administration for use by all federal agencies.

REMOVE: Pages 1 and 2 of Method 7021.1, dated 23 July 1993.

ADD: Pages 1 and 2 of Method 7021.2, dated 1 December 2000.

MILITARY INTERESTS:

Custodians:
Army - CR
Navy - AS
Air Force - 11
DLA - CC

Review Activities:
Army - AR, AT
Navy - EC, MC
Air Force - 19, 80, 99

CIVIL AGENCY COORDINATING ACTIVITY:

GSA - FSS

Preparing Activity:
DLA – CC

(Project 6145-2281)

RETAIN THIS CHANGE NOTICE AND PLACE IT BEFORE THE FIRST PAGE OF THE STANDARD.

FSC 6145

FLUID IMMERSION

1. SCOPE

1.1 This method is intended for use in determining the ability of wire or cable to resist degradation when exposed to specific fluids with which the cable may come into contact during its service life.

2. SPECIMEN

2.1 An individual sample for each applicable fluid, 18 inches in length (minimum), shall be stripped to the bare conductor on either end for one inch.

3. TEST APPARATUS

3.1 The test apparatus shall include the following:

a. A vessel to contain the various fluids in sufficient quantity to completely immerse 2/3 of the wire or cable specimen.

b. An air-circulating oven capable of maintaining temperature within ±3 °C of the required setting. The maximum test temperature is 175 °C.

c. A table stove or hot plates.

d. An immersion thermometer that reads a range of 0 to 150 °C.

4. TEST FLUIDS

4.1 Unless otherwise specified in the detail specification or the contract or order, test fluids shall be as specified in table I.

5. PROCEDURE

5.1 Before proceeding with the fluid immersion, the sample shall be weighed. The applicable test fluid shall be stabilized at the temperature specified in table I. A separate specimen shall be immersed in each fluid to a minimum of 2/3 of the specimen's length. Immersion and cycling shall be as specified in table I. Following the last immersion, the specimen shall be dried.

6. RESULTS

6.1 Any change of weight or delamination, softening, swelling (finished diameter of material), reduction of electrical properties (e.g., dielectric withstanding voltage, scrape abrasion), or discoloration of material finishes and markings shall be recorded.

TABLE I. Test fluids and cycles.

Test fluid	Test cycle			
	Immersion time	Immersion temperature (±3 °C)	Drain time	Number of cycles 1/
(a) Hydraulic fluid conforming to MIL-PRF-83282, MIL-PRF-87257, or MIL-H-5606 2/	5 minutes	85 °C	1 hour minimum in air at room temperature	7
(b) Hydraulic fluid - Exxon M2-V oil, or equivalent 3/		85 °C		
(c) Turbine fuel conforming to MIL-DTL-5624, grade JP-5		25 °C		
(d) Lubricating oil conforming to MIL-PRF-7808		125 °C		
(e) Lubricating oil conforming to MIL-PRF-23699		120 °C		
(f) Defrosting fluid conforming to MIL-A-8243		65 °C		
(g) Cleaning compound conforming to MIL-PRF-87937		65 °C		
(h) Mixture of 50 percent by volume Kerosine conforming to ASTM D3699 and 50 percent by volume lubricating oil conforming to SAE J1966, grade 1100	16 hours	48 °to 50 °C	3 hours	1
(i) Gasoline conforming to ASTM D4814, type I	5 minutes	25 °C	24 hours in free air	5
(j) Mixture of 25 percent by volume of isopropyl alcohol conforming to TT-I-735, grade A or B, with 75 percent by volume of mineral spirits paint thinner conforming to A-A-2904, type I, or degreasing solvent conforming to MIL-PRF-680, type I				
(k) Isopropyl alcohol conforming to TT-I-735	4 hours		2 hours	1
(l) Cleaning compound, aircraft surfaces, conforming to MIL-C-43616 (diluted for cleaning)	1 hour	50 °C	2 hours	10

NOTES:
1/ The transition time between steady-state conditions shall be 2 minutes, maximum. Steady-state conditions shall be ±1 minute unless otherwise noted. The wire shall be drained by gravity during drainage portions of the cycle.
2/ MIL-H-5606 hydraulic fluid shall only be used if required by the detail specification or the contract or order.
3/ ExxonMobil Corp. may be contacted at 1-800-443-9966 to determine availability of this fluid.