

**1. CONDUCTOR**

Material: Tin Plated Copper  
 Construction: See Table 1  
 Diameter: See Table 1

**2. INSULATION**

Material  
 Layer 1: Irradiation Crosslinked Polyolefin  
 Layer 2: Irradiation Crosslinked PVDF  
 Wall thickness  
 Layer 1: See Table 1  
 Layer 2: 0.003" nom  
 Diameter: See Table 1  
 Color: Customer Specified  
 Marking: JUDD WIRE FLEXRAD 44 1/C #XX  
 AWG ZZ/ZZ 150°C 600V (YYYY)

XX – Denotes AWG Size  
 ZZ/ZZ – Denotes Conductor Standing  
 YYYY – Denotes Year of Manufacture

**3. PHYSICAL CHARACTERISTICS**

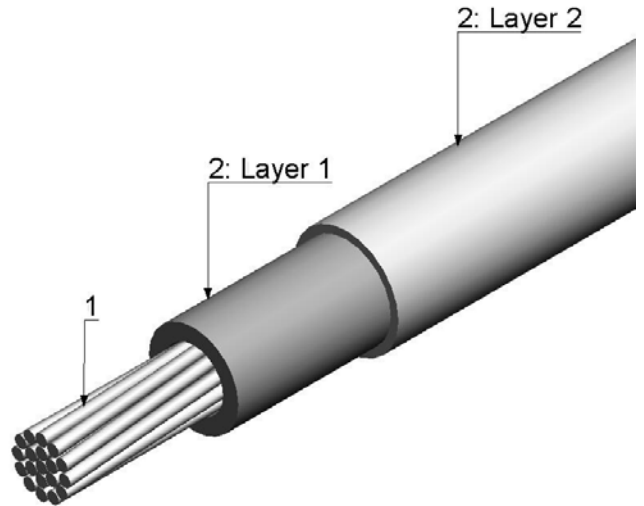
Temperature rating: 150°C  
 Voltage rating: 600V  
 Weight: See Table 1

**4. PERFORMANCE PROPERTIES – AS81044/12**

**Mechanical**  
 Elongation 150%, min  
 Tensile Strength 2500 psi, min  
 Concentricity 70%, min  
 Wicking 2.25", max  
 Bend Test  
 See Table 2 for Mandrel Requirements  
 Print Durability 125 Cycles, 500g  
 Mandrel Wrap Test  
 See Table 2 for Mandrel Requirements  
 No Cracks, Pass Wet Dielectric Test

**Electrical**  
 Impulse Dielectric Test 6.0/8.0 kV<sub>ac</sub>  
 Wet Dielectric Test (5 hrs @ 25°C)  
 5% NaCl Solution, 2500 V, 5 min  
 Insulation Resistance 5000 MΩ/kft, min  
 Direct Current Resistance @ 20°C See Table 1  
 Surface Resistance 500 MΩ·in, Initial and Final Readings, min  
 Spark Test 1500 V

**Thermal**  
 Shrinkage (6 hrs @ 300°C) 0.125 in, max  
 Life Cycle (168 hrs @ 200°C)  
 No Cracks, No Conductor Pitting



**PERFORMANCE PROPERTIES (Con't)**

Accelerated Aging I (6 hrs @ 300°C)  
 No Cracks, No Conductor Pitting  
 Pass Wet Dielectric Test  
 Accelerated Aging II (6 hrs @ 225°C)  
 Print shall Remain Legible  
 Cold Bend (4 hrs @ -65°C)  
 See Table 2 for Mandrel Requirements  
 No Cracks, Pass Wet Dielectric Test  
 Thermal Shock Resistance  
 High Temperature 30 min @ 150°C  
 Low Temperature 30 min @ -55°C  
 Number of Cycles 4  
 Change in Measurement 0.060", max  
 Humidity Resistance 5000 MΩ/kft, min  
 Blocking (24 hrs @ 225°C)  
 Adjacent Wire Shall not Stick  
 Flammability 60° Angle  
 Maximum Burn Time 30 sec  
 Maximum Char Length 3.0"  
 Tissue Paper No Flame  
 Smoke Test (15 min @ 200°C)  
 No Indication of Visible Smoke

**Chemical**  
 Immersion Tests (20 hrs @ 50°C)  
 No Cracks, Pass Wet Dielectric  
 OD Increase, Max  
 Lubricating Oil 5%  
 Hydraulic Fluid 5%  
 Isopropyl Alcohol 5%  
 Turbine Fuel 5%

**5. REFERENCE SPECIFICATION**

SAE AS81044  
 SAE AS81044/12



**JUDD WIRE INC.**  
 124 Turnpike Road  
 Turners Falls, MA 01376  
 (413) 863-4357

| Date               | Rev | By | Appr'd | ECN |
|--------------------|-----|----|--------|-----|
| 06/20/13           | --  | EM | GT     | --- |
|                    |     |    |        |     |
| Customer Approval: |     |    |        |     |

|  |                 |
|--|-----------------|
| Description:<br><b>HOOKUP, TPC, DUAL WALL<br/>FLEXRAD 44 150°C, 600V</b> |                 |
| Specification Number:<br><b>JW1501-13</b>                                | Page:<br>1 of 2 |

Table 1 - Construction Details

| Size (AWG) | Conductor |          |       |                  | Insulation                       |          |       |       |                  | Ampacity |
|------------|-----------|----------|-------|------------------|----------------------------------|----------|-------|-------|------------------|----------|
|            | Stranding | Diameter |       | DCR (Ω/kft), max | Layer 1 Wall Thickness (in), nom | Diameter |       |       | Weight (lbs/kft) |          |
|            |           | #/AWG    | Min   |                  |                                  | Max      | Min   | Nom   | Max              | Nom      |
| 24         | 19/36     | 0.023    | 0.026 | 26.2             | 0.006                            | 0.038    | 0.04  | 0.042 | 2                | 6        |
| 22         | 19/34     | 0.025    | 0.033 | 10.2             | 0.006                            | 0.045    | 0.047 | 0.049 | 2.5              | 10       |
| 20         | 19/32     | 0.037    | 0.041 | 9.88             | 0.006                            | 0.053    | 0.055 | 0.057 | 4.4              | 11       |
| 18         | 19/30     | 0.046    | 0.051 | 6.23             | 0.006                            | 0.063    | 0.065 | 0.067 | 6.8              | 15       |
| 16         | 19/29     | 0.052    | 0.058 | 4.81             | 0.006                            | 0.069    | 0.072 | 0.075 | 8.5              | 18       |
| 16         | 37/32*    | 0.053    | 0.059 | 4.49             | 0.006                            | 0.071    | 0.074 | 0.077 | 8.5              | 18       |
| 14         | 19/27     | 0.065    | 0.073 | 3.06             | 0.006                            | 0.085    | 0.089 | 0.093 | 13.4             | 26       |
| 12         | 37/28     | 0.084    | 0.09  | 2.02             | 0.007                            | 0.104    | 0.108 | 0.112 | 20.7             | 35       |
| 12         | 65/30*    | 0.086    | 0.095 | 1.81             | 0.007                            | 0.108    | 0.112 | 0.116 | 21.9             | 35       |

\* - Stranding not listed in 81044 specification

\*\* - Calculations Based on: Single Conductor Installed in free 40°C air, 110°C Temperature Rating

Table 2: Test Requirements

| Size (AWG) | Bend Test Requirements         |                   |           |                                |                |
|------------|--------------------------------|-------------------|-----------|--------------------------------|----------------|
|            | Mandrel Diameter (in)          |                   |           | Test Load (lbs)                |                |
|            | Life Cycle and Acc. Aging Test | Cold Bend Testing | Wrap Test | Life Cycle and Acc. Aging Test | Cold Bend Test |
| 24         | 0.50                           | 0.50              | 0.250     | 0.38                           | 0.50           |
| 22         | 0.75                           | 0.75              | 0.250     | 0.36                           | 1.00           |
| 20         | 0.75                           | 1.00              | 0.250     | 0.36                           | 1.00           |
| 18         | 1.00                           | 1.50              | 0.375     | 0.50                           | 1.00           |
| 16         | 1.00                           | 1.50              | 0.375     | 0.50                           | 1.00           |
| 14         | 1.50                           | 2.00              | 0.500     | 1.00                           | 3.00           |
| 12         | 2.00                           | 2.00              | 0.500     | 1.00                           | 3.00           |



**JUDD WIRE INC.**  
 124 Turnpike Road  
 Turners Falls, MA 01376  
 (413) 863-4357

Description:

**HOOKUP, TPC, DUAL WALL  
 FLEXRAD 44 150°C, 600V**

Specification Number:

**JW1501-13**

Rev:

--

Page:

2 of 2