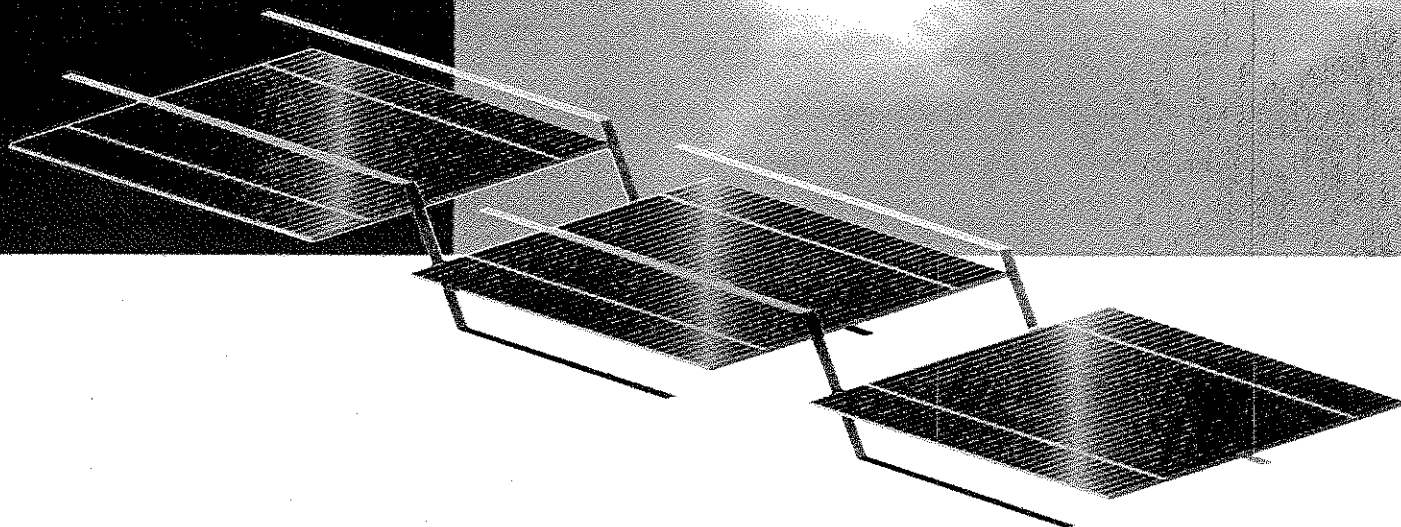




THE POWER OF SOLAR

**CELL INTERCONNECT
TABBING
BUSS RIBBONS**



Ulbrich's precision flat wire making capabilities offer many advantages to solar module producers

- Numerous solder blends
- Ribbon or traverse wound
- Rolled from round wire
- Hot dip solder plated
- All four edges are solder plated
- No risk of dish or bow
- State-of-the-art manufacturing = low cost producer
- Each order is made to your specifications
- No cost initial samples – send us your sample for evaluation
- Please request our catalog
- Smooth rounded edges with no burrs



PV INTERCONNECT RIBBON / BUSS WIRE

All interconnect and buss bar ribbons produced by Ulbrich Precision Flat Wire have solder coating on all four sides since plating is done after the ribbon is rolled from round wire. Also, burrs are nonexistent in ribbon / buss wire rolled from round wire.

I. BASE METAL OPTIONS

UNS Designator	UNS C11000	UNS C10100
Common Name	CDA-110	CDA-101
Copper Content	99.90%	99.99%
Resistivity (ohm*gram/m ²) (Annealed) @ 20° C	.15328 Maximum	.15176 Maximum
Tensile (psi) Half Hard	37,000 - 46,000	37,000 - 46,000
Dead Soft Annealed	26,000 - 36,000	26,000 - 36,000
Elongation in 2" Half Hard	15% Maximum	15% Maximum
Dead Soft Annealed	20% Minimum	20% Minimum

II. SOLDER COATING OPTIONS

- A) 60%Sn/40%Pb +/-1% solder with 20 to 90 microinches (.5 to 2.3 microns) of coating per side.
- B) 60%Sn/40%Pb +/-1% solder with 400 to 600 microinches (10.2 to 15.2 microns) of coating per side.
- C) Other solder compositions, including 100%Sn and 96.5%Sn/3.5Ag are available.
Other coating thickness ranges are also available.
- D) Shelf life on all solder coated ribbons is 18 months.

III. OTHER SPECIFICATIONS

- A) Base Metal Thickness +/--.0003 inch (unless closer required)
- B) Base Metal Width +/--.003 inch (unless closer required)
- C) Camber
.250 inch maximum in 36 inches length as measured from the center for Ribbon Wound (unless closer required)
.500 inch maximum in 36 inches length as measured from the center for Traverse Wound
- D) Coil Set
3.5 inches maximum in 36 inches length hanging from vertical plane as measured from the bottom

V. CERTIFICATION AND LABELING

- A) A Certification of Compliance and Certified Test Report is provided with each shipment and includes the following information:

Customer Order Number	Customer Name	Date & Ulbrich Number
Specification and Revision Level	Customer Part Number	Description of Product
Size	Quantity	Copper Content
Tensile Strength	% Elongation	Hardness (if applicable)
Coating Thickness	Grain Size (if required)	
- B) SPC Data is available (X-Bar & R Control Charts) upon request at no additional charge.
- C) A complete Chemical Analysis is available upon request for the base metal and coating.
- D) Package Bar code labeling is available upon request and can contain any information the Customer requests.
- E) Spool Information includes: lot number, date and operator initials.

VI. WARRANTY

Ulbrich Precision Flat Wire guarantees and warrants our product to your specific application.



ULBRICH PRECISION FLAT WIRE

692 Plant Road • Post Office Box 619 • Westminster, SC 29693

Fax: 864-647-0482 • Phone: 864-647-6087

Additional information is available on our web site: ulbrich.com