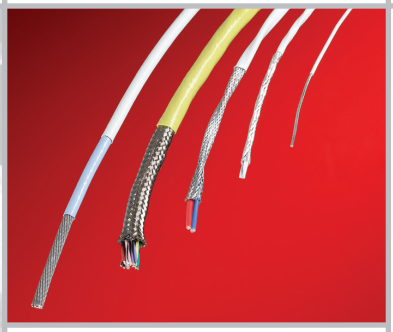
Aerospace Wire & Cable

JUDD WIRE INC.

Defines, Designs, and Delivers High Value Solutions for our Customers



Aerospace

Judd Wire's Aerospace wiring is currently used in a wide range of commercial and military airframes, avionics, satellites, missile guidance systems, Fly-By-Wire cables, in-flight communication and entertainment cables, and military electronics ground equipment.

Judd Wire is approved for installation in the world's largest transports built by the Boeing Commercial Airplane Group, and numerous other military and OEM programs.

Manufacturers of Superior Insulation Systems for Electrical Aerospace Wire & Cable

Judd Wire is an integrated designer, manufacturer and test facility for Aerospace wire and cable. We work to create a combination of design choices for our customers that allow them the best choice of materials and performance attributes for their unique applications.

Our products include both military and commercial airframe wiring, lightweight avionics wiring, data bus cables, non-halogenated jacketed cables for in-flight entertainment systems, Fly-By-Wire flight control cables, reduced diameter cables for satellites, commercial aircraft grade Fiber Optic cables, Filter Line wiring and custom cables for military ground equipment and missiles.

Designing for Excellence

Engineering expertise in the design of unique Aerospace products has made ***Judd Wire*** a leading supplier to the newest aircraft platforms being built today. Our engineers work in multi skilled teams to utilize the most effective choices among materials, designs, manufacturing processes and test verifications.

Product designs from simple discrete wire to complex cables carry with them the same involvement of engineering expertise and dedication to precise design elements.

Product engineers utilize an on-line design system to tie together customer specifications into our design efforts from the manufacturing process through the Quality Assurance documentation.

Give us the opportunity to enhance the design of your requirements.

Contents

Judd Wire Specification Approvals

Judd Wire is approved to both SAE AS 22759 (/32-/46) XLETFE and SAE AS 85485 (Filter Line) QPL specifications. We also manufacture to the corresponding NEMA WC 27500 cable requirements for related styles.

Judd Wire's OEM approvals include designs used at Boeing Commercial Airplane, Boeing Military, Raytheon, Lockheed Martin, Bombardier, Embraer, Sikorsky, Northrop Grumman, and Fokker.

These designs are used on commercial aircraft built throughout the world as well for the United States military.

Quality Assurance and Testing

Judd Wire is registered to ISO-9000 and AS9100. Our quality record allows customers to create a "ship-to-stock" program that saves them considerable time and money in the receiving and inspection of our product. ***Judd Wire*** has also achieved registration to the Automotive IS/TS1649 and Environmental ISO 14000 certifications.

Other companies may manufacture product for Aerospace use, however few can offer the complete laboratory and material test facilities that ***Judd Wire*** provides.

Among the specialized testing for airframe products that ***Judd Wire's*** laboratory routinely performs are Insulation and Conductor Flexure Endurance, Wet Arc Tracking Resistance, Dry Arc Tracking Resistance, Wire to Wire Abrasion, Circuit Breaker Overload testing, Shielding Effectiveness, Surface Transfer Impedance, and Dynamic Cut-Through.

Specialized material analysis testing is available as DSC or TGA measurements, hot modulus benchmarking, viscosity analysis, volatile particulate measurements and FT-IR examinations.

JUDD WIRE INC. QVL
QUALIFIED VENDOR LISTING

Through this program, both Judd Wire and its vendors guarantee to always provide the very best products backed by the very best quality assurance network.

Qualified Vendor Listing

In an effort to provide customers with the highest quality products through our distributors, ***Judd Wire*** has developed a Qualified Vendor Listing (QVL) program for its Military and Aerospace wire and cable distributors. To become a QVL distributor of ***Judd Wire***, vendors were audited to the standards outlined in ISO 9001:2000 and AS9100-B which are in accordance with AS9104 and AIR5359B, and certified to have met or exceeded all of the expectations within those standards. ***Judd Wire's*** QVL program provides customers with:

- A distribution source that utilizes accredited methods for record keeping, certification and traceability of all factory documentation
- A value added packaging system that complies with Aerospace regulatory agency requirements
- A visible and defined link between ***Judd Wire*** and the end customer

SuperComposite® **200**

Judd Wire's newest hybrid insulation system is the SuperComposite® 200, a combination of dual walls using an enhanced ultra thin layer of PTFE/Polyimide tape with an extruded XLETFE outer layer.

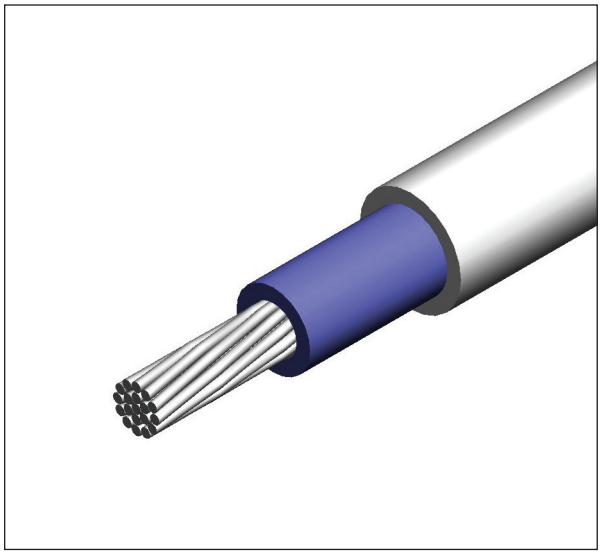
This robust and proven combination of materials produces a .006" dual wall product with performance properties that exceed every current design materials used in the Aerospace community today.

The design emphasis has been on using the strengths of each material to compliment and improve the overall performance of the insulation.

We believe that the mechanical performance for cut-through (at both room temperature and at elevated temperatures), wire to wire abrasion resistance, moisture resistance, resistance to arc tracking, and deformation all have been measured as equal to the best materials in use today.

This wire also exhibits superb contrast levels when marked with current laser processors and can be cut and stripped with all types of hand held and automated equipment.

We invite you to ask more about what ***Judd Wire*** sees as the natural progression to the next generation Aerospace wiring insulation system.



Judd Wire's SuperComposite® products offer:

- Truly edge-free outer insulation layer
- Extruded layer (no edges/seams)
- Improved laser contrast vs. tape
- Equivalent Wet Arc-Track Resistance
- Durable/Abrasion resistant outer layer
- Improved Dynamic Cut-Through Resistance
- 200˚C capability (260˚C version available)
- Improved strippability (insulation removal) vs. tape
- Equivalent forced Hydrolysis Resistance
- Potential for weight savings

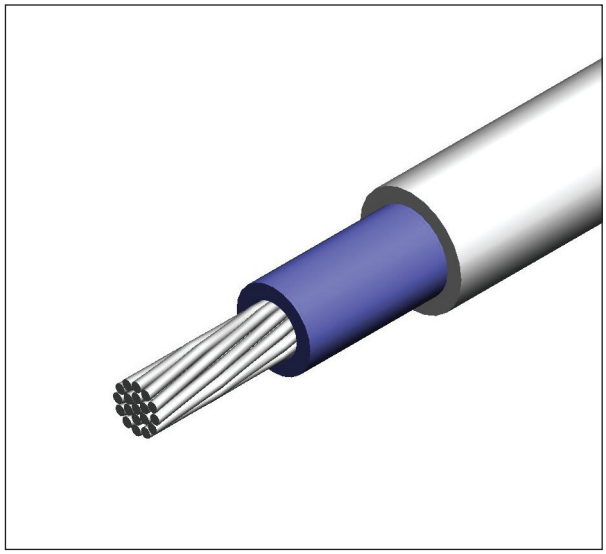
Please contact Judd Wire for complete test and data information.

JWXLT

JWXLT is an improved lightweight XLETFE insulations system with enhanced properties for airframe wiring applications.

Judd Wire is pleased to offer to the general aviation industry the same superior wires and cables which are currently used on the largest commercial aircraft in the world. JWXLT is used in commercial, regional aircraft, business jets and on aircraft developed for the United States Armed Forces.

The unique attributes of this insulation allow it to meet the requirements of the Military Specification SAE AS 22759 for crosslinked modified Ethylene Tetrafluoroethylene Copolymer (XLETFE) and the additional testing requirements imposed by the OEM standards used in these programs.



Design Enhancements of JWXLT

- Superior wire to wire abrasion resistance
  - Over 6 million average cycles
- Lower weights and diameters due to thinner dual wall insulations
  - 20% Thinner insulation layers than standard Mil Spec XLETFE
- Outstanding resistance to wire bundle damage due to arc tracking from overloaded circuits
  - Qualifies to industry standards for both wet and dry arc propagation
- Enhanced markability contrasts when processed by Excimer Lasers
  - Exceeds 60% contrast measurements
- Excellent results when tested for fusing characteristics in Circuit Breaker Overload Current Compatibility Test
- Improved flexure endurance for conductor and insulation
- Excellent outgassing measurements for Toxic Emissions and Smoke Density

Please contact Judd Wire for complete test and data information.

Fiber Optic Cables for Commercial Aircraft Applications

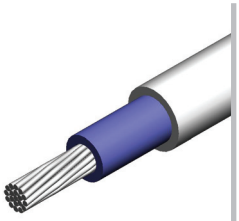
Judd Wire has developed a flexible, abrasion and crush resistant, temperature stable Fiber Optic cable that is made in compliance with ARINC standard 802. This cable is suitable for installation in both the pressurized and non pressurized cabin environments of all commercial aircraft.

Superior Performance and Strength of Support

- In-Flight Entertainment Systems
- Commercial Aircraft Cabin Data Collection
- Electronic Flight Bag (Downloadable Data)
- Military Systems

Please contact Judd Wire for complete test and data information.

Test Description	Specification Reference	Requirement(s)		Product Test Results
Diameter	ARINC 802 Table 2-1	1.80mm ± 0.16mm		1.90mm
Cable Weight	ARINC 802 Section 2.1.1	Lowest Weight Possible		4.61Kg/Km
Cable Flexibility	ARINC 802 Section 2.2.3.1 Frictional torque applied 20% of max	Angle: 90˚ Angle: 180˚	0.20 dN x m (min) 0.85 dN x m (max) 0.20 dN x m (min) 1.13 dN x m (max)	0.22 dN x m 0.27 dN x m
Flexure Endurance	ARINC 802 Section 2.2.3.2 TIA/EIA - 455-104A	Change in Transmittance	10,000 cycles ± 0.25 dB (max)	0.11 dB
Cable Bend Radius	ARINC 802 Section 2.2.3.4	Change in Transmittance	± 0.25 dB (max)	0.00 change (negligible)
Impact Resistance	ARINC 802 Section 2.2.3.7 TIA/EIA - 455-25C	No Cracking, No Fiber Breakage	20 drops	147 drops No Fiber Breakage
Jacket Shrinkage	ARINC 802 Section 2.2.3.8 TIA/EIA - 455-3A Test Condition C-3	Change in Strip Length	1.3% (45mm) (max)	4.57mm (No added change in jacket shrinkage after 23 cycles)
Cable to Cable Abrasion	ARINC 802 Section 2.2.3.11	300,000 cycles (min)	No exposure of any layer	Greater than 50,000,000 cycles
Fiber movement under compression	ARINC 802 Section 2.2.3.13	Change in Transmittance	± 0.10 dB (max)	0.03 dB
Smoke and Toxicity	ARINC 802 Section 2.2.4.7 Boeing Specifications: BSS 7238 BSS 7239	Smoke and Toxicity limits specified		Meets Smoke limits Meets Toxicity limits
Low and High Temperature Cable Bend	ARINC 802 Section 2.2.5.4 TIA/EIA - 455-37A	Change in Transmittance	± 0.25 dB (max) No cracking (10x magnification)	0.04 dB No cracks (10x magnification)
Temperature Life	ARINC 802 Section 2.2.5.5 TIA/EIA - 455-4C	500hrs at 125˚C (275˚F) Change in Transmittance	3.0 dB/Km (max) at 1300µm 6.0 dB/Km (max) at 850µm	1.15 dB/Km 3.58 dB/Km



Hybrid Conductors

Judd Wire offers a number of design options for weight reductions and performance enhancements.

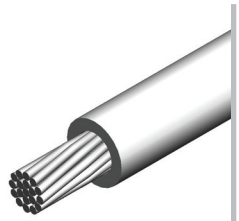
One of those alternatives is the development of an insulated hybrid conductor, utilizing both aluminum and copper stranding. Customers requiring a balance of properties can take advantage of weight savings afforded by the aluminum while keeping the conductivity and mechanical strength properties of the copper.

Designs to date have used 1350 EC aluminum as the center bunch with plated copper strands forming the outer layer.

Full design (including calculated weight savings) and test performance data is available upon request.

Aluminum Hybrid Conductors

AWG	Nominal Diameter (inches)	Plated Copper- Insulated Values DCR (max.)	Weight LBS/KFT (max.)	Plated Hybrid- Insulated Values DCR (max.)	Weight LBS/KFT (max.)	Weight Savings	DCR Rise
14 19/27	.218	3.000	11.3	3.470	8.3	27%	16%
12 37/28	.218	1.980	17.2	2.440	11.1	36%	23%
10 37/26	.107	1.240	27.9	1.530	17.9	36%	23%
8 133/29	.218	.694	70.8	.803	51.7	27%	16%
6 133/27	.267	.436	107.0	.504	78.1	27%	16%
4 133/25	.325	.275	170.0	.318	121.3	29%	16%
2 665/30	.407	.177	261.0	.205	195.0	25%	16%
1 817/30	.471	.149	332.0	.167	245.3	26%	12%
0 1045/30	.504	.113	429.0	.131	296.2	31%	16%
00 1330/30	.553	.089	530.0	.103	375.0	29%	16%
000 1665/30	.630	.071	634.0	.088	403.3	36%	24%

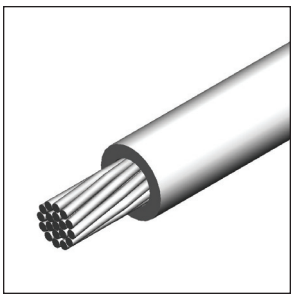


Low Voltage – Lightweight **XLETFE**
450 Volts - 150°C

Judd Wire offers a unique reduced wall (.004") avionics wire for enclosed panels and systems that require the smallest wire possible for unique applications. Although not listed under a specific military specification, this wire is routinely used in satellite systems, optical systems and other miniaturized control devices.

Low Voltage Lightweight XLETFE

Judd Part No.	Wire AWG/Strand	Resistance at 20˚C OHMS 1000′ Max.	Maximum Diameter Inches	Maximum Diameter Millimeters	Maximum Weight Pounds/ 1000′	Maximum Weight Kilograms/ Kilometers
H4503302**01	30 7/38	156.00	.021	.534	.54	.80
H4503282**01	28 7/36	74.40	.024	.610	.81	1.21
H4503264**01	26 19/38	44.80	.029	.737	1.23	1.83
H4503244**01	24 19/36	28.40	.034	.864	1.79	2.67
H4503224**01	22 19/34	15.10	.041	1.042	2.70	4.02
H4503204**01	20 19/32	9.19	.051	1.300	4.27	6.36
H4503184**01	18 19/30	5.79	.061	1.550	6.56	9.76
H4503164**01	16 19/29	4.52	.068	1.730	8.33	12.40
H4503144**01	14 19/27	2.88	.083	2.083	12.80	19.05
H4503126**01	12 37/28	1.90	.103	2.620	19.71	29.33

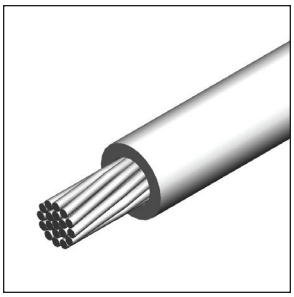


SAE-AS-22759/32

Tinned Copper Conductor

150°C 600 Volts
Single Insulation of
Crosslinked Ethylene-Tetrafluoroethylene (ETFE)

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter		Maximum Weight	
				Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
H3832302-*	M22759/32-30-*	30 7/38	108.4	.024	.610	.66	.98
H3832282-*	M22759/32-28-*	28 7/36	68.6	.027	.686	.91	1.35
H3832264-*	M22759/32-26-*	26 19/38	41.3	.032	.813	1.4	2.08
H3832244-*	M22759/32-24-*	24 19/36	26.2	.037	.940	2.0	2.98
H3832224-*	M22759/32-22-*	22 19/34	16.2	.043	1.092	2.8	4.17
H3832204-*	M22759/32-20-*	20 19/32	9.88	.050	1.270	4.3	6.40
H3832184-*	M22759/32-18-*	18 19/30	6.23	.060	1.524	6.5	9.67
H3832164-*	M22759/32-16-*	16 19/29	4.81	.068	1.727	8.3	12.35
H3832144-*	M22759/32-14-*	14 19/27	3.06	.085	2.159	13.0	19.35
H3832126-*	M22759/32-12-*	12 37/28	2.02	.103	2.616	19.7	29.32



SAE-AS-22759/33

Silver Coated High Strength Copper Alloy Conductor

200°C 600 Volts
Single Insulation of
Crosslinked Ethylene-Tetrafluoroethylene (ETFE)

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter		Maximum Weight	
				Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
H3833302-*	M22759/33-30-*	30 7/38	117.4	.024	.610	.66	.98
H3833282-*	M22759/33-28-*	28 7/36	74.4	.027	.686	.91	1.35
H3833264-*	M22759/33-26-*	26 19/38	44.8	.032	.813	1.4	2.08
H3833244-*	M22759/33-24-*	24 19/36	28.4	.037	.940	2.0	2.98
H3833224-*	M22759/33-22-*	22 19/34	17.5	.043	1.092	2.9	4.32
H3833204-*	M22759/33-20-*	20 19/32	10.7	.050	1.270	4.4	6.55

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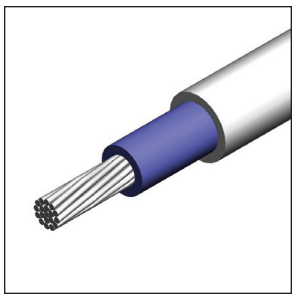
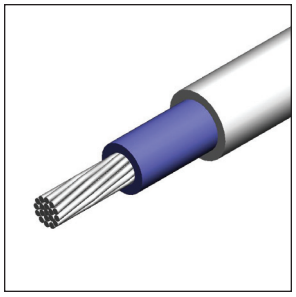


SAE-AS-22759/34

Tinned Copper Conductor

150°C 600 Volts
Dual Insulation of
Crosslinked Ethylene-Tetrafluoroethylene (ETFE)

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter Inches	Nominal Diameter Millimeters	Maximum Weight Pounds/ 1000′	Maximum Weight Kilograms/ Kilometers
H3834244-*	M22759/34-24-*	24 19/36	26.20	.045	1.143	2.3	3.42
H3834224-*	M22759/34-22-*	22 19/34	16.20	.050	1.270	3.2	4.76
H3834204-*	M22759/34-20-*	20 19/32	9.88	.058	1.473	4.7	6.99
H3834184-*	M22759/34-18-*	18 19/30	6.23	.070	1.778	7.2	10.71
H3834164-*	M22759/34-16-*	16 19/29	4.81	.077	1.956	9.0	13.39
H3834144-*	M22759/34-14-*	14 19/27	3.06	.094	2.388	13.8	20.54
H3834126-*	M22759/34-12-*	12 37/28	2.02	.111	2.819	20.5	30.51
H3834106-*	M22759/34-10-*	10 37/26	1.26	.134	3.404	32.4	48.21
H3834088-*	M22759/34-8-*	8 133/29	.701	.195	4.953	60.3	89.73
H3834068-*	M22759/34-6-*	6 133/27	.445	.241	6.121	94.5	140.63
H3834048-*	M22759/34-4-*	4 133/25	.280	.310	7.874	150.0	223.22
H3834029-*	M22759/34-2-*	2 665/30	.183	.405	10.287	239.0	355.68
H3834019-*	M22759/34-1-*	1 817/30	.149	.445	11.303	290.0	431.57
H3834109-*	M22759/34-01*	1/0 1045/30	.116	.485	12.319	377.0	561.05
H3834209-*	M22759/34-02*	2/0 1330/30	.091	.545	13.843	487.0	724.75



SAE-AS-22759/35

Silver Coated High Strength Copper Alloy Conductor

200°C 600 Volts
Dual Insulation of
Crosslinked Ethylene-Tetrafluoroethylene (ETFE)

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter Inches	Nominal Diameter Millimeters	Maximum Weight Pounds/ 1000′	Maximum Weight Kilograms/ Kilometers
H3835264-*	M22759/35-26-*	26 19/38	44.8	.040	1.016	1.7	2.53
H3835244-*	M22759/35-24-*	24 19/36	28.4	.045	1.143	2.3	3.42
H3835224-*	M22759/35-22-*	22 19/34	17.5	.050	1.270	3.3	4.91
H3835204-*	M22759/35-20-*	20 19/32	10.7	.058	1.473	4.8	7.14

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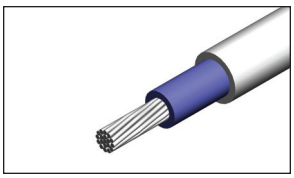


SAE-AS-22759/41 *Nickel Coated Copper Conductor*

200°C 600 Volts
Dual Insulation of
Crosslinked Ethylene-Tetrafluoroethylene (ETFE)

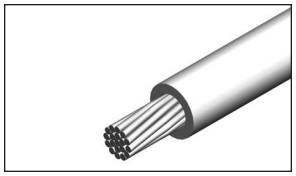
Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter Inches	Nominal Diameter Millimeters	Maximum Weight Pounds/ 1000′	Maximum Weight Kilograms/ Kilometers
H3841264-*	M22759/41-26-*	26 19/38	42.2	.040	1.016	1.7	2.53
H3841244-*	M22759/41-24-*	24 19/36	25.9	.045	1.143	2.3	3.42
H3841224-*	M22759/41-22-*	22 19/34	16.0	.050	1.270	3.2	4.76
H3841204-*	M22759/41-20-*	20 19/32	9.77	.058	1.473	4.7	6.99
H3841184-*	M22759/41-18-*	18 19/30	6.10	.070	1.778	7.2	10.71
H3841164-*	M22759/41-16-*	16 19/29	4.76	.077	1.956	9.0	13.39
H3841144-*	M22759/41-14-*	14 19/27	3.00	.094	2.388	13.8	20.54
H3841126-*	M22759/41-12-*	12 37/28	1.98	.111	2.819	20.5	30.51
H3841106-*	M22759/41-10-*	10 37/26	1.24	.134	3.404	32.4	48.21
H3841088-*	M22759/41-8-*	8 133/29	.694	.195	4.953	64.2	95.54
H3841068-*	M22759/41-6-*	6 133/27	.436	.241	6.121	96.8	144.05
H3841048-*	M22759/41-4-*	4 133/25	.275	.310	7.874	163.0	242.56
H3841029-*	M22759/41-2-*	2 665/30	.177	.405	10.287	246.0	366.09
H3841019-*	M22759/41-1-*	1 817/30	.144	.445	11.303	314.0	467.29
H3841109-*	M22759/41-01*	1/0 1045/30	.113	.485	12.319	421.0	626.53
H3841209-*	M22759/41-02*	2/0 1330/30	.089	.545	13.843	518.0	770.88

SAE-AS-22759/42 *Nickel Coated High Strength Copper Conductor*

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter Inches	Nominal Diameter Millimeters	Maximum Weight Pounds/ 1000′	Maximum Weight Kilograms/ Kilometers
H3842264-*	M22759/42-26-*	26 19/38	49.4	.040	1.016	1.7	2.53
H3842244-*	M22759/42-24-*	24 19/36	30.1	.045	1.143	2.3	3.42
H3842224-*	M22759/42-22-*	22 19/34	18.6	.050	1.270	3.3	4.91
H3842204-*	M22759/42-20-*	20 19/32	11.4	.058	1.473	4.8	7.14

SAE-AS-22759/43 *Silver Coated Copper Conductor*

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter Inches	Nominal Diameter Millimeters	Maximum Weight Pounds/ 1000′	Maximum Weight Kilograms/ Kilometers
H3843264-*	M22759/43-26-*	26 19/38	38.4	.040	1.016	1.7	2.53
H3843244-*	M22759/43-24-*	24 19/36	24.3	.045	1.143	2.3	3.42
H3843224-*	M22759/43-22-*	22 19/34	15.1	.050	1.270	3.2	4.76
H3843204-*	M22759/43-20-*	20 19/32	9.19	.058	1.473	4.7	6.99
H3843184-*	M22759/43-18-*	18 19/30	5.79	.070	1.778	7.2	10.71
H3843164-*	M22759/43-16-*	16 19/29	4.52	.077	1.956	9.0	13.39
H3843144-*	M22759/43-14-*	14 19/27	2.88	.094	2.388	13.8	20.54
H3843126-*	M22759/43-12-*	12 37/28	1.90	.111	2.819	20.5	30.51
H3843106-*	M22759/43-10-*	10 37/26	1.19	.134	3.404	32.4	48.21
H3843088-*	M22759/43-8-*	8 133/29	.658	.195	4.953	61.9	92.11
H3843068-*	M22759/43-6-*	6 133/27	.418	.241	6.121	94.5	140.63
H3843048-*	M22759/43-4-*	4 133/25	.264	.310	7.874	158.0	235.12
H3843029-*	M22759/43-2-*	2 665/30	.170	.405	10.287	239.0	355.68
H3843019-*	M22759/43-1-*	1 817/30	.139	.445	11.303	305.0	453.90
H3843109-*	M22759/43-01*	1/0 1045/30	.108	.485	12.319	385.0	572.95
H3843209-*	M22759/43-02*	2/0 1330/30	.085	.545	13.843	487.0	724.75



SAE-AS-22759/44 *Silver Coated Copper Conductor*

200°C 600 Volts
Single Insulation of
Crosslinked Ethylene-Tetrafluoroethylene (ETFE)

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter Inches	Nominal Diameter Millimeters	Maximum Weight Pounds/ 1000′	Maximum Weight Kilograms/ Kilometers
H3844282-*	M22759/44-28-*	28 7/36	63.8	.027	.686	.91	1.35
H3844264-*	M22759/44-26-*	26 19/38	38.4	.032	.813	1.4	2.08
H3844244-*	M22759/44-24-*	24 19/36	24.3	.037	.940	2.0	2.98
H3844224-*	M22759/44-22-*	22 19/34	15.1	.043	1.092	2.8	4.17
H3844204-*	M22759/44-20-*	20 19/32	9.19	.050	1.270	4.3	6.40
H3844184-*	M22759/44-18-*	18 19/30	5.79	.060	1.524	6.5	9.67
H3844164-*	M22759/44-16-*	16 19/29	4.52	.068	1.727	8.3	12.35
H3844144-*	M22759/44-14-*	14 19/27	2.88	.085	2.159	13.0	19.35
H3844126-*	M22759/44-12-*	12 37/28	1.90	.103	2.616	19.7	29.32

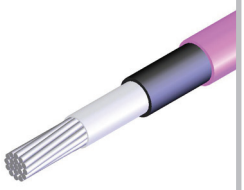
SAE-AS-22759/45 *Nickel Coated Copper Conductor*

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter Inches	Nominal Diameter Millimeters	Maximum Weight Pounds/ 1000′	Maximum Weight Kilograms/ Kilometers
H3845282-*	M22759/45-28-*	28 7/36	67.9	.027	.686	.91	1.35
H3845264-*	M22759/45-26-*	26 19/38	42.2	.032	.813	1.4	2.08
H3845244-*	M22759/45-24-*	24 19/36	25.9	.037	.940	2.0	2.98
H3845224-*	M22759/45-22-*	22 19/34	16.0	.043	1.092	2.8	4.17
H3845204-*	M22759/45-20-*	20 19/32	9.77	.050	1.270	4.3	6.40
H3845184-*	M22759/45-18-*	18 19/30	6.10	.060	1.524	6.5	9.67
H3845164-*	M22759/45-16-*	16 19/29	4.76	.068	1.727	8.3	12.35
H3845144-*	M22759/45-14-*	14 19/27	3.00	.085	2.159	13.0	19.35
H3845126-*	M22759/45-12-*	12 37/28	1.98	.103	2.616	19.7	29.32

SAE-AS-22759/46 *Nickel Coated High Strength Copper Alloy Conductor*

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter Inches	Nominal Diameter Millimeters	Maximum Weight Pounds/ 1000′	Maximum Weight Kilograms/ Kilometers
H3846282-*	M22759/46-28-*	28 7/36	79.0	.027	.686	.91	1.35
H3846264-*	M22759/46-26-*	26 19/38	49.4	.032	.813	1.4	2.08
H3846244-*	M22759/46-24-*	24 19/36	30.1	.037	.940	2.0	2.98
H3846224-*	M22759/46-22-*	22 19/34	18.6	.043	1.092	2.9	4.32
H3846204-*	M22759/46-20-*	20 19/32	11.4	.050	1.270	4.4	6.55

**Replace the asterisks with numeric color code designations*



SAE-AS-85485 – Filter Line

"This specification covers the requirements for radio frequency absorptive component wires and finished cables which function electrically as distributed low-pass filters."

Judd Wire's Filter Line products offer a flexible alternative for traditionally metal shielded products. The reduced size, weight and increased flexibility can be critical in applications were those performance requirements are paramount.

Filter Line products offer excellent design solutions in areas where power and signal wires run in close proximity, or in areas where space and weight limitations restrict the use of metallic braids.

These filtered layer wires are used today in numerous environments including helicopter harnesses, satellite systems and other secure electrical communication networks.

SAE-AS-85485/9 *Tinned Coated Copper Conductor*

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter		Maximum Weight	
				Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
H9009224-*	M85485/9-22-*	22 19/34	16.20	.051	1.30	4.0	6.0
H9009204-*	M85485/9-20-*	20 19/32	9.88	.059	1.50	5.8	8.6
H9009184-*	M85485/9-18-*	18 19/30	6.23	.070	1.78	8.7	13.0
H9009164-*	M85485/9-16-*	16 19/29	4.81	.078	1.98	11.2	16.7
H9009144-*	M85485/9-14-*	14 19/27	3.06	.095	2.41	16.1	24.0
H9009126-*	M85485/9-12-*	12 37/28	2.02	.112	2.84	24.0	35.7
H9009106-*	M85485/9-10-*	10 37/26	1.26	.136	3.45	37.0	55.1

SAE-AS-85485/10 *Silver Coated High Strength Copper Alloy Conductor*

Judd Part No.	Military Part No.	Wire AWG/Strand	Resistance at 20°C OHMS 1000′ Max.	Nominal Diameter		Maximum Weight	
				Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
H9010244*	M85785/10-24-*	24 19/36	28.40	.045	1.14	3.0	4.5

SAE-AS-85485/11 *M85485/9 Components Twisted, No Shield, No Jacket:* ***"T" Designation***

Judd Part No.	Military Part No.	Number of Components	Nominal Diameter		Maximum Weight	
			Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
M9002222*	M85485/11-22T2*	2	.102	2.59	8.2	12.2
M9002224*	M85485/11-20T2*	2	.118	3.00	11.8	17.6
M9003222*	M85485/11-22T3*	3	.110	2.79	12.2	18.2
M9003224*	M85485/11-20T3*	3	.127	3.23	17.7	26.3

SAE-AS-85485/11 *M85485/10 Components Twisted, No Shield, No Jacket: **"M" Designation***

Judd Part No.	Military Part No.	Number of Components	Nominal Diameter		Maximum Weight	
			Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
M9002268*	M85485/11-24M2*	2	.090	2.29	6.1	9.1
M9003268*	M85485/11-24M3*	3	.097	2.46	9.2	13.7

SAE-AS-85485/12 *M85485/9 Component, Tin Coated Copper Shield, Jacketed: **"T" Designation***

Judd Part No.	Military Part No.	Number of Components	Nominal Diameter		Maximum Weight	
			Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
C9001302*	M85485/12-22T1*	1	.083	2.11	8.8	13.1
C9001304*	M85485/12-20T1*	1	.091	2.31	11.2	16.7
C9001308*	M85485/12-16T1*	1	.110	2.79	18.0	26.8

SAE-AS-85485/12 *M85485/9 Components Twisted, Tin Coated Copper Shield, Jacketed: **"T" Designation***

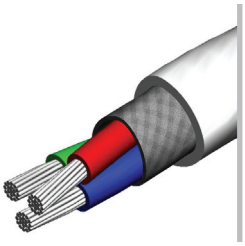
Judd Part No.	Military Part No.	Number of Components	Nominal Diameter		Maximum Weight	
			Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
M9002302*	M85485/12-22T2*	2	.134	3.40	16.0	23.8
M9002304*	M85485/12-20T2*	2	.150	3.81	20.5	30.5
M9002308*	M85485/12-16T2*	2	.188	4.78	34.0	50.6
M9003302*	M85485/12-22T3*	3	.142	3.61	20.9	31.1
M9003304*	M85485/12-20T3*	3	.159	4.04	27.6	41.1
M9003308*	M85485/12-16T3*	3	.201	5.11	47.0	69.9

SAE-AS-85485/12 *M85485/10 Component, Silver Coated High Strength Copper Alloy Shield, Jacketed: **"M" Designation***

Judd Part No.	Military Part No.	Number of Components	Nominal Diameter		Maximum Weight	
			Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
C9001348*	M85485/12-24M1*	1	.077	1.96	7.3	10.9

SAE-AS-85485/12 *M85485/10 Components Twisted, Silver Coated High Strength Copper Alloy Shield, Jacketed: **"M" Designation***

Judd Part No.	Military Part No.	Number of Components	Nominal Diameter		Maximum Weight	
			Inches	Millimeters	Pounds/ 1000′	Kilograms/ Kilometers
M9002348*	M85485/12-24M2*	2	.122	3.10	13.0	19.3
M9003348*	M85485/12-24M3*	3	.129	3.28	17.0	25.3



NEMA WC 27500

All NEMA WC 27500 cables are designated by a seven digit code that includes the exact construction of each cable.
The tables used in this brochure represent only some of the material and design choices available. These designs are those used most often with ***Judd Wire*** produced materials. You must consult the actual cable document for full design and performance requirement information.

M27500	–	22	SB	2	T	23
1	2	3	4	5	6	7

Example: seven digit code

1 Military Specification 27500 is used to designate NEMA WC 27500

2 Shield Coverage and Color Identification- a slash followed by a dash (-) or letter code indicates both shielding coverage and the method of color identification of primary core insulation as detailed in ***Table A.*** The example (left) indicates 85% and white primaries with colored stripes.

3 Conductor Size- This position identifies the wire AWG. Judd Wire can manufacture cables using AWG's of 30-2/0, depending on basic wire specification.

4 Basic Wire Specification- The component wire are identified by a two letter code. Cables utilizing Judd Wire's components are detailed in ***Table B.***

5 Number of Conductors- 27500 currently specifies from 1 to 15 conductors for shielded and jacketed cables, and from 2 to 15 for unshielded unjacketed or unshielded jacketed cables.

6 Shield- The specific shield style and material are designated by a single letter code. Detailed in ***Table C.***

7 Jacket- Cable jacketing materials are specified with a two digit code. Detailed in ***Table D.***

Table A
Identification Codes

Identification method of cable (within 85% shield coverage)	Optional identification method (with 90% shield coverage)	Statement taken from NEMA WC 27500	Judd Wire description of the requirement from NEMA WC 27500
-	C	Preferred identification method using table III A	All wires are colored white with spiral stripes for identification.
F	H	Preferred identification method using table III B	All wires are colored white with spiral stripes for identification, but different stripe color sequence is used.
A	D	Optional identification method A, Table III A	All solid colors are used instead of white striped wires.
G	J	Optional identification method A, Table III B	All solid colors are used instead of white striped wires, but a different color sequence is used.
K	M	Optional identification method C	All wires are the same solid color determined by the Table to denote the AWG. Numbers are added for individual conductor identification.
L	N	Optional identification method D	All wires are white and numbers are added for individual conductor identification.

Table B
Letter Code Base Description

Code	Base Specification	Description	Wire AWG
SB	SAE-AS-22759/32	Single Insulation, Tin Coated Copper	30-12
SC	SAE-AS-22759/33	Single Insulation, Silver Coated High Strength Copper Alloy	30-20
SD	SAE-AS-22759/34	Dual Insulation, Tin Coated Copper	24-2/O
SE	SAE-AS-22759/35	Dual Insulation, Silver Coated High Strength Copper Alloy	26-20
SM	SAE-AS-22759/41	Dual Insulation, Nickel Coated Copper	26-2/O
SN	SAE-AS-22759/42	Dual Insulation, Nickel Coated High Strength Copper Alloy	26-20
SP	SAE-AS-22759/43	Dual Insulation, Silver Coated Copper	26-2/O
SR	SAE-AS-22759/44	Single Insulation, Silver Coated Copper	28-12
SS	SAE-AS-22759/45	Single Insulation, Nickel Coated Copper	28-12
ST	SAE-AS-22759/46	Single Insulation, Nickel Coated High Strength Copper Alloy	28-20

Table C
Shield Letter Code

Single Shield	Double Shield	Description
U	-	No Shield
T	V	Round, Tin Coated Copper
S	W	Round, Silver Coated Copper
N	Y	Round, Nickel Coated Copper
M	K	Round, Silver Coated High Strength Copper Alloy
P	L	Round, Nickel Coated High Strength Copper Alloy
G	A	Flat, Silver Coated Copper
H	B	Flat, Silver Coated High Strength Copper Alloy
*	#	Flat, Nickel Coated Copper
J	D	Flat, Tin Coated Copper
E	X	Flat, Nickel Coated High Strength Copper Alloy

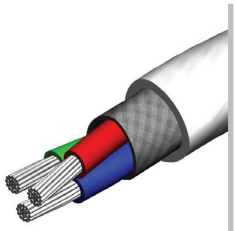
Table D
Shield Letter Code

Single Jacket	Double Jacket	Description	Temp. Rating
00	00	No Jacket	-
09	59	Extruded white fluorinated ethylene propylene (FEP)	260˚C (500˚F)
14	64	Extruded white, Ethylene-tetrafluoroethylene Copolymer (ETFE)	150˚C (302˚F)
23	73	White, Crosslinked, extruded, modified, Ethylene Tetrafluoroethylene Copolymer (XLETFE)	200˚C (392˚F)

Custom Designed Aerospace Wires & Cables

Judd Wire builds hundreds of wire and cable designs that could not be included in a single brochure. Those designs use all of the required testing and manufacturing elements of our obligations to the Aerospace industry.

We invite you to ask us about recommending a unique design for your application, or working with you to create a design that can match your specific requirements.



Custom Manufactured Cables

Judd Wire manufactures a wide array of custom designed cables for unique Aerospace applications requiring very specific matching of material and electrical performance. ***Judd Wire*** offers a wide range of material and design combinations to create cost-effective solutions in these fields:

- ***Data Bus Cables- Judd Wire*** has OEM approvals for numerous cables designed for multiplexing requirements of the data bus architecture of Mil-STD-1553.
- ***In-Flight Entertainment Systems- Judd Wire*** cabling systems are used on the largest and most modern commercial aircraft in the world and have been approved by the leading manufacturers of in-flight video delivery equipment.
- ***Fly-By-Wire Cables-*** These cables combine the electrical integrity and performance required by this flight critical system combined with a very flexible and tough insulation system to withstand the rigors of their physical environment.

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Judd Wire's two modern facilities are part of the Sumitomo Electric Industries (SEI) worldwide family of companies. With over 300,000 square feet of production space, and state-of-the-art equipment, Judd Wire provides irradiation cross-linking processes on both coasts, supporting the product diversity our customers require.

JUDD WIRE INC.

Defines, Designs, and Delivers High Value Solutions for our Customers

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