



# MARMON AEROSPACE & DEFENSE

680 HAYWARD STREET, MANGHESTER NH 03103

WWW.MARMON-AD.COM / 866.303.9473



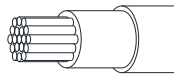
A MARMON WIRE & CABLE / BERKSHIRE HATHAWAY COMPANY

**Drawing Number**  
**AD50**

**Product Type**  
**Space-Grade**  
**Electrical Wire**



Light Weight



Normal Weight

**Conductor:**  
Coated Copper

**Insulation:**  
Cross-linked Modified Ethylene-  
Tetrafluoroethylene (XLPE)

## APPLICATIONS

Marmon's AD50 is a Space-Grade wire with excellent properties across the board. The AD50 wire uses a proprietary blend of irradiation cross-linked Ethylene-Tetrafluoroethylene Copolymer (XL-ETFE) along with advanced material processing to create a low off-gassing (also called Fluoride Evolution) wire. AD50 wire is manufactured to meet the requirements of AS22759/32-46 as well as the extra requirements herein.

## ELECTRICALS

Test	Test Method	Requirement
Conductor Resistance (DCR)	AS4373 Method 403	IAW AS29606
High Frequency Spark Test	AS4373 Method 505-1	5700 VRMS
Insulation Electrical Resistance (IR)	AS4373 Method 504	5000 MΩ/1000 ft. Min.
Electrical Surface Resistance	AS4373 Method 506	500 MΩ-inch Min.
Wet Dielectric Voltage	AS4373 Method 510	2500 VRMS at 60 Hz
Humidity Resistance	AS4373 Method 603	5000 MΩ/1000 ft. Min.

## PHYSICALS

Test	Test Method	TC	SC, NC, SA, NA
Fluoride Evolution	AS4373 Method 608	35 ppm Max.	
Total Mass Loss (TML)	ASTM E595	<1.0%	
Collected Volatile Condensable Materials (CVCM)	ASTM E595	<0.1%	
Low Temperature (Cold Bend)	AS4373 Method 702	4 hours at -65°C	
Accelerated Aging (Crosslink Proof)	AS4373 Method 811	7 hours at 300°C	
Insulation Blocking	AS4373 Method 808	200°C	230°C
Insulation Shrinkage	AS4373 Method 104	200°C, .125" Max.	230°C, .125" Max.
Insulation Tensile Strength	AS4373 Method 705	5000 PSI Min.	
Insulation Elongation	AS4373 Method 705	100% Min.	
Wicking	AS4373 Method 607	2.25" Max.	
Wrap Back Bend Resistance	AS4373 Method 708	2 hours at 200°C	2 hours at 313°C
Thermal Shock Mechanical Resistance	AS4373 Method 805	150°C, .060" Max.	200°C, .060" Max.
Low Term Aging (Life Cycle)	AS4373 Method 807	500 hours at 200°C	500 hours at 230°C
Fluid Resistance	AS4373 Method 601	5% Max. increase	
Smoke Resistance	AS4373 Method 513	200°C	250°C
Flame Resistance	AS4373 Method 801	3 seconds, 3" burn	

RoHS & Reach Compliant  
ISO9001 & AS9100C Certified

Drawing Number	AD50	Revision	6	11/20/2020	Made By	Kyle Coderre	Page 1 of 3
Changes:	Added in TML and CVCM tests			Approved By	James Filice		



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## PART NUMBERING SYSTEM

Specification	-	Type	-	Conductor AWG Size	Conductor Plating Type	-	Conductor Plating Thickness	-	Insulation Color	Stripe Color
AD50	/	LW	-	30	SC	-	40	-	9	

### Types

Type	Designation	Insulation Layers
Light Weight	LW	1
Normal Weight	NW	2

## CONDUCTOR PLATINGS

Letter Designation	Material & Coating Type	Specification	Temperature Rating	Plating Thicknesses
TC	Tin-Coated Copper	ASTM B33 & AS29606	-100°C to +150°C	20 or 30 μ-inches
SC	Silver-Coated Copper	ASTM B298 & AS29606	-100°C to +200°C	40 or 80 μ-inches
NC	Nickel-Coated Copper	ASTM B355 & AS29606	-100°C to +200°C	50 or 80 μ-inches
SA	Silver-Coated Copper-Alloy	ASTM B624 & AS29606	-100°C to +150°C	40 or 80 μ-inches
NA	Nickel-Coated Copper-Alloy	ASTM B624 & AS29606	-100°C to +150°C	50 or 80 μ-inches

## INSULATION AND STRIPE COLOR CODE

Color	Number Designation	Color	Number Designation
Black	0	Green	5
Brown	1	Blue	6
Red	2	Violet (Purple)	7
Orange	3	Gray (Slate)	8
Yellow	4	White	9

## MILSPEC CROSSES

Milspec	AD50
M22759/32	AD50/LW, Plating TC
M22759/33	AD50/LW, Plating SA
M22759/34	AD50/NW, Plating TC
M22759/35	AD50/NW, Plating SA
M22759/41	AD50/NW, Plating NC
M22759/42	AD50/NW, Plating NA
M22759/43	AD50/NW, Plating SC
M22759/44	AD50/LW, Plating SC
M22759/45	AD50/LW, Plating NC
M22759/46	AD50/LW, Plating NA



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## LIGHT WEIGHT PART NUMBERS

Part Number	AWG	Stranding	Conductor Diameter	Insulation Diameter	Weight (lbs / kft)
AD50/LW-30XX-##-*	30	7 X 38	.0120"	.024 ± .002"	.59
AD50/LW-28XX-##-*	28	7 X 36	.0145"	.027 ± .002"	.85
AD50/LW-26XX-##-*	26	19 X 38	.0185"	.032 ± .002"	1.3
AD50/LW-24XX-##-*	24	19 X 36	.0235"	.037 ± .002"	1.8
AD50/LW-22XX-##-*	22	19 X 34	.0295"	.043 ± .002"	2.8
AD50/LW-20XX-##-*	20	19 X 32	.0375"	.050 ± .002"	4.2
AD50/LW-18XX-##-*	18	19 X 30	.0470"	.060 ± .002"	6.3
AD50/LW-16XX-##-*	16	19 X 29	.0530"	.068 ± .002"	8.1
AD50/LW-14XX-##-*	14	19 X 27	.0665"	.085 ± .003"	12.7
AD50/LW-12XX-##-*	12	37 X 28	.0855"	.103 ± .003"	19.2

NOTE \*: To be replaced by desired Conductor Plating Letter Designation

NOTE XX: To be replaced by desired Insulation and Stripe Color Code

All values are nominal unless otherwise stated

## NORMAL WEIGHT PART NUMBERS

Part Number	AWG	Stranding	Conductor Diameter	Insulation Diameter	Weight (lbs / kft)
AD50/NW-26XX-##-*	26	19 X 38	.0185"	.040 ± .002"	1.7
AD50/NW-24XX-##-*	24	19 X 36	.0235"	.045 ± .002"	2.3
AD50/NW-22XX-##-*	22	19 X 34	.0295"	.050 ± .002"	3.1
AD50/NW-20XX-##-*	20	19 X 32	.0375"	.058 ± .002"	4.7
AD50/NW-18XX-##-*	18	19 X 30	.0470"	.070 ± .003"	7.0
AD50/NW-16XX-##-*	16	19 X 29	.0530"	.077 ± .003"	8.9
AD50/NW-14XX-##-*	14	19 X 27	.0665"	.094 ± .003"	14
AD50/NW-12XX-##-*	12	37 X 28	.0855"	.111 ± .003"	20
AD50/NW-10XX-##-*	10	37 X 26	.108"	.134 ± .004"	32
AD50/NW-8XX-##-*	8	133 X 29	.162"	.195 ± .008"	58
AD50/NW-6XX-##-*	6	133 X 27	.203"	.241 ± .010"	91
AD50/NW-4XX-##-*	4	133 X 25	.255"	.310 ± .010"	150

NOTE \*: To be replaced by desired Conductor Plating Letter Designation

NOTE XX: To be replaced by desired Insulation and Stripe Color Code

All values are nominal unless otherwise stated