



# TEST REPORT

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Glenair GS22759-16 Commercial Equivalent Wire  
Test Report to AS22759/16 and AS22759/17  
(Ref. QTP-1145)

Revision	Description of Changes	Date	Author
1	Initial Release	10/14/2022	MLS



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## 1.0 Scope

This report summarizes the test results of Glenair's GS22759-16 commercial equivalent wire to AS22759/16. All tests were performed according to AS22759 and QTP-1145 except the ovens were not calibrated per ASTM Type II oven requirements, where applicable.

## 2.0 Reference Documents

AS22759 Revision D	Wire, Electrical, Fluoropolymer-Insulated, Copper or Copper Alloy
AS4373 Revision F	Test Methods for Insulated Electric Wire
ASTM D3032 Revision 21A	Standard Test Methods for Hookup Wire Insulation
AS29606 Revision B	General Specification for Wire, Electrical, Stranded, Uninsulated Copper, Copper Alloy, or Aluminum, or Thermocouple Extension
AS5768 Revision C	General Specification for Tool, Stripper, Electrical Insulation
GS22759-16 Revision 4	Glenair AS22759/16 Wire, Tin-Coated Copper Conductor, ETFE Insulated, 600-Volt, 150°C
GS22759-17 Revision 3	Glenair AS22759/17 Wire, Silver-Coated High Strength Copper Conductor, ETFE Insulated, 600-Volt, 150°C

## 3.0 Test Specimens

The part number and description of the wire tested is listed in Table I.

**Table I**

Part Number	Description
GS22759-16-22-9	Glenair AS22759/16 22 AWG Wire Tin-Coated Copper Conductor ETFE-insulated
GS22759-16-16-9	Glenair AS22759/16 16 AWG Wire Tin-Coated Copper Conductor ETFE-insulated
GS22759-16-10-9	Glenair AS22759/16 10 AWG Wire Tin-Coated Copper Conductor ETFE-insulated
GS22759-16-8-9	Glenair AS22759/16 8 AWG Wire Tin-Coated Copper Conductor ETFE-insulated



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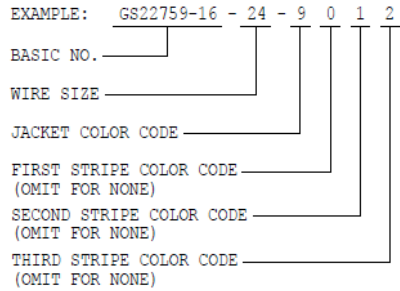
GS22759-16

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REVISIONS			
REV	DESCRIPTION	DATE	APPROVED
1	PRELIMINARY	02/01/22	LEJ
2	PRELIMINARY: REMOVED WIRE SIZES 6 - 00 AWG.	06/18/22	MMAT
3	PRELIMINARY: ADDED STRIPES TO PART NUMBER.	09/12/22	MMAT
4	PRELIMINARY: TEMP RATING, FROM COND. TO WIRE.	09/26/22	MMAT

PART NUMBER	WIRE SIZE	STRANDING (NUMBER OF STRANDS X SIZE GAGE OF STRANDS)	DIAMETER OF STRANDED CONDUCTOR (INCHES)		FINISHED WIRE		WEIGHT (LB/1000 FEET) (MAX)
			(MIN)	(MAX)	RESISTANCE AT 20°C (68°F) (OHMS/1000 FEET) (MAX)	DIAMETER (INCHES)	
GS22759-16-24-*	24	19 X 36	.0225	.0244	26.2	.045 ± .002	2.57
GS22759-16-22-*	22	19 X 34	.0285	.0314	16.2	.052 ± .002	3.68
GS22759-16-20-*	20	19 X 32	.0365	.0394	9.88	.060 ± .002	5.36
GS22759-16-18-*	18	19 X 30	.0455	.0494	6.23	.071 ± .002	7.89
GS22759-16-16-*	16	19 X 29	.0515	.0554	4.81	.079 ± .002	9.95
GS22759-16-14-*	14	19 X 27	.0645	.0694	3.06	.093 ± .002	14.9
GS22759-16-12-*	12	37 X 28	.0835	.0894	2.02	.114 ± .003	22.6
GS22759-16-10-*	10	37 X 26	.106	.112	1.26	.139 ± .003	35.1
GS22759-16-8-*	8	133 X 29	.158	.169	.701	.199 ± .003	66.7

PART NUMBER DEVELOPMENT:



COLOR CODE	COLOR
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	VIOLET
8	GRAY
9	WHITE

NOTES:

1. WIRE IS MADE IN ACCORDANCE WITH AS22759/16.
2. CONDUCTOR IS TIN COATED COPPER PER AS29606.
3. INSULATION IS ETFE (ETHYLENE-TETRAFLUOROETHYLENE).
4. WIRE MAXIMUM CONTINUOUS TEMPERATURE RATING IS 150°C (302°F).
5. VOLTAGE RATING IS 600 VOLTS (RMS) AT SEA LEVEL.
6. COLOR CODE PER MIL-STD-681. SEE MIL-STD-681 FOR ADDITIONAL WIRE COLOR CODES.
7. CONSULT FACTORY FOR CUSTOM STRIPE COLOR ORDER.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES: FRACTIONS ± 1/16 DECIMALS .XX ± .030 .XXX ± .015 ANGLES ± 1°	DRAWN	LEJ	02/01/22	<b>GLENAIR, INC.</b> CAD 1999 <sup>©</sup> 1211 AIR WAY - GLENDALE - CALIFORNIA 91201
	CHECK	SF	02/01/22	
	ENG'D	LEJ	02/01/22	AS22759/16 WIRE, TIN COATED COPPER CONDUCTOR ETFE INSULATED, 600-VOLT, 150°C
	APPROVED: <i>LBrown</i>			CODE IDENT. NO.   SIZE
	APPROVED: _____			06324   C   GS22759-16
DO NOT SCALE THIS DRAWING	RELEASE DATE	REV. DATE		4
B/F 21A9342   P/C	NON REPAIRABLE COMMERCIAL ITEM	SCALE	N/A	WEIGHT   N/A   SHEET 1 OF 1

Figure 1 – Glenair AS22759/16 Wire Drawing GS22759-16



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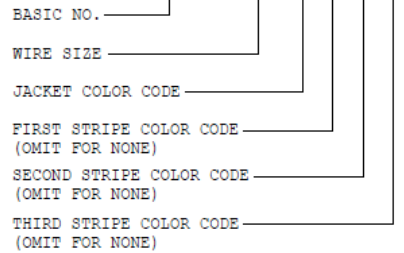
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REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
1	PRELIMINARY	02/01/22	LKJ
2	PRELIMINARY: ADDED STRIPES TO PART NUMBER.	09/12/22	MMJ
3	PRELIMINARY: TEMP RATING, FROM COND. TO WIRE.	09/26/22	MMJ

PART NUMBER	WIRE SIZE	STRANDING (NUMBER OF STRANDS X SIZE GAGE OF STRANDS)	FINISHED WIRE			
			DIAMETER OF STRANDED CONDUCTOR (INCHES)		RESISTANCE AT 20°C (68°F) (OHMS/1000 FEET) (MAX)	DIAMETER (INCHES)
			(MIN)	(MAX)	(MAX)	
GS22759-17-26-*	26	19 X 38	.0175	.0204	44.8	.040 ± .002 1.76
GS22759-17-24-*	24	19 X 36	.0225	.0244	28.4	.045 ± .002 2.43
GS22759-17-22-*	22	19 X 34	.0285	.0314	17.5	.052 ± .002 3.50
GS22759-17-20-*	20	19 X 32	.0365	.0395	10.7	.060 ± .002 5.14

PART NUMBER DEVELOPMENT:

EXAMPLE: GS22759-17 - 24 - 9 0 1 2



COLOR CODE	COLOR
0	BLACK
1	BROWN
2	RED
3	ORANGE
4	YELLOW
5	GREEN
6	BLUE
7	VIOLET
8	GRAY
9	WHITE

NOTES:

1. WIRE IS MADE IN ACCORDANCE WITH AS22759/17.
2. CONDUCTOR IS SILVER COATED HIGH STRENGTH COPPER PER AS29606.
3. INSULATION IS ETFE (ETHYLENE-TETRAFLUOROETHYLENE).
4. WIRE MAXIMUM CONTINUOUS TEMPERATURE RATING IS 150°C (302°F).
5. VOLTAGE RATING IS 600 VOLTS (RMS) AT SEA LEVEL.
6. COLOR CODE PER MIL-STD-681. SEE MIL-STD-681 FOR ADDITIONAL WIRE COLOR CODES.
7. CONSULT FACTORY FOR CUSTOM STRIPE COLOR ORDER.

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES		<table border="1"> <tr> <td>DRAWN</td> <td>LKJ</td> <td>02/01/22</td> </tr> <tr> <td>CHECK</td> <td>SF</td> <td>02/01/22</td> </tr> <tr> <td>ENGR</td> <td>LKJ</td> <td>02/01/22</td> </tr> </table>	DRAWN	LKJ	02/01/22	CHECK	SF	02/01/22	ENGR	LKJ	02/01/22	<b>GLENAIR, INC.</b> CAD 1997 1211 AIR WAY - GLENDALE - CALIFORNIA 91201
DRAWN	LKJ	02/01/22										
CHECK	SF	02/01/22										
ENGR	LKJ	02/01/22										
TOLERANCES:		APPROVED: <i>L. Brown</i> APPROVED: _____										
FRACTIONS ± 1/16 DECIMALS .XX ± .030 .XXX ± .015 ANGLES ± 1°		AS22759/17 WIRE, SILVER COATED HIGH STRENGTH COPPER CONDUCTOR ETFE INSULATED, 600-VOLT, 150°C										
DO NOT SCALE THIS DRAWING		MESSAGE DATE: _____ PREVIOUS MESSAGE DATE: _____	CODE IDENT. NO. 06324 SIZE C GS22759-17 REV. 3									
B/P 21A5343	P/C	NON REPARABLE COMMERCIAL ITEM	SCALE N/A WEIGHT N/A SHEET 1 OF 1									

Figure 2 – Glenair AS22759/17 Wire Drawing GS22759-17



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## 4.0 Summary of Results

The test results are summarized in Table II.

Table II

Test	Specification	Test Requirements	Results
Insulated Conductor Tin Solderability	AS4373 Method 105	95%, min.	Pass
Insulated Conductor Geometric Characteristics (Diameter)	AS29606 AS22759/16	22 AWG: $0.052 \pm 0.002$ 16 AWG: $0.079 \pm 0.002$ 10 AWG: $0.139 \pm 0.003$ 8 AWG: $0.199 \pm 0.003$	Pass
Insulated Conductor Elongation	AS29606 AS4373 Method 402	22 AWG: 10%, min. 16 AWG: 10%, min. 10 AWG: 10%, min. 8 AWG: 10%, min.	Pass
Insulation Construction (Material Type)	AS22759/16	ETFE	Pass
Insulation Tensile Strength and Elongation	AS4373 Method 705	5000 psi tensile strength, min. 150% elongation, min.	Pass
Short-Term Thermal Stability	AS4373 Method 811	7 hours at $230^{\circ}\text{C} \pm 2^{\circ}\text{C}$ DWV 2000 VDC, 60 seconds	Pass
Insulation Blocking	AS4373 Method 808	24 hours at $200^{\circ}\text{C} \pm 2^{\circ}\text{C}$	Pass
Insulation Shrinkage	AS4373 Method 104	6 hours at $200^{\circ}\text{C} \pm 2^{\circ}\text{C}$ 0.125" max. shrinkage	Pass



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Test	Specification	Test Requirements	Results
Wire Conductor Electrical Resistance	AS4373 Method 403	22 AWG: 16.2 $\Omega$ /1000 ft., max. 16 AWG: 4.81 $\Omega$ /1000 ft., max. 10 AWG: 1.26 $\Omega$ /1000 ft., max. 8 AWG: 0.701 $\Omega$ /1000 ft., max.	Pass
Wire Electrical Insulation Resistance	AS4373 Method 504	22 AWG: 5000 M $\Omega$ -1000 ft., min. 16 AWG: 5000 M $\Omega$ -1000 ft., min. 10 AWG: 3000 M $\Omega$ -1000 ft., min. 8 AWG: 3000 M $\Omega$ -1000 ft., min.	Pass
Wire Electrical Surface Resistance	AS4373 Method 506	22 AWG: 500 M $\Omega$ -inches, min. at 500 VDC 16 AWG: 500 M $\Omega$ -inches, min. at 500 VDC 10 AWG: N/A 8 AWG: N/A	Pass
Electrical Dielectric Resistance – Wet Dielectric Voltage	AS4373 Method 510	2000 V (rms) at 60Hz, min.	Pass
Wire Diameter	AS4373 Method 901	22 AWG: 0.052 $\pm$ 0.002" 16 AWG: 0.079 $\pm$ 0.002" 10 AWG: 0.139 $\pm$ 0.003" 8 AWG: 0.199 $\pm$ 0.003"	Pass
Wire Weight	AS4373 Method 902	22 AWG: 3.68 lbs./1000 ft., max. 16 AWG: 9.95 lbs./1000 ft., max. 10 AWG: 35.1 lbs./1000 ft., max. 8 AWG: 66.7 lbs./1000 ft., max.	Pass
Wire Insulation Stripping	AS5768/1 AS5768/2	Insulation readily removable without damage to conductor	Pass
Wire Insulation Concentricity and Wall Thickness	AS4373 Method 101	70 %, min.	Pass
Wire Identification Printed Marking and Location	AS22759	Marking in intervals of 6 to 60 inches	Pass

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Test	Specification	Test Requirements	Results
Workmanship	AS22759	No cracks, splits, irregularities, or embedded foreign material	Pass
Wire Color Designators and Munsell Limits	EIA-359-A	Visual inspection against Munsell color chart	Pass*
Wire Identification Mark, Stripe, and Band Durability	AS4373 Method 710	125 cycles (250 strokes) with 500 gram weight	Pass
Wrap Back Bend Mechanical Resistance for Extruded Insulation	AS4373 Method 708	2 hours at 200°C ± 2°C No cracking or splitting	Pass
Insulation Low Temperature Mechanical Resistance/Cold Bend	AS4373 Method 702	4 hours at -65°C ± 2°C DWV 2000 VDC, 60 sec.	Pass
Insulation Thermal Shock Mechanical Resistance	AS4373 Method 805	-55°C ± 3°C to 150°C ± 2°C 0.060" max. shrinkage	Pass
Thermal Mechanical Resistance – Life Cycle	AS4373 Method 807	500 hours at 200°C ± 2°C DWV 2000 V (rms) at 60 Hz	Pass
Fluid Resistance – Immersion	AS4373 Method 601	Diameter increase 5% max. DWV 2000 V (rms) at 60 Hz	Pass
Humidity Resistance	AS4373 Method 603	22 AWG: 5000 MΩ-1000 ft., min. 16 AWG: 5000 MΩ-1000 ft., min. 10 AWG: 3000 MΩ-1000 ft., min. 8 AWG: 3000 MΩ-1000 ft., min.	Pass

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Test	Specification	Test Requirements	Results
Smoke Resistance	AS4373 Method 513	200°C ± 2°C No visible smoke	Pass
Flammability	AS4373 Method 801	Self-extinguishing flame within 3 seconds max. Flame travel 3" min.	Pass

\* Lot samples of GS22759-16-22-9 selected for complete testing to QTP-1145 did not meet the requirements of EIA-359-A. However, subsequent lots of GS22759-16-22-9 does meet the requirements of EIA-359-A.

## 5.0 Conclusion

Glenair's GS22759-16 wire meets all performance requirements of AS22759 except that the ovens were not calibrated per ASTM Type II oven requirements, where applicable. GS22759-17 wire meets AS22759/17 requirements by similarity.