GT-23-265

Glenair GS22759-45 Commercial Equivalent Wire Test Summary
(Ref. QTP-1362)

Revision	Description of Changes	Date	Author
1	Initial Release	12/20/2023	JCR

1.0 Scope

This report summarizes the test results of Glenair's GS22759-45 commercial equivalent wire to AS22759/45. All tests were performed according to AS22759 and QTP-1362 except the ovens were not calibrated per ASTM Type II oven requirements, where applicable.

2.0 Reference Documents

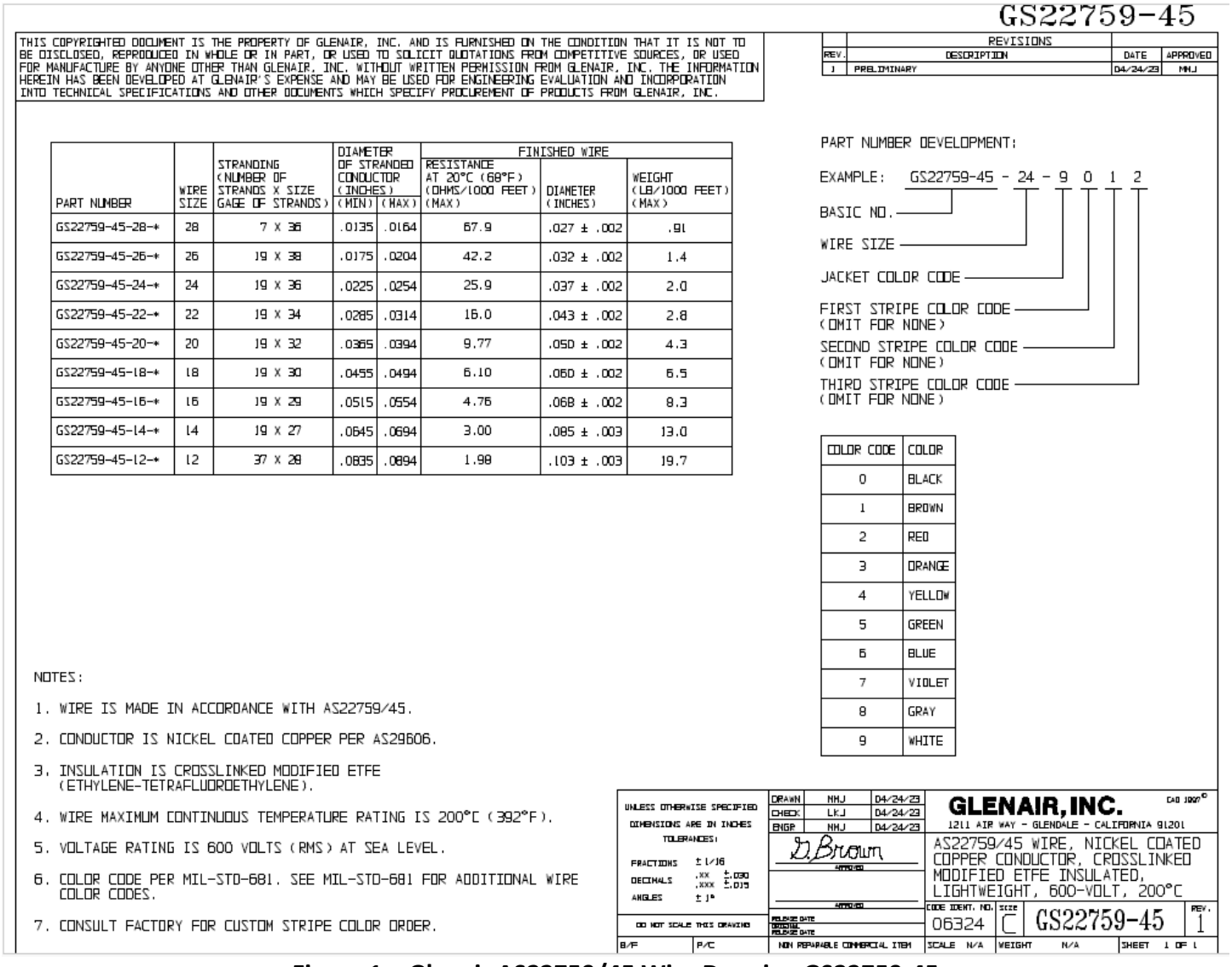
AS22759 Revision D	Wire, Electrical, Fluoropolymer-Insulated, Copper or Copper Alloy
AS4373 Revision F	Test Methods for Insulated Electric Wire
ASTM D3032 Revision 21A	Standard Test Methods for Hookup Wire Insulation
AS29606 Revision B	General Specification for Wire, Electrical, Stranded, Uninsulated Copper, Copper Alloy, or Aluminum, or Thermocouple Extension
AS5768 Revision C	General Specification for Tool, Stripper, Electrical Insulation
GS22759-45 Revision 3	Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE, Light Weight, Nickel-Coated Copper, 200°C, 600-Volt

3.0 Test Specimens

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

Table I

Part Number	Description
GS22759-45-16-9	Glenair AS22759/43 Wire, Electrical, Fluoropolymer-Insulated, Cross-linked Modified ETFE, Light Weight, Nickel-Coated Copper, 200°C, 600-Volt



GS22759-45

REV.	DESCRIPTION	DATE	APPROVED
J	PRELIMINARY	04/24/23	MHJ

PART NUMBER	WIRE SIZE	STRANDING (NUMBER OF STRANDS X SIZE GAGE OF STRANDS)	DIAMETER OF STRANDED CONDUCTOR (INCHES) (MIN)	(MAX)	FINISHED WIRE RESISTANCE AT 20°C (68°F) (OHMS/1000 FEET) (MAX)	DIAMETER (INCHES)	WEIGHT (LB/1000 FEET) (MAX)
GS22759-45-28-*	28	7 X 36	.0135	.0164	67.9	.027 ± .002	.91
GS22759-45-26-*	26	19 X 38	.0175	.0204	42.2	.032 ± .002	1.4
GS22759-45-24-*	24	19 X 36	.0225	.0254	25.9	.037 ± .002	2.0
GS22759-45-22-*	22	19 X 34	.0285	.0314	16.0	.043 ± .002	2.8
GS22759-45-20-*	20	19 X 32	.0365	.0394	9.77	.050 ± .002	4.3
GS22759-45-18-*	18	19 X 30	.0455	.0494	6.10	.060 ± .002	6.5
GS22759-45-16-*	16	19 X 29	.0515	.0554	4.76	.068 ± .002	8.3
GS22759-45-14-*	14	19 X 27	.0645	.0694	3.00	.085 ± .003	13.0
GS22759-45-12-*	12	37 X 28	.0835	.0894	1.98	.103 ± .003	19.7

PART NUMBER DEVELOPMENT:

EXAMPLE: GS22759-45 - 24 - 9 0 1 2

BASIC NO.

WIRE SIZE

JACKET COLOR CODE

FIRST STRIPE COLOR CODE (OMIT FOR NONE)

SECOND STRIPE COLOR CODE (OMIT FOR NONE)

THIRD STRIPE COLOR CODE (OMIT FOR NONE)

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 AS22759/45.
2. CONDUCTOR IS NICKEL COATED COPPER PER AS29606.
3. INSULATION IS CROSSLINKED MODIFIED ETFE (ETHYLENE-TETRAFLUOROETHYLENE).
4. WIRE MAXIMUM CONTINUOUS TEMPERATURE RATING IS 200°C (392°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°

DO NOT SCALE THIS DRAWING

DRAWN	MHJ	04/24/23
CHECK	LKJ	04/24/23
ENGR	MHJ	04/24/23

D. Brown

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1211 AIR WAY - GLENDALE - CALIFORNIA 91201

AS22759/45 WIRE, NICKEL COATED COPPER CONDUCTOR, CROSSLINKED MODIFIED ETFE INSULATED, LIGHTWEIGHT, 600-VOLT, 200°C

CODE IDENT. NO.	SIZE		REV.
06324	C	GS22759-45	1

B/P | P/C | NON PREFERABLE COMMERCIAL ITEM | SCALE N/A | WEIGHT N/A | SHEET 1 OF 1

Figure 1 – Glenair AS22759/45 Wire Drawing GS22759-45

4.0 Summary of Results

The test results are summarized in Table II.

Table II

Test	Specification	Test Requirements	Results	Pass/Fail
Insulated Conductor Tin Solderability	AS4373 Method 105	95%, min.	N/A	N/A
Insulated Conductor Geometric Characteristics (Diameter)	AS29606 AS22759/45	16 AWG: 0.0515-0.0554”	0.0533”	Pass
Insulated Conductor Elongation	AS29606 AS4373 Method 402	16 AWG: 10%, min.	15%	Pass
Insulation Construction (Material Type)	AS22759/45	Cross-linked Modified ETFE	Pass	Pass
Insulation Tensile Strength and Elongation	AS4373 Method 705	5000 psi tensile strength, 75% elongation, min.	8651 psi 243%	Pass
Short-Term Thermal Stability	AS4373 Method 811	7 hours at 300°C ± 3°C DWV 2500 VDC, 60 seconds	Pass	Pass
Insulation Blocking	AS4373 Method 808	24 hours at 230°C ± 3°C	Pass	Pass
Insulation Shrinkage	AS4373 Method 104	6 hours at 230°C ± 3°C 0.125” max. shrinkage	0.013”	Pass

Test	Specification	Test Requirements	Results	Pass/Fail
Wire Conductor Electrical Resistance	AS4373 Method 403	16 AWG: 4.76 Ω/1000 ft., max.	4.43 Ω/1000 ft	Pass
Wire Electrical Insulation Resistance	AS4373 Method 504	16 AWG: 5000 MΩ-1000 ft., min.	343,700 MΩ-1000 ft	Pass
Wire Electrical Surface Resistance	AS4373 Method 506	16 AWG: 500 MΩ-inches, min. at 500 VDC	Pass	Pass
Electrical Dielectric Resistance – Wet Dielectric Voltage	AS4373 Method 510	2500 V (RMS) at 60Hz, min.	Pass	Pass
Wire Diameter	AS4373 Method 901	16 AWG: 0.068 ± 0.002”	0.067”	Pass
Wire Weight	AS4373 Method 902	16 AWG: 8.3 lbs./1000 ft., max.	8.2 lbs./1000 ft	Pass
Wire Insulation Stripping	AS5768/1 AS5768/2	Insulation readily removable without damage to the conductor	Pass	Pass
Wire Insulation Concentricity and Wall Thickness	AS4373 Method 101	Concentricity: 70 %, min.	Pass	Pass
Wire Identification Printed Marking and Location	AS22759	Marking intervals of 6 to 60 inches	N/A	N/A

Test	Specification	Test Requirements	Results	Pass/Fail
Workmanship	AS22759	No cracks, splits, irregularities, or embedded foreign material	Pass	Pass
Wire Color Designators and Munsell Limits	EIA-359-A	Visual inspection against Munsell color chart	Pass	Pass
Wire Identification Mark, Stripe, and Band Durability	AS4373 Method 710	125 cycles (250 strokes) with a 500-gram weight	N/A	N/A
Wrap Back Bend Mechanical Resistance for Extruded Insulation	AS4373 Method 708	2 hours at 313°C ± 3°C No cracking or splitting	Pass	Pass
Insulation Low Temperature Mechanical Resistance/Cold Bend	AS4373 Method 702	4 hours at -65°C ± 3°C DWV 2500 V (rms) at 60 Hz	Pass	Pass
Insulation Thermal Shock Mechanical Resistance	AS4373 Method 805	-55°C ± 3°C to 200°C ± 3°C 0.060” max. shrinkage	Pass	Pass
Thermal Mechanical Resistance – Life Cycle	AS4373 Method 807	500 hours at 230°C ± 3°C DWV 2500 V (rms) at 60 Hz	Pass	Pass
Fluid Resistance – Immersion	AS4373 Method 601	Diameter increase 5% max. DWV 2500 V (rms) at 60 Hz	Pass	Pass
Humidity Resistance	AS4373 Method 603	5000 MΩ-1000 ft., min.	Pass	Pass

Test	Specification	Test Requirements	Results	Pass/Fail
Smoke Resistance	AS4373 Method 513	250°C ± 5°C No visible smoke	Pass	Pass
Flammability	AS4373 Method 801	Self-extinguishing flame within 3 seconds max. Flame travel 3” min.	Pass	Pass

5.0 Conclusion

Glenair’s GS22759-45 wire meets all performance requirements of AS22759. In some instances, the oven calibration was performed in accordance with ISO instead of ASTM Type II.