



TECHNICAL DATA SHEET

HPC-35EF® & HPC-80EF® Environmentally Friendly Alloys

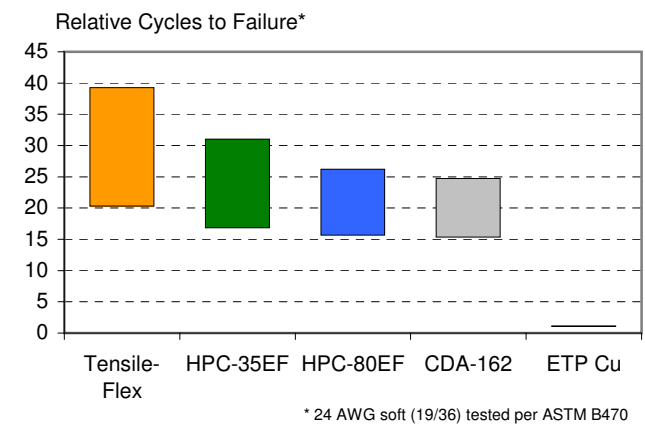
IWG High Performance Conductors, in response to global concerns, has taken a leadership role in developing high performance, environmentally friendly alloy systems. These alloys have been specifically designed to be free of potentially harmful elements such as cadmium, mercury, lead, and other heavy metals.

HPC-35EF was designed for RoHS applications and offers comparable conductivity, tensile strength, flex life, and thermal stability to Tensile-Flex®. Utilizing the same precipitation-hardened strengthening mechanism as Tensile-Flex®, HPC-35EF meets all of the mechanical property requirements of SAE AS22759, MIL-W-29606, NEMA WC67 and ASTM B624. Similarly, HPC-80EF uses a solution strengthening mechanism to deliver comparable properties to cadmium copper (CDA-162).

BASE MATERIAL PROPERTIES

Composition, HPC-35EF:	99% Cu; Bal. Cr, Ag, Si
Composition, HPC-80EF:	99% Cu; Bal. Mg
Density @68 °F(lb/in³):	0.323
Melting Point (°F):	1976
Thermal Conductivity (BTU-ft/(h-ft²-F)):	200
Modulus of Elasticity (psi):	2.00E+07

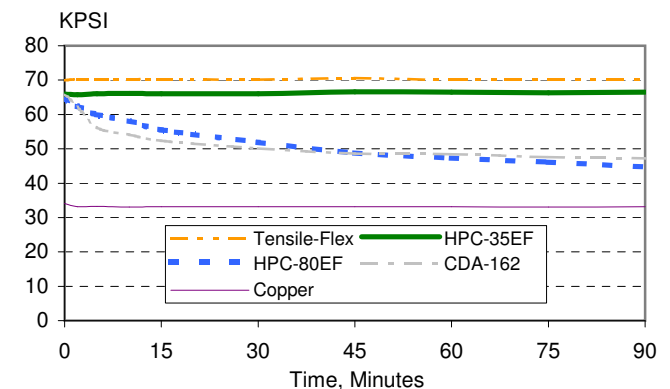
FLEX LIFE



MECHANICAL & ELECTRICAL PROPERTIES

	HPC-35EF	HPC-80EF
Elongation, Nom. (%):	8	8
Tensile Strength, Nom.: (kpsi)	Soft: 65 Hard: 110	55 110
Resistivity, Max.: (cmil-Ω/ft)	Soft: 11.52 Hard: 12.24	12.20 12.96
Conductivity, Min.: (% IACS)	Soft: 90 Hard: 85	85 80

THERMAL STABILITY @ 350 °C



COATINGS

Silver:	99.95% Ag purity; thickness to 15%
Nickel:	99.95% Ni purity; thickness to 27%
Tin:	99.92% Sn purity; thickness to 8% (hard)

CONSTRUCTIONS

HPC's environmentally friendly alloys are available in single end sizes as small as 54AWG, in a full range of concentric or unilay 7 and 19 strand constructions, as shield wires parallel wound on braider bobbins in multiple size/strand count combinations or as high strand count extra flexible ropes.

CONSTRUCTIONS

HPC-35EF

HPC-35EF									
AWG	Const	Diameter		DC Resistance		Weight		Break Strength	
		inches	mm	Ω/mft	Ω/km	lbs/mft	kg/km	lbs	kg
7 STRAND CONSTRUCTIONS - HEAT TREATED									
28	7/36	0.0150	0.381	66.7	218.8	0.529	0.787	8.20	3.72
30	7/38	0.0120	0.305	102.2	335.3	0.345	0.513	5.20	2.36
32	7/40	0.0093	0.236	170.2	558.4	0.207	0.308	3.20	1.45
34	7/42	0.0077	0.194	251.5	825.2	0.140	0.208	1.85	0.84
36	7/44	0.0060	0.152	408.8	1,341.3	0.086	0.128	1.15	0.52
38	7/46	0.0049	0.123	615.4	2,019.1	0.057	0.085	0.75	0.34
40	7/48	0.0035	0.089	1,063.0	3,487.7	0.033	0.049	0.35	0.16
42	7/50	0.0030	0.077	1,572.0	5,157.7	0.023	0.033	0.26	0.12
19 STRAND CONSTRUCTIONS - HEAT TREATED									
16	19/29	0.0526	1.336	5.1	16.6	7.030	10.461	112.00	50.85
18	19/30	0.0464	1.179	6.5	21.3	5.480	8.155	89.30	40.54
20	19/32	0.0373	0.947	10.0	32.7	3.580	5.327	58.10	26.38
22	19/34	0.0293	0.744	16.5	54.1	2.160	3.214	35.80	16.25
24	19/36	0.0233	0.592	25.4	83.3	1.400	2.083	22.40	10.17
26	19/38	0.0183	0.465	40.3	132.2	0.882	1.313	14.20	6.45

HPC-80EF

HPC-80EF									
AWG	Const	Diameter		DC Resistance		Weight		Break Strength	
		inches	mm	Ω/mft	Ω/km	lbs/mft	kg/km	lbs	kg
7 STRAND CONSTRUCTIONS - HEAT TREATED									
28	7/36	0.0150	0.381	70.6	231.8	0.529	0.787	6.94	3.15
30	7/38	0.0120	0.305	108.2	355.1	0.345	0.513	4.40	2.00
32	7/40	0.0093	0.236	180.2	591.4	0.207	0.308	2.71	1.23
34	7/42	0.0077	0.194	266.3	873.9	0.140	0.208	1.57	0.71
36	7/44	0.0060	0.152	432.9	1,420.4	0.086	0.128	0.97	0.44
38	7/46	0.0049	0.123	651.7	2,138.3	0.057	0.085	0.63	0.29
40	7/48	0.0035	0.089	1,125.7	3,693.5	0.033	0.049	0.30	0.13
42	7/50	0.0030	0.077	1,664.7	5,462.0	0.023	0.033	0.22	0.10
19 STRAND CONSTRUCTIONS - HEAT TREATED									
16	19/29	0.0526	1.336	5.4	17.6	7.030	10.461	94.77	43.03
18	19/30	0.0464	1.179	6.9	22.6	5.480	8.155	75.57	34.31
20	19/32	0.0373	0.947	10.6	34.7	3.580	5.327	49.16	22.32
22	19/34	0.0293	0.744	17.5	57.3	2.160	3.214	30.29	13.75
24	19/36	0.0233	0.592	26.9	88.3	1.400	2.083	18.95	8.61
26	19/38	0.0183	0.465	42.7	140.0	0.882	1.313	12.02	5.46

Unilay constructions shown for reference only. Note that stranded constructions finer than 36 AWG (7/44) may contain less than 40 microinches of silver plate. Please contact HPC Product Engineering for complete product range and detailed specifications.