

Engineering Note

SUBJECT: CICOIL CABLE LIFE EXPECTANCY

CICOIL cables offer the highest life expectancy available. Below is a review of CICOIL cable performance specifications.

TYPICAL LIFE EXPECTANCY:
10 million cycles.

Technical review:

The exceptional life expectancy inherent in CICOIL Ultraflex flat cables is due to three combined design factors:

- CICOIL's common plane principal.
- CICOIL's superior Flexx-Sil™ jacket material.
- CICOIL's Ultraflex wire construction.

CICOIL flat cables align each wire in the cable along a common plane. The dynamic forces during flexing are evenly applied so the uniformity of the applied forces assures the maximum life expectancy possible.

CICOIL Flexx-Sil™ jacket material is made from our proprietary Flexsil rubber. Our Flexx-Sil™ jacket is applied in a manner that surrounds the wires with a very tough but extremely flexible integrated jacket. The smooth rolling action created by the support from the Flexx-Sil™ jacket assures each wire experiences a stress free transition when dynamically changing from the flat orientation to the area where the bending motion is occurring.

Also, wire spacing is another factor contributing to our cables exceptional life expectancy. No two wires come into contact with each other. This eliminates premature failure due to wire-to-wire wear caused when wires rub against each other during flexing.

CICOIL wire is specifically designed for high flex applications. We use USA mined; oxygen free, heat-treated high grade ultrafine copper base strands that when laid in high density bundles make up our CICOIL Ultraflex wire. Our Ultraflex design assures long life as bending stresses are distributed across many more wires strands, thereby dissipating the strain on the overall wire conductor.

The exceptional life expectancy of a CICOIL cable is made possible by the combination of the factors discussed above and can only be achieved with a ultra-flexible Flexx-Sil™ flat cable.

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The following extended life expectancy features are unique to CICOIL flat cable and can result in typical life expectancy of 10 million cycles or more.

FEATURES:

- (a) CICOIL outer jacket encapsulates all wires offering maximum uniform support along the entire length of the cable. CICOIL jacket indicated by the arrow and shown in blue. 
- (b) Each wire is physically separated from each other; not twisted into one round bundle resulting in physical abrasion and eventual failure.
- (c) Each wire, by virtue of the unique flat design are located on the same plane. This common plane principal virtually eliminates damaging forces and loads on the wires during flexing. This is a great advantage over bundled wires seen in round cables. 
- (d) Loads present during flexing are evenly distributed along each wire in CICOIL flat cables.
- (e) CICOIL outer jacket is very rugged, yet extremely flexible.
- (f) Wire used in CICOIL Ultraflex cables are made from the highest quality oxygen free American copper and specially heat-treated for maximum ductility and performance.
- (g) Wire used in CICOIL Ultraflex cables are made from extremely fine stranded wires in the 40 – 44 AWG range.
- (h) Wire used in CICOIL Ultraflex cables use finely stranded wire for the shields.
- (i) The shields in CICOIL Ultraflex cables are made from braided strands of 38 AWG wire and offer the best EMI and flexing performance.
- (j) CICOIL cables offer high life expectancies with extremely small bend radiuses'.¹
- (k) CICOIL Ultraflex cables with Gliderite allow cables to be stacked for maximum density applications. This feature extends life by virtually eliminating friction from cable to cable.
- (l) CICOIL offers engineering assistance when designing your flexible cable application. This assures that cable designs result in optimum performance and maximum flex life.

¹ When appropriate design practices are utilized in a continuous flexing application.