



TEST REPORT

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Glenair GS22759-18 Commercial Equivalent Wire
Test Report to AS22759/18 and AS22759/19
(Ref. QTP-1147)

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 GS22759-18 commercial equivalent wire to AS22759/18. All tests were performed according to AS22759 and QTP-1147 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
GS22759-18 Revision 3	Glenair AS22759/18 Wire, Tin-Coated Copper Conductor, ETFE Insulated, 600-Volt, 150°C
GS22759-19 Revision 3	Glenair AS22759/19 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
GS22759-18-20-9	Glenair AS22759/18 20 AWG Wire Tin-Coated Copper Conductor ETFE-insulated
GS22759-18-16-9	Glenair AS22759/18 16 AWG Wire Tin-Coated Copper Conductor ETFE-insulated
GS22759-18-10-9	Glenair AS22759/18 10 AWG Wire Tin-Coated Copper Conductor ETFE-insulated



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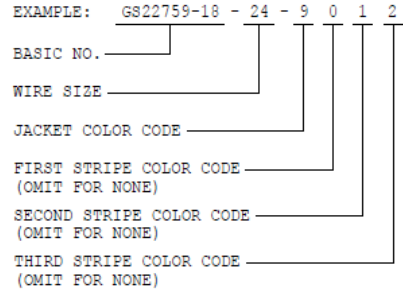
GS22759-18

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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)	DIAMETER OF STRANDED CONDUCTOR (INCHES)		RESISTANCE AT 20°C (68°F) (OHMS/1000 FEET) (MAX)	FINISHED WIRE	
			(MIN)	(MAX)		DIAMETER (INCHES)	WEIGHT (LB/1000 FEET) (MAX)
GS22759-18-26-*	26	19 X 38	.0175	.0204	41.3	.032 ± .002	1.52
GS22759-18-24-*	24	19 X 36	.0225	.0244	26.2	.036 ± .002	2.12
GS22759-18-22-*	22	19 X 34	.0285	.0314	16.2	.043 ± .002	3.16
GS22759-18-20-*	20	19 X 32	.0365	.0394	9.88	.051 ± .002	4.76
GS22759-18-18-*	18	19 X 30	.0455	.0494	6.23	.061 ± .002	7.10
GS22759-18-16-*	16	19 X 29	.0515	.0554	4.81	.070 ± .002	9.14
GS22759-18-14-*	14	19 X 27	.0645	.0694	3.06	.085 ± .002	14.1
GS22759-18-12-*	12	37 X 28	.0835	.0894	2.02	.107 ± .003	21.6
GS22759-18-10-*	10	37 X 26	.106	.112	1.26	.134 ± .003	34.1

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 AS22759/18.
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		DRAWN	LKJ	02/01/22	GLENAIR, INC. CAD 1990®
DIMENSIONS ARE IN INCHES		CHECK	SP	02/01/22	
TOLERANCES:		ENGR	LKJ	02/01/22	1211 AIR WAY - GLENDALE - CALIFORNIA 91201
FRACTIONS	± 1/16	<i>D. Brown</i>		APPROVED	AS22759/18 WIRE, TIN COATED COPPER CONDUCTOR ETFE INSULATED, 600-VOLT, 150°C
DECIMALS	.XXX ±.030			APPROVED	
DECIMALS	.XXX ±.015				
ANGLES	± 1°				
DO NOT SCALE THIS DRAWING		RELEASE DATE			CODE IDENT. NO.
		ISSUE DATE			06324
		RELEASE DATE			SIZE
					C
					GS22759-18
					REV. 3
B/F 21A5343	P/C	NON REPARABLE COMMERCIAL ITEM		SCALE N/A	WEIGHT N/A
				SHEET 1 OF 1	

Figure 1 – Glenair AS22759/18 Wire Drawing GS22759-18



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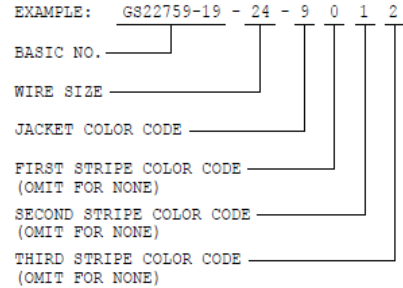
GS22759-19

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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)	DIAMETER OF STRANDED CONDUCTOR (INCHES)		FINISHED WIRE		
			(MIN)	(MAX)	RESISTANCE AT 20°C (68°F) (OHMS/1000 FEET) (MAX)	DIAMETER (INCHES)	WEIGHT (LB/1000 FEET) (MAX)
GS22759-19-26-*	26	19 X 38	.0175	.0204	44.8	.032 ± .002	1.41
GS22759-19-24-*	24	19 X 36	.0225	.0244	28.4	.036 ± .002	1.99
GS22759-19-22-*	22	19 X 34	.0285	.0314	17.5	.043 ± .002	2.98
GS22759-19-20-*	20	19 X 32	.0365	.0395	10.7	.051 ± .002	4.59

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 AS22759/19.
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 TOLERANCES: FRACTIONS ± 1/16 DECIMALS .XX ± .030 .XXX ± .015 ANGLES ± 1°	DRAWN LKJ 02/01/22	GLENAIR, INC. CAD 1997® 1211 AIR WAY - GLENDALE - CALIFORNIA 91201 AS22759/19 WIRE, SILVER COATED HIGH STRENGTH COPPER CONDUCTOR ETFE INSULATED, 600-VOLT, 150°C
	CHECK SF 02/01/22	
	ENGR LKJ 02/01/22	
DO NOT SCALE THIS DRAWING	APPROVED <i>L. Brown</i> APPROVED	CODE IDENT. NO. 06324 SIZE C GS22759-19 REV. 3
B/F 21A5343 P/C	NON REPAIRABLE COMMERCIAL ITEM	SCALE N/A WEIGHT N/A SHEET 1 OF 1

Figure 2 – Glenair AS22759/19 Wire Drawing GS22759-19



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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	20 AWG: $0.051 \pm 0.002''$ 16 AWG: $0.070 \pm 0.002''$ 10 AWG: $0.134 \pm 0.003''$	Pass
Insulated Conductor Elongation	AS29606 AS4373 Method 402	20 AWG: 10%, min. 16 AWG: 10%, min. 10 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	20 AWG: 9.88 Ω /1000 ft., max. 16 AWG: 4.81 Ω /1000 ft., max. 10 AWG: 1.26 Ω /1000 ft., max.	Pass
Wire Electrical Insulation Resistance	AS4373 Method 504	20 AWG: 5000 M Ω -1000 ft., min. 16 AWG: 3000 M Ω -1000 ft., min. 10 AWG: 2000 M Ω -1000 ft., min.	Pass
Wire Electrical Surface Resistance	AS4373 Method 506	20 AWG: 500 M Ω -inches, min. at 500 VDC 16 AWG: 500 M Ω -inches, min. at 500 VDC 10 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	20 AWG: 0.051 \pm 0.002" 16 AWG: 0.070 \pm 0.002" 10 AWG: 0.134 \pm 0.003"	Pass
Wire Weight	AS4373 Method 902	20 AWG: 3.68 lbs./1000 ft., max. 16 AWG: 9.95 lbs./1000 ft., max. 10 AWG: 35.1 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 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 V (rms) at 60 Hz	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	20 AWG: 5000 MΩ-1000 ft., min. 16 AWG: 3000 MΩ-1000 ft., min. 10 AWG: 2000 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

5.0 Conclusion

Glenair's GS22759-18 wire meets all performance requirements of AS22759 except that the ovens were not calibrated per ASTM Type II oven requirements, where applicable. GS22759-19 wire meets AS22759/19 requirements by similarity.