1. **Conductor**
   Material: Tin Plated Copper
   Construction: See Table 1
   Diameter: See Table 1

2. **Insulation**
   Material: Irradiation Crosslinked Polyolefin
   Wall Thickness: See Table 1
   Diameter: See Table 1
   Color: Per Customer Request
   Marking: JUDD WIRE FLEXRAD® 585 1/C #XX AWG ZZ/ZZ 2000V 125°C YYYY

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

3. **Physical Characteristics**
   Temperature Rating: 125°C
   Voltage Rating: 2000V
   Weight: See Table 1

4. **Performance Properties – AAR RP-585**

Mechanical

Tensile Strength
Unaged – ICEA S-66-524 1400 psi, min
Aged (168 hrs @ 173°C) – ICEA S-19-81 90% Retention, min

Elongation
Unaged – ICEA S-66-524 200%, min
Aged (168 hrs @ 173°C) – ICEA S-19-81 50% Retention, min

Crush Resistance – UL 44 6000 lbs, min

Abrasion Resistance I
See Table 2, 1000 Cycles, min

Abrasion Resistance II – UL 719
See Table 2, 1000 Cycles, min

Penetration Test
1 hr @ 175°C ± 2°C
See Table 2, 10 minutes, min

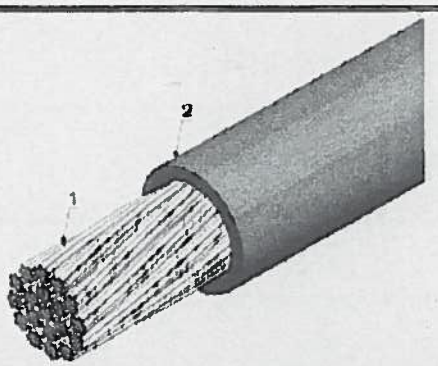
Thermal

Cold Bend – ICEA S-61-402
1 hr @ -65°C ± 2°C
No Cracks, Pass Voltage Withstand

Cold Shock
1 hr @ -40°C ± 2°C
No Cracks, Pass Voltage Withstand

Thermal Test I: Heat Resistance
96 hrs @ 190°C ± 2°C
1/32" Shrinkage, max
Pass Voltage Withstand

Thermal Test II: Insulation Resistance
168 hrs @ 173°C ± 5°C




Pass Voltage Withstand
No Appreciable Color Change
See Table 2 for IR in $H_2O$

Thermal Test III: Cold Shock
168 hrs @ 173°C ± 2°C Pass Cold Shock

**Performance Properties (Cont)**

Vertical Flame Test – ICEA S-66-524
10 seconds Flame, max

NFPA 130
Cable Tray Test (UL 1581) 6.5ft, max
Smoke Generation Test (ASTM E662)
Flaming $D_s$ @ 4 minutes 200, max
Non Flaming $D_s$ @ 4 minutes 75, max

Electrical

Voltage Withstand
6 hrs @ 20°C ± 5°C See Table 2

Dielectric Test Impulse 18.0 kV

Insulation Resistance in $H_2O$ – ICEA S-19-81
24 hrs @ 25°C ± 3 See Table 2

Insulation Resistance in at 140°C
24 hrs @ 140°C ± 2°C 2 MΩ/kft, min

Long Term Insulation Resistance – UL 44
26 wks @ 90°C ± 2°C 10 MΩ/kft, min

Ampacity @ 25°C See Table 2

Conductor DCR See Table 2

Single Overload
3 minutes @ Amperage in Table 2
No Short for 3 minutes, min

Bundle Overload
7 minutes @ Amperage in Table 2
No Visible Smoke or Splits
No Charring or Blocking

Chemical

Oil Resistance Test I – UL 44
Oil Immersion Temp I (18 hrs @ 136°C)
Tensile Strength 50% Retention, min
Elongation 50% Retention, min
Oil Immersion Temp II (168 hrs @ 70°C)
Tensile Strength 70% Retention, min
Elongation 70% Retention, min

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

| Date | Rev | By | Appr'd | ECN |
|---|---|---|---|---|
| 03/28/11 | B | ARJP | EJK | 10-869 |
| 08/28/13 | C | EM | GT | 13-1419 |
| 12/15/14 | D | MCC | GT | 14-1566 |

Customer Approval:

Description:
**1/C FLEXRAD 585 2000V 125°C STANDARD STRANDING**

Specification Number:
**JW1328-10**

Table 2: Performance Requirements

| AWG | Abrasion Resistance I Weight (g) | Abrasion Resistance II (lbs) | Penetration Test weight (g) | Voltage Withstand (Kv) | Min Insulation Resistance in $H_2O$ (MΩ/kft) | Single and Bundle Overload Amperage (amp) | Conductor DCR (Ohms/kft) | Ampacity, max |
|---|---|---|---|---|---|---|---|---|
| 22 | NR | NR | NR | 6.0 | 5740 | NR | 15.9 | 14 |
| 20 | NR | NR | NR | 6.0 | 4840 | NR | 9.76 | 19 |
| 18 | 1000 | NR | NR | 6.0 | 4239 | NR | 7.18 | 23 |
| 16 | 1000 | NR | NR | 6.0 | 3660 | NR | 4.91 | 28 |
| 14 | 1500 | NR | 1500 | 6.0 | 3208 | 100 | 3.18 | 37 |
| 12 | 1500 | NR | 1500 | 6.0 | 2724 | 135 | 2.01 | 49 |
| 10 | NR | 3 | NR | 6.0 | 2191 | NR | 1.10 | 72 |
| 8 | NR | 3 | NR | 7.5 | 2201 | NR | 0.793 | 91 |
| 6 | NR | 3 | NR | 7.5 | 1343 | NR | 0.473 | 126 |
| 5 | NR | 4 | NR | 7.5 | 1642 | NR | 0.363 | 161 |
| 4 | NR | 4 | NR | 7.5 | 1442 | NR | 0.279 | 185 |
| 3 | NR | 4 | NR | 7.5 | 1306 | NR | 0.239 | 205 |
| 2 | NR | 8 | NR | 7.5 | 1009 | NR | 0.184 | 239 |
| 1 | NR | 8 | NR | 8.0 | 1053 | NR | 0.140 | 294 |
| 1/0 | NR | 8 | NR | 8.0 | 961 | NR | 0.111 | 345 |
| 2/0 | NR | 8 | NR | 8.0 | 1004 | 1000 | 0.090 | 393 |
| 3/0 | NR | 8 | NR | 8.0 | 817 | NR | 0.070 | 446 |
| 4/0 | NR | 8 | NR | 8.0 | 727 | NR | 0.055 | 516 |
| 262MCM | NR | NR | NR | 9.5 | 846 | NR | 0.047 | 574 |
| 313MCM | NR | NR | NR | 9.5 | 801 | NR | 0.039 | 647 |
| 373MCM | NR | NR | NR | 9.5 | 662 | NR | 0.033 | 724 |
| 444MCM | NR | NR | NR | 9.5 | 656 | NR | 0.028 | 806 |
| 535MCM | NR | NR | NR | 11.5 | 663 | NR | 0.022 | 937 |
| 646MCM | NR | NR | NR | 11.5 | 556 | NR | 0.019 | 1029 |
| 777MCM | NR | NR | NR | 11.5 | 591 | NR | 0.015 | 1186 |

NR – Not Required

Customer Approval

Name BOMBARDIER

Title PROJECT ENGINEER

Signature Signature Rodolfo Hz

DATE : 02/03/2015

Oil Resistance Test II
100 hrs @ 150°C 60% swell, max
No Cracks, Pass Voltage Withstand

**Performance Properties (Cont)**

Toxicity (BSS 7239)

| | |
|---|---|
| Carbon Dioxide | 90000 ppm, max |
| Carbon Monoxide | 3500 ppm, max |
| Hydrogen Fluoride | 200 ppm, max |
| Hydrogen Bromide | 90 ppm, max |
| Hydrochloric Acid | 500 ppm, max |
| Nitrous Fumes (NO & $NO_2$) | 100 ppm, max |
| Sulfur Dioxide | 100 ppm, max |
| Hydrocyanic Acid | 150 ppm, max |

5. **Reference Specifications**
AAR RP 585
UL 44
UL 719
ICEA S-66-524
ICEA S-61-402
ICEA S-19-81
NFPA 130
UL 1581
ASTM E662
BSS 7239

Table 1: Standard Stranding

| AWG | Conductor Construction (#/Size) | Conductor Diameter (in) Nom | Conductor Diameter (in) Max | Insulation Wall Thickness (in) Min | Insulation Wall Thickness (in) Min Avg | Insulation Diameter (in) Nom | Insulation Diameter (in) Nom | Insulation Diameter (in) Max | Weight (lbs/kft) |
|---|---|---|---|---|---|---|---|---|---|
| 22 | 19/34 | 0.030 | 0.032 | 0.036 | 0.041 | 0.045 | 0.120 | 0.123 | 9.21 |
| 20 | 19/32 | 0.038 | 0.042 | 0.036 | 0.041 | 0.045 | 0.128 | 0.132 | 11.1 |
| 18 | 19/30 | 0.048 | 0.052 | 0.036 | 0.041 | 0.045 | 0.138 | 0.141 | 14.0 |
| 16 | 19/29 | 0.054 | 0.062 | 0.036 | 0.041 | 0.045 | 0.144 | 0.158 | 16.0 |
| 14 | 19/27 | 0.067 | 0.075 | 0.036 | 0.041 | 0.045 | 0.157 | 0.175 | 20.7 |
| 12 | 19/25 | 0.086 | 0.094 | 0.036 | 0.041 | 0.045 | 0.176 | 0.192 | 30.6 |
| 10 | 27/24 | 0.117 | 0.125 | 0.036 | 0.041 | 0.045 | 0.207 | 0.228 | 46.9 |
| 8 | 37/24 | 0.134 | 0.147 | 0.044 | 0.050 | 0.055 | 0.244 | 0.267 | 65.3 |
| 6 | 61/24 | 0.172 | 0.207 | 0.044 | 0.050 | 0.055 | 0.282 | 0.326 | 98.7 |
| 5 | 91/24 | 0.238 | 0.244 | 0.044 | 0.050 | 0.055 | 0.348 | 0.364 | 142 |
| 4 | 105/24 | 0.258 | 0.264 | 0.044 | 0.050 | 0.055 | 0.368 | 0.384 | 164 |
| 3 | 125/24 | 0.279 | 0.288 | 0.044 | 0.050 | 0.055 | 0.389 | 0.408 | 188 |
| 2 | 150/24 | 0.300 | 0.325 | 0.044 | 0.050 | 0.055 | 0.410 | 0.447 | 215 |
| 1 | 225/24 | 0.367 | 0.390 | 0.052 | 0.059 | 0.065 | 0.497 | 0.535 | 326 |
| 1/0 | 275/24 | 0.419 | 0.440 | 0.052 | 0.059 | 0.065 | 0.549 | 0.585 | 395 |
| 2/0 | 325/24 | 0.452 | 0.465 | 0.052 | 0.059 | 0.065 | 0.586 | 0.627 | 460 |
| 3/0 | 450/24 | 0.548 | 0.565 | 0.052 | 0.059 | 0.065 | 0.682 | 0.709 | 627 |
| 4/0 | 550/24 | 0.593 | 0.620 | 0.052 | 0.059 | 0.070 | 0.733 | 0.765 | 753 |
| 262MCM | 650/24 | 0.648 | 0.660 | 0.060 | 0.068 | 0.075 | 0.802 | 0.838 | 903 |
| 313MCM | 775/24 | 0.708 | 0.725 | 0.060 | 0.068 | 0.080 | 0.872 | 0.905 | 1080 |
| 373MCM | 925/24 | 0.776 | 0.795 | 0.060 | 0.068 | 0.080 | 0.926 | 0.936 | 1274 |
| 444MCM | 1100/24 | 0.846 | 0.870 | 0.060 | 0.068 | 0.080 | 1.012 | 1.052 | 1500 |
| 535MCM | 1325/24 | 0.900 | 0.970 | 0.072 | 0.081 | 0.095 | 1.120 | 1.167 | 1837 |
| 646MCM | 1600/24 | 1.010 | 1.060 | 0.072 | 0.081 | 0.095 | 1.205 | 1.259 | 2150 |
| 777MCM | 1925/24 | 1.100 | 1.130 | 0.072 | 0.081 | 0.095 | 1.295 | 1.351 | 2574 |