

CABLE COMPONENTS

Dash No.	Qty	Description	Conductor Size (AWG)	Specification Number	Number Idently As Indicated	Diameter of Pulshed Cable (Max)	Revision Status Letter
-1	20	Single Conductors	22	5935618-50	1 thru 20	.43	C
-2	40	Single Conductors	22	5935618-50	1 thru 40	.59	D
-3	13 1	Twisted Shielded Pairs Single Conductor	22 22	5930275-1 5935618-50	1 thru 13 14	.72	C
-4	16	Twisted Shielded Pairs	22	5930275-1	1 thru 16	.75	C
-5	10	Twisted Shielded Triples	22	5930275-2	1 thru 10	.76	C
-6	20	Single Conductors	20	5935618-60	1 thru 20	.47	D
-7	40	Single Conductors	20	5935618-60	1 thru 40	.88	D

SIZE 

CODE IDENT NO. 53711

5 9 3 0 8 6 9

SCALE None

REV D

SHEET 2

1.1 This document establishes the requirements for the procurement of special purpose electrical cables that have low halogen insulation and jacket materials. The cables are fire retardant and are rated at 600 Vrms and +150°C.

2. APPLICABLE DOCUMENTS

2.1 In the event of conflict, the requirements of the contract or purchase order, this document, and the referenced documents shall govern in that order.

2.2 The latest issue of the following documents, in effect on the effective date of the contract or purchase order, form a part of this document to the extent specified herein.

MIL-I-631	Insulation, Electrical, Synthetic Resin Composition, Nonrigid
MIL-C-12000	Cable, Cord, And Wire, Electric Packaging Of
MIL-C-13777	Cable, Special Purpose, Electrical, Conductors, General Specification For
MIL-C-24643	Cable and Cord, Electrical, Low Smoke, for Shipboard use, General Specification for
MIL-STD-130	Identification Marking Of US Military Property
MIL-STD-202	Test Methods For Electronic And Electrical Component Parts
5930275	Cable, Electrical, Special Purpose
5935618	Wire, Electrical, Single Conductor

All Military Standards (MIL-STD-), Military Specifications (MIL-), Ordnance Pamphlets (OP-), Federal Standards (FED-STD-), and Federal Specifications shall be ordered from the Naval Publications and Forms Center, 5801 Labor Avenue, Philadelphia, Pennsylvania 19120.

All Drawings, Ordnance Data (OD-), and Ordnance and Weapon Specifications (OS/WS-) publications shall be ordered from the Commanding Officer, Naval Ordnance Station (Code 802), Louisville, Kentucky 40214.

SCALE	None	REV	C	SHEET	3
SIZE	A	CODE IDENT NO.	53711	5 9 3 0 8 6 9	

SCALE	None	REV	C	SHEET	4
SIZE	A	CODE IDENT NO.	53711	5 9 3 0 8 6 9	

3. REQUIREMENTS

3.1 The cable shall meet the low-smoke and toxicity requirements of MIL-C-24643 as applicable. Polyvinyl Chloride (PVC) compounds shall not be used in the cable construction for any purpose. The parts tabulation provides the detail requirements for each cable.

3.2 Splicing. - No splicing of any kind is acceptable.

3.3 Circuit Identification

3.3.1 The outer jacket of the cable components shall be marked at 4 inch maximum intervals with the circuit identification numbers specified using black ink.

3.4 Materials

3.4.1 Fillers. - Fillers shall be polyamide (Nylon) fiber.

3.4.2 Tape/Binder. - The tape/binder shall be polyethylene terephthalate in accordance with MIL-I-631, Type G, Form T, Grade A, Class 1.

3.4.3 Outer Jacket. - The outer jacket shall be crosslinked polyolefin; color, black. The jacket shall be capable of meeting the full requirements of MIL-C-24643 and shall have the following physical properties:

Tensile Strength	1300 lbs/sq in minimum
Elongation	160% minimum
Durometer	80 minimum (Type A)
Acid Gas Generation	2.0% maximum
Halogen Content	0.2% maximum
Smoke Index	25 maximum
Toxicity Index	5 maximum

3.5 Construction. - Use core and intermediate fillers in accordance with 3.4.1 as necessary to achieve a firm, round cable.

3.5.1 Accumulate the specified type and number of component parts in accordance with the parts tabulation.

3.5.2 Helically twist each layer of components together using a lay length of 8 to 16 times the maximum diameter of each corresponding layer.

3.5.3 Apply a binder tape 0.001 minimum thick in accordance with 3.4.2 using a minimum overlap of 25 percent.

3.5.4 Apply the outer jacket in accordance with 3.4.3. The minimum wall thickness shall be equal to 10 percent \pm 0.005 inches of the diameter over the separator tape, except it shall not be less than 0.030 or more than 0.065.

SCALE Name	REV	C	SHEET	5
SIZE	CODE IDENT NO.	53711	5	9 3 0 8 6 9
A				

3.6 Electrical Requirements

3.6.1 Dielectric Withstanding Voltage (DWV). - The cable shall withstand 1500 Vrms applied between all mutually insulated conductors and from conductor to shield (when applicable) without breakdown. DWV between shield and ground (when applicable) shall be 500 Vrms.

3.6.2 Insulation Resistance (IR). - The cable shall have an insulation resistance of 100 megohms minimum per 1000 feet between mutually insulated conductors, conductor to shield (when applicable) and shield to ground (when applicable).

3.7 Environmental

3.7.1 Flexing Endurance. - When tested in accordance with 4.2.4.4, the cable shall show no evidence of electrical or mechanical failure (100 bending cycles at +25°C).

3.7.2 Bend. - When tested in accordance with 4.2.4.5, the cable shall show no damage or displacement of component parts.

3.7.3 Flammability. - When tested in accordance with 4.2.4.6, the insulation shall not burn at a rate exceeding 6 inches in 1 minute.

3.8 Workmanship. - The cable shall reflect workmanship of the highest standards consistent with the current state of the art. Evidence of poor workmanship such as inconsistencies in appearance or performance, evidence of bubbles, blisters, cracking, or splitting of the insulation shall be cause for rejection.

3.9 Identification. - Do not mark on part. Identify in accordance with MIL-STD-130 using 53711 - 5930869, dash number, revision letter, date of manufacture and manufacturer's identification. Mark on reel ends or on a tag firmly attached to coil of cable. For revision letter, see parts tabulation. Any marking that is consistent with the manufacturer's normal practice is acceptable providing it does not affect the function of the part.

4. QUALITY ASSURANCE PROVISIONS

4.1 Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified, the supplier may utilize his own facilities or any commercial laboratory acceptable to the Government. The Government reserves the right to perform any of the inspections set forth in the document where such inspections are deemed necessary to assure that supplies and services conform to prescribed requirements.

4.2 Qualification Inspection

4.2.1 Unless the contract or purchase order specifies qualification inspection (see 4.2.2), the supplier shall furnish, in lieu thereof, written certification verifying that the cable is constructed to comply with the full requirements of this document. This certification shall be required prior to the acceptance of any lot (see 4.3.1).

4.2.2 Test and Inspection Equipment and Facilities. - The supplier shall furnish and maintain all necessary test equipment, facilities and personnel for performing all inspection tests. The test equipment shall be adequate in quantity and shall be of sufficient accuracy and quality to permit conducting the required assurance inspections.

4.2.3 Inspection Conditions. - Unless otherwise specified, all tests shall be performed under the following conditions:

Ambient Temperature: +20°C to +30°C
Relative Humidity: 30 to 80 percent
Barometric Pressure: 24 to 31 inches of mercury

4.2.4 When qualification is specified in the contract or purchase order, cable manufactured from the same materials and finishes, using the same methods and processes proposed for the production units shall be subjected to all the inspections and tests of Table I. Two specimen cables having the length specified in Table I are required for each test.

4.2.4.1 Visual and Mechanical. - The specimen cable shall be inspected to verify conformance with 3.2, 3.3, 3.5, 3.8, 3.9 and the dimensional requirements of this drawing.

4.2.4.2 Dielectric Withstanding Voltage (DWV). - The cable shall be tested in accordance with MIL-STD-202, Method 301 using the voltages and test points as specified to verify compliance with 3.6.1.

4.2.4.3 Insulation Resistance (IR). - The cable shall be tested in accordance with MIL-STD-202, Method 302, Test Condition B, using the test points as specified to verify compliance with 3.6.2.

4.2.4.4 Flexing Endurance. - The cable shall be tested in accordance with MIL-C-13777 for 100 cycles at +25°C. During the test, continuity shall be monitored in accordance with MIL-C-13777. After testing, the cable shall be carefully examined to verify compliance with 3.7.1 and shall meet the requirements of 3.6.1 and 3.6.2. Weight in excess of that necessary to keep the cable taut shall not be used.

4.2.4.5 Bend. - The cable shall be bent 180° over a mandrel of the size specified. After bending, the cable shall be returned to its original position and inspected to verify compliance with 3.7.2. The mandrel sizes specified in MIL-C-13777 for cold bend testing shall be used.

SCALE None	REV C	SHEET 6
SIZE A	CODE IDENT NO. 53711	5 9 3 0 8 6 9

SCALE NONE	REV C	SHEET 7
SIZE CODE IDENT NO. A	53711	5 9 3 0 8 6 9

4.2.4.6 Flammability. - Specimens shall consist of 2 foot lengths of completed cable marked at a distance of 6 inches from the lower end to indicate the central point for flame application. The specimen shall be held tautly at an angle of 45 degrees within a chamber approximately 2 by 1 foot, open at the top and one vertical side, and which allows sufficient flow of air for complete combustion, but which is free from drafts. A flame from a Bunsen burner shall be applied, for 30 seconds, at the lower test mark. The Bunsen burner shall have a 1/4 inch inlet, a nominal bore of 3/8 inch and a length of approximately 4 inches from top to primary inlets. The burner shall be adjusted to produce a 2-inch flame with an inner cone one-third of the flame height. The burner height shall be adjusted so that the hottest portion of the flame is applied to the test mark on the wire. The time of burning and distance of flame travel upward along with wire form the test mark shall not exceed the values specified in 3.7.3. Burning particles shall not fall from the specimen. Breaking of small wire specimens during the test shall not be considered as failure if the time of burning and flame travel limits are not exceeded.

4.2.4.7 Characteristic Impedance and Capacitive Unbalance. - Cables containing 5930275 shielded components shall be tested (as applicable) for impedance and unbalance in accordance with the applicable test procedures specified in 5930275 to verify compliance. Randomly select and test 50 percent of the shielded components of each type contained in the sample cable.

4.3 Quality Conformance Inspection

4.3.1 Inspection Lot Definition. - A lot shall consist of all the cable manufactured at the same time from the same materials and finishes, using the same methods and processes, and offered for inspection at the same time.

4.3.2 Sampling. - A sample of the length specified in Table I shall be selected at random, from each reel or coil of finished cable.

4.3.3 Rejection Criteria. - If any one of the samples fail any inspection or test, the entire lot from which it was selected shall be rejected.

4.3.4 Specimen cable selected in accordance with 4.3.2 shall be subjected to all the Quality Conformance inspections and tests as specified in Table I.

4.3.4.1 Unless included on another certificate, (see 4.2.1), the supplier shall furnish a certification, with each lot offered for inspection, that the device complies with the requirements of 3.1 and 3.4.

SCALE None	REV D	SHEET 8
SIZE A	CODE IDENT NO. 53711	5 9 3 0 8 6 9

5. PREPARATION FOR DELIVERY

5.1 The cable shall be prepared for delivery in accordance with MIL-C-12000, Level C. The minimum continuous length acceptable shall be 250 feet.

6. NOTES

6.1 None

SUGGESTED SOURCE(S) OF SUPPLY

Identification of the "suggested source(s) of supply" herein is not to be construed as a guarantee of present or continued availability as a source of supply for the item(s).

General Cable Corporation
 Willimantic, CT
 CAGE Code: 71124



TABLE I

Quality Assurance Inspections and Tests

Inspection	Requirement	Test Method	Qualification	Quality Conformance	Length (feet)
Visual and Mechanical	3.2, 3.3, 3.5, 3.8, 3.9 and dimensional requirements	4.2.4.1	X	X	50
Certification	3.1 and 3.4	4.3.4.1	X	X	--
Dielectric Withstanding Voltage	3.6.1	4.2.4.2	X	X	100% of lot
Insulation Resistance	3.6.2	4.2.4.3	X	X	100% of lot
Flexing Endurance	3.7.1	4.2.4.4	X	--	
Dielectric Withstanding	3.6.1	4.2.4.2	X	--	8
Insulation Resistance	3.6.2	4.2.4.3	X	--	
Bend	3.7.2	4.2.4.5	X	--	4
Flammability	3.7.3	4.2.4.6	X	--	2
Characteristic Impedance	5930275	4.2.4.7	X	X	10 (use same sample for both tests)
Capacitive Unbalance	5930275	4.2.4.7	X	X	

SIZE	A	SCALE	None	REV	C	SHEET	9
CODE IDENT NO.	53711	5 9 3 0 8 6 9					