

Submitted for recognition as an American National Standard

60 V and 600 V Single Core Cables

Foreword—The SAE Standard is technically equivalent to ISO 6722.

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SAE J2183 Issued MAR2001

1. **Scope**—This SAE Standard specifies the test methods, dimensions, and requirements for single core 60 V cables intended for use in road vehicle applications where the nominal system voltage ≤ 60 V DC (25 V AC). It also specifies additional test methods and/or requirements for 600 V cables intended for use in road vehicle applications where the nominal system voltage is >60 V DC (25 V AC) to ≤ 600 V DC (600 V AC). Where practical, this standard uses ISO 6722 for test methods, dimensions, and requirements. This standard covers ISO conductor sizes which usually differ from SAE conductor sizes. It also covers the individual cores in multi-core cables. See ISO 6722 for “Temperature Class Ratings”.
2. **References**
 - 2.1 **Applicable Publications**—The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.
 - 2.1.1 SAE PUBLICATION—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.
SAE EA-1128—Wire Color Charts
 - 2.1.2 ASTM DOCUMENTS—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959
ASTM B 354—Definitions of Terms Relating to Uninsulated metallic Electrical Conductors
ASTM D 471—Standard Test Method for Rubber Property – Effect of Liquids
ASTM F 1251—Standard Terminology Relating to Polymeric Biomaterials in Medical and Surgical Device
 - 2.1.3 ISO DOCUMENTS—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002
ISO 6722—Road vehicles—60 V and 600 V single core cables—Test methods, dimensions and requirements
 - 2.1.4 IEC DOCUMENTS—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002
IEC 216-4-1—Guide for the determination of thermal endurance properties of electrical insulating materials – Part 4: Ageing ovens – Section 1: Single-chamber ovens.
IEC, Electricity, Electronics and Telecommunications, Multilingual Dictionary
 - 2.2 **Related Publications**—The following publications are provided for information purposes only and are not a required part of this specification.
 - 2.2.1 SAE PUBLICATIONS—Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.
SAE J156—Fusible Links
SAE J1067—Seven Conductor Jacketed Cable for Truck Trailer Connections
SAE J1127—Low Tension Battery Cable
SAE J1128—Low Tension Primary Cable
SAE J1292—Automobile, Truck, Truck-Tractor, Trailer, and Motor Coach Wiring
SAE J1654—High Voltage Primary Cable
SAE J1673—High Voltage Automotive Wiring
SAE J1678—Ultra Thin Wall Primary Cable
SAE J2501—Round, Unscreened, 60 V and 600 V Multicore Sheathed Cables
SAE Dictionary of Materials and Testing

2.2.2 ASTM DOCUMENTS—Available from ASTM, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959

ASTM B 1—Standard Specification for Hard-Drawn Copper Wire
ASTM B 3—Standard Specification for Soft or Annealed Copper Wire
ASTM B 8—Concentric-Lay-Stranded Copper conductors, Hard, Medium-Hard, or Soft
ASTM B 33—Standard Specification for Tinned Soft or Annealed Copper Wire
ASTM B 174—Standard Specification for Bunch-Stranded Copper Conductors for Electrical Conductors
ASTM B 193—Standard Test Method for Resistivity of Electrical Conductor Materials
ASTM B 263—Method for Determination of Cross-Sectional Area of Standard Conductors
ASTM B 298—Standard Specification for Silver-Coated Soft or Annealed Copper Wire
ASTM B 355—Standard Specification for Nickel-Coated Soft or Annealed Copper Wire
ASTM B 452—Standard Specification for Copper-Clad Steel Wire for Electronic Application
ASTM B 787—19 Wire Combination Unilay-Stranded Copper Conductors for Subsequent Insulation
ASTM E 145—Standard Specification for Gravity-Convection and Forced-Ventilation Ovens

2.2.3 IEC DOCUMENTS—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002

IEC 811-2-1—Common test methods for insulating and sheathing materials of electrical cables – Part 2: Methods specific to elastomeric compounds – Section 1: Ozone resistance test – Hot set test – Mineral oil immersion test.

2.2.4 ISO DOCUMENTS—Available from ANSI, 11 West 42nd Street, New York, NY 10036-8002

ISO 14572—Road vehicles—Round, unscreened, 60 V and 600 V multicore sheathed cables—Basic and high performance test methods and requirements

2.3 Other Publications—Bibliography—See ISO 6722.

3. Definitions

3.1 **60 Volt (V) Cable**—Cables intended for use in road vehicle applications where the nominal system voltage ≤ 60 V DC (25 V AC). AC tests are performed at 60 Hz. Applications at higher frequencies may require additional testing.

3.2 **600 Volt (V) Cable**—Cables intended for use in road vehicle applications where the nominal system voltage is > 60 V DC (25 V AC) to ≤ 600 V DC (600 V AC). AC tests are performed at 60 Hz. Applications at higher frequencies may require additional testing.

3.3 **3000 h Temperature Class Rating**—a letter designation (class) based on the maximum test temperature (rating) at which a primary cable successfully passes the minimum requirements of 3000 h of heat aging.

3.4 **Additional Mass (ref. "Resistance to Sandpaper Abrasion" Test)**—the mass which is applied to the support rod. The combination of the forces exerted by the additional mass and the 0.63 N exerted by the remaining apparatus (bracket, support rod, and pivoting arm) is applied to the cable.

3.5 **Cable**—see primary cable.

3.6 **Coated Wire**—Wire comprised of a given metal covered with a relatively thin application of a different metal. (ASTM B 354)

3.7 **Conductor**—A wire or combination of wires not insulated from one another, suitable for carrying an electrical current. (ASTM B 354)

3.8 **Conductor Size**—See SAE conductor size.

- 3.9 Core**—See conductor.
- 3.10 Decimals**—Decimal points are shown as “.” instead of “,” commonly used in ISO standards.
- 3.11 Fluid Compatibility**—The ability of a cable to resist the effects of various fluids found in surface vehicles.
- 3.12 Hot Plate**—An electrically heated device used to test thermoset cables.
- 3.13 Low Voltage**—Usually considered to be 60 V DC (25 V AC).
- 3.14 Minimum Wall (Thickness)**—The lowest allowable insulation thickness at any point.
- 3.15 Nominal**—A suitable approximate value used to designate or identify a component
- 3.16 Ozone Resistance**—The ability of a material to withstand the deteriorating effect of ozone (surface cracking). SAE, Dictionary of Materials and Testing.
- 3.17 Plastic**—Any of numerous polymeric materials that are usually thermoplastic or thermosetting, of high molecular weight and that can be molded, cast, extruded, drawn, laminated, or otherwise fabricated into objects, powders, beads, films, filaments, fibers, or other shapes. (ASTM F 1251)
- 3.18 Primary Cable**—the single or multi-stranded, single conductor, insulated cable used to carry electric current, by attachment to the low voltage side of an ignition coil in surface vehicles.
- 3.19 SAE Conductor Size**—a system that indicates the cross sectional area of the conductor. The Metric SAE Conductor Size is the approximate area of the conductor. The English SAE Conductor Size number indicates that the area of the conductor approximates the area of the American Wire Gauge for the equivalent size.
- 3.20 Separator**—A thin layer used as a barrier to prevent mutually detrimental effects between different components of a cable such as between the conductor and insulation or between the insulation and the sheath. (IEC, Electricity, Electronics and Telecommunications, Multilingual Dictionary)
- 3.21 Strip Force**—The peak axial force required to overcome the adhesion between the conductor and the insulation.
- 3.22 Strand**—See wire.
- 3.23 Thermoplastic**—A plastic capable of being softened by heating and hardened by cooling through a temperature range characteristic of the plastic and, in the softened state, capable of being repeatedly shaped by flow into articles by molding, extrusion or forming. (IEC, Electricity, Electronics and Telecommunications, Multilingual Dictionary)
- 3.24 Thermoset**—A plastic which, when cured by heat or other means, changes into a substantially infusible and insoluble product. Note—Thermosets are often called thermosetting before curing and thermoset after cure. (IEC, Electricity, Electronics and Telecommunications, Multilingual Dictionary)
- 3.25 Wire (Strand)**—A rod or filament of drawn or rolled metal whose length is great in comparison with the major axis of its cross section. (ASTM B354)
- 3.26 Wire Size**—See SAE conductor size

- 4. General Requirements**—See ISO 6722.
- 4.1 Conductors**—See ISO 6722.
- 4.2 Cables**—The cables shall be submitted to the tests as specified in Figure 1.
- 4.3 General Test Conditions**—See ISO 6722.
- 4.4 Ovens**—See ISO 6722. The ovens shall meet the requirements of IEC 216-4-1.

Clause	Test Description	See ISO	In Process Tests ¹⁾	Certification		If Required ³⁾	
				Initial	Periodic ²⁾	Initial	Periodic ²⁾
5	Dimensions						
5.1	Outside Cable Diameter	6722		X	X		
5.2	Insulation Thickness	6722		X	X		
6	Electrical characteristics						
6.1	Conductor Resistance	6722		X	X		
6.2	Withstand Voltage	6722		4)	4)		
6.3	Insulation Faults	6722	4)				
6.4	Insulation Volume Resistivity	6722				X	X
7	Mechanical characteristics						
7.1	Resistance to Pinch			X	X		
7.2	Strip Force	6722				X	X
8	Low temperature characteristics						
8.1	Winding			X	X		
9	Resistance to Abrasion						
9.1	Sandpaper abrasion			X	X		
10	Heat aging						
10.1	Short Term Aging 240 h	6722		X	X		
10.2	Long Term Aging, 3000 h	6722		X			
10.3	Thermal Overload	6722				X	X
11	Resistance to Chemicals						
11.1	Fluid Compatibility			X	X		
11.2	Resistance to Ozone	6722				X	
11.3	Resistance to Hot Water	6722				X	
11.5	Temperature and Humidity Cycling					X	
12	Resistance to Flame Propagation	6722		X	X		

NOTE 1: A test made of all cable during or after manufacture to check if it complies with the requirements of the standard concerned or the criteria specified.

NOTE 2: The frequency of periodic testing will be established by agreement between the customer and the supplier.

NOTE 3: The usage of "if required" tests will be established by agreement between customer and supplier.

NOTE 4: Some cables are rated at 60 V and others at 600 V. See clauses 3, 6.2, and 6.3 for details.

FIGURE 1—TESTS
REF. 4.2

5. Dimensions

5.1 Outside Cable Diameter—See ISO 6722 for “Test sample”, “Apparatus”, and “Procedure”. No single value shall exceed the appropriate maximum cable diameter specified in SAE J2183, Figure 2.

5.2 Insulation Thickness—See ISO 6722 for “Test sample”, “Apparatus”, and “Procedure”. No single value shall be less than the appropriate minimum insulation thickness specified in SAE J2183, Figure 2.

6. Electrical Characteristics

6.1 Conductor Resistance—See ISO 6722.

6.2 Withstand Voltage—See ISO 6722.

6.3 Insulation Faults—See ISO 6722.

6.4 Insulation Volume Resistivity—See ISO 6722.

ISO Conductor Size mm ²	Thick Wall			Thin Wall			Ultra thin wall		
	Insulation Thickness		Outside Cable Diameter Maximum mm	Insulation Thickness		Outside Cable Diameter Maximum mm	Insulation Thickness		Outside Cable Diameter Maximum mm
Nominal ¹⁾ mm	Minimum mm	Nominal ¹⁾ mm		Minimum mm	Nominal ¹⁾ mm		Minimum mm		
0.13				0.25	0.20	1.05	0.20	0.16	0.95
0.22				0.25	0.20	1.20	0.20	0.16	1.05
0.35				0.25	0.20	1.40	0.20	0.16	1.20
0.50	0.60	0.48	2.30	0.28	0.22	1.70	0.20	0.16	1.40
0.75	0.60	0.48	2.50	0.30	0.24	1.90	0.20	0.16	1.60
1	0.60	0.48	2.70	0.30	0.24	2.10	0.20	0.16	1.75
1.5	0.60	0.48	3.00	0.30	0.24	2.40	0.20	0.16	2.10
2	0.60	0.48	3.30	0.35	0.28	2.80	0.25	0.20	2.40
2.5	0.70	0.56	3.60	0.35	0.28	3.00	0.25	0.20	2.70
3	0.70	0.56	4.10	0.40	0.32	3.40			
4	0.80	0.64	4.40	0.40	0.32	3.80			
5	0.80	0.64	4.90	0.40	0.32	4.20			
6	0.80	0.64	5.00	0.40	0.32	4.30			
10	1.00	0.80	6.50	0.60	0.48	6.00			
16	1.00	0.80	8.30	0.65	0.52	7.90			
25	1.30	1.04	10.40	0.65	0.52	9.40			
35	1.30	1.04	11.60						
50	1.50	1.20	13.50						
70	1.50	1.20	15.50						
95	1.60	1.28	18.00						
120	1.60	1.28	19.70						

NOTE:
1) A suitable approximate value used to designate or identify a component.

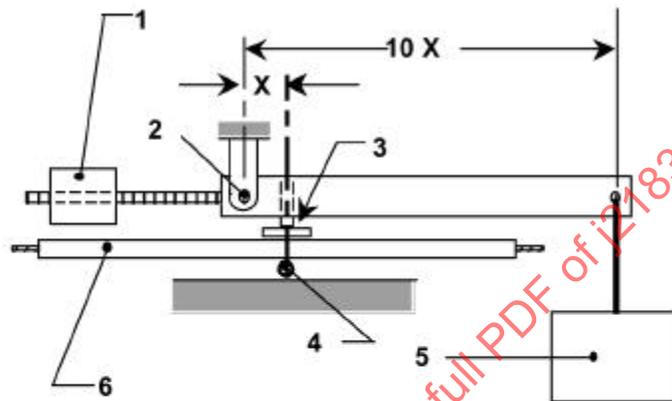
FIGURE 2—OUTSIDE CABLE DIAMETER AND INSULATION THICKNESS
REF. 5.1 AND 5.2

7. Mechanical Characteristics

7.1 Resistance to Pinch—This test is only applicable to cable with an ISO Conductor Size $\leq 6 \text{ mm}^2$.

7.1.1 TEST SAMPLE—25 mm of insulation shall be removed from one end of a 900 mm sample of finished cable.

7.1.2 APPARATUS—The apparatus shall be as shown in Figure 3. The counter balance shall be adjusted so that no force will be exerted on the sample until a mass is applied to the end of the lever with a mechanical advantage of 10.



- Key
- 1 Counter Balance
 - 2 Pivot
 - 3 Anvil
 - 4 Rod
 - 5 Applied Mass
 - 6 Test Sample

FIGURE 3—APPARATUS FOR “RESISTANCE TO PINCH” TEST
REF. 7.1

7.1.3 PROCEDURE—The sample shall then be placed taut without stretching across a 3 mm diameter steel rod as shown in Figure 3. The sample shall then be subjected to an increasing force applied through the steel anvil by increasing the applied mass at a rate of 2.3 kg per min. At the moment the insulation is pinched through, the test shall stop. The applied mass shall then be recorded. After each reading the sample shall be moved 50 mm and rotated clockwise 90 degrees. Four readings shall be obtained for each sample. The mean of the four readings shall determine the pinch resistance of the cable under test.

7.1.4 REQUIREMENT—The minimum value for each cable type and size is shown in Figure 4.

7.2 Strip Force—See ISO 6722.

ISO Conductor Size mm ²	60 V			600 V
	Wall Thickness			kg
	Ultra Thin kg	Thin kg	Thick kg	
0.13				2.3
0.22	0.3	1.2		2.3
0.35	0.4	1.2		2.3
0.5	0.5	1.5	2.3	2.3
0.75	0.7	1.5	2.7	2.7
1	0.9	2.0	2.7	2.7
1.5	1.1	2.0	3.6	3.6
2.5	1.3	2.5	3.6	3.6
4	1.5	2.5	4.5	4.5
6	1.7	3.0	5.0	5.0

FIGURE 4—MINIMUM RESISTANCE TO PINCH
REF. 7.1

8. Low Temperature Characteristics

8.1 Winding

8.1.1 TEST SAMPLE—Prepare two test samples of 600 mm and remove 25 mm of insulation from each end.

8.1.2 APPARATUS—A freezing chamber at $-40\text{ }^{\circ}\text{C} \pm 2\text{ }^{\circ}\text{C}$. Either a rotatable or stationary mandrel may be used. The mandrel size shall be as specified in Figure 5.

- Rotatable Mandrel—When a rotatable mandrel is used, the masses shall conform to Figure 5.
- Stationary Mandrel—When a stationary mandrel is used, no mass is used.

ISO Conductor Size a mm ²	Mandrel Diameter, Multiple of Outside Diameter of Test Sample			Mass kg	Winding Speed s ⁻¹	Minimum Number of Turns
	Clauses 8.1, 10.1	Clauses 10.2, 10.3	Clause 11.1			
$a \leq 0.75$	5.0 ± 1.0	1.5 ± 0.3	12.5 ± 2.5	0.5	0.2	3
$0.75 < a \leq 1.5$	5.0 ± 1.0	1.5 ± 0.3	12.5 ± 2.5	2.5	0.2	3
$1.5 < a \leq 6$	5.0 ± 1.0	1.5 ± 0.3	12.5 ± 2.5	5	0.2	2
$6 < a \leq 10$	5.0 ± 1.0	1.5 ± 0.3	12.5 ± 2.5	8	0.2	0.5
$10 < a \leq 25$	5.0 ± 1.0	1.5 ± 0.3	12.5 ± 2.5	10	0.2	0.5
$25 < a \leq 35$	5.0 ± 1.0	1.5 ± 0.3	12.5 ± 2.5	20	0.2	0.5
$35 < a \leq 120$	5.0 ± 1.0	1.5 ± 0.3	12.5 ± 2.5	30	0.2	0.5

FIGURE 5—WINDING
REF. 8.1, 10.1, 10.2, 10.3, AND 11.1

8.1.3 PROCEDURE—The test samples and mandrel shall be conditioned for a minimum of 4 h in the freezing chamber

- a. Rotatable Mandrel—When a rotatable mandrel is used, the test samples shall be fixed on the mandrel. The free ends are loaded with the specified mass. Position the mandrel with the test samples hanging vertically.
- b. Stationary Mandrel—When a stationary mandrel is used, the test samples shall be wrapped around the mandrel by hand.

Wind at least the minimum number of turns specified in Figure 5 around the mandrel within the freezing chamber at winding speed as specified in Figure 5. Care shall be taken to ensure that there is continuous contact between the test samples and the mandrel.

After the cold winding, allow the test sample to return to room temperature, and make a visual inspection of the insulation. If no exposed conductor is visible, perform the “Withstand voltage” test; however, the following changes shall be made to the procedure in 6.2:

- a. The test sample shall be immersed in the salt solution for a minimum of 10 min prior to the application of the voltage.
- b. The 1 kV (rms) voltage shall be applied for 1 minute min.
- c. The voltage shall not be “ramped up” after the application of the 1 kV (rms) voltage.

8.1.4 REQUIREMENT—After winding, no conductor shall be visible. During the “Withstand voltage” test, breakdown shall not occur.

9. Resistance to Abrasion

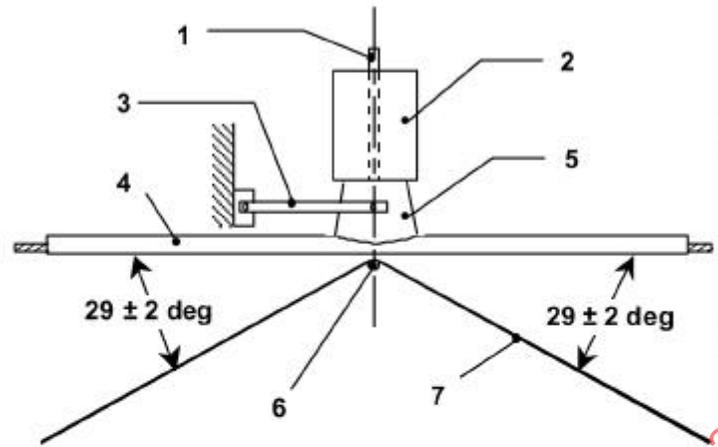
9.1 Sandpaper Abrasion

9.1.1 TEST SAMPLE—Prepare a test sample of 1 m and remove 25 mm of insulation from each end.

9.1.2 APPARATUS—The resistance to sandpaper abrasion shall be measured using 150J garnet sandpaper with 10 mm conductive strips perpendicular to the edge of the sandpaper spaced a maximum of every 75 mm. The DC resistance of the conductive strips shall be 15 000 Ω (when measured across the width of the sandpaper) or low enough to allow the apparatus to detect exposed conductor. The sandpaper shall approach and exit the sample from below at an angle of 29 degrees \pm 2 degrees to the axis of the cable and shall be supported by a pin 6.9 mm \pm 0.1 mm in diameter. The pivoting arm (see Figure 6) will have a suitable bracket to maintain the cable position over an unused portion of the sandpaper. A total force of 0.63 N \pm 0.05 N will be exerted on the test sample by the combination of the bracket, support rod, and pivoting arm. The total vertical force exerted on the test sample will be the combination of the force exerted by the support bracket, pivoting arm, support rod and additional mass. See Figure 7 for additional masses.

9.1.3 PROCEDURE—Mount the specimen taut, without stretching, in a horizontal position using an area of the abrasion tape not previously used. Place the additional mass and bracket on top of the cable. Draw the sandpaper under the specimen at a rate of 1500 mm/min \pm 75 mm/min and record the length of sandpaper necessary to expose the core. Move the test sample 50 mm and rotate the test sample clockwise 90 degrees. Repeat the procedure for a total of 4 readings. The mean of the readings will determine the resistance to sandpaper abrasion.

9.1.4 REQUIREMENT—The resistance to sandpaper abrasion shall meet or exceed the “Minimum length of sandpaper” requirements in Figure 7.



Key:

- 1 Support Rod
- 2 Additional Mass
- 3 Pivoting Arm
- 4 Test Sample
- 5 Bracket
- 6 Tape Supporting Pin
- 7 Sandpaper Abrasion Tape

FIGURE 6—APPARATUS FOR “SANDPAPER ABRASION”
REF. 9.1

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ISO Conductor Size mm ²	60 V Cables						600 V Cables	
	<u>Thick wall</u>		<u>Thin wall</u>		<u>Ultra thin wall</u>		Additional Mass kg	Minimum Length of Sandpaper mm
	Additional Mass kg	Minimum Length of Sandpaper mm	Additional Mass kg	Minimum Length of Sandpaper mm	Additional Mass kg	Minimum Length of Sandpaper mm		
0.13			0.1	200	0.05	150	0.5	400
0.22			0.1	225	0.05	175	0.5	400
0.35			0.1	250	0.05	200	0.5	400
0.5	0.5	400	0.2	300	0.1	175	0.5	400
0.75	0.5	410	0.2	350	0.1	200	0.5	410
1	0.5	420	0.2	400	0.1	225	0.5	420
1.5	0.5	430	0.2	450	0.1	250	0.5	430
2	0.5	450	0.2	500	0.1	275	0.5	450
2.5	1.5	280	0.5	250	0.2	125	1.5	280
3	1.5	330	0.5	300			1.5	330
4	1.5	400	0.5	350			1.5	400
5	1.5	450	0.5	430			1.5	450
6	1.5	500	0.5	500			1.5	500
10	4.0	250	2.0	250			4.0	250
16	4.0	350	2.0	300			4.0	350
25	4.0	400	2.0	350			4.0	400
35	4.0	450					4.0	450
50	4.0	500					4.0	500
70	4.0	550					4.0	550
95	4.0	600					4.0	600
120	4.0	650					4.0	650

Note: The total vertical force exerted on the test sample will be the combination of the force exerted by the support bracket, pivoting arm, support rod, and additional mass.

FIGURE 7—SANDPAPER ABRASION
REF. 9.1

10. Heat Aging

10.1 Short Term Aging, 240 h—See ISO 6722.

10.2 Long Term Aging, 3000 h—See ISO 6722.

10.3 Thermal Overload—See ISO 6722.

11. Resistance to Chemicals

11.1 Fluid Compatibility—The tests are intended to qualify cables for limited exposure to fluids. Additional tests will be necessary to qualify cables for continuous immersion.

11.1.1 TEST SAMPLE—See ISO 6722.

11.1.2 APPARATUS—The apparatus for measuring the cable diameter shall be the same as that shown in 5.1. Vessels shall be filled with the fluids at the temperatures shown in Figure 8. See Figure 5 for masses and mandrels. Either a rotatable or stationary mandrel may be used.

Fluid	Specification	Test Temp. °C	Test Duration h	Maximum OD Change %
Gasoline	ASTM D471, Ref. Fuel C	23 ± 5	20	15
Diesel Fuel	90% ASTM D471, IRM 903 + 10% p-xylene	23 ± 5	20	15
Engine Oil	ASTM D471, IRM-902	50 ± 3	20	15
Ethanol	85% Ethanol + 15% ASTM D471, Ref. Fuel C	23 ± 5	20	15
Power Steering	ASTM D471, IRM-903	50 ± 3	20	30
Auto Trans	Dexron III	50 ± 3	20	25
Engine Coolant	50 % ethylene glycol + 50 % distilled water	50 ± 3	20	15
Battery Acid	H ₂ SO ₄ Specific Gravity = 1.260 ± .005	23 ± 5	20	5

NOTE : Solutions are determined as % by volume.

FIGURE 8—FLUID COMPATIBILITY
REF. 11.1

11.1.3 PROCEDURE—See ISO 6722.

11.1.4 REQUIREMENT—See ISO 6722.

11.2 Resistance to Ozone—See ISO 6722.

11.3 Resistance to Hot Water—See ISO 6722.

11.4 Temperature and Humidity Cycling—See ISO 6722.

11.4.1 TEST SAMPLE—See ISO 6722

11.4.2 APPARATUS—Perform the test in a temperature chamber which is capable of cycling between $-40\text{ °C} \pm 2\text{ °C}$ and the “Temperature Class Rating”. The chamber shall also be capable of controlling the relative humidity between $5\% \pm 5\%$ and $90\% \pm 5\%$. The mandrel size shall be (1.5 ± 0.3) times the diameter of the test sample.

11.4.3 PROCEDURE—See ISO 6722

11.4.4 REQUIREMENT—See ISO 6722

12. **Resistance to Flame Propagation**—See ISO 6722.

13. **Reference Information**

13.1 **Color Code**—The purpose of the “color code” is to provide visual information during the building and servicing of wiring assemblies. Cables of different colors shall be distinguishable from each other.

13.1.1 **RECOMMENDED COLORS**—The color of the cables should match as closely as possible the central colors specified in Appendix A. The “Light” and “Dark” color limits are for guidelines only.

13.1.2 **STRIPES**—When additional color coding is required, various colored stripes may be applied longitudinally, spirally, or by other manner agreed upon by the supplier and user. The color standards do not apply to stripes.

PREPARED BY THE SAE CABLE TASK FORCE COMMITTEE

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