MICROMETALS
IRON POWDER CORES
USA: 800/356-5977
TEL: 714/970-9400
FAX: 714/970-0400

RADIO FREQUENCY (RF) APPLICATIONS

Introduction

Typically iron powder cores are used to produce high "Q" inductors from 50 KHz to 500 MHz and broadband transformers above 50 MHz. It is a preferred core material due to its stability, high"Q", frequency response, and power handling capabilities.

Micrometals offers iron powder cores produced to narrow permeability tolerances, which results in cores with close uniformity within lots and relative uniformity from lot to lot.

Material Description

-1, -3, -8, -15 Materials: These materials are annealed carbonyl irons providing the highest carbonyl permeability. They are useful for high Q applications below 1 MHz. They will provide the broadest band transformers covering a typical range from 50 to 500 MHz.

-2, -4, -6, -7, Materials: These are the most popular carbonyl irons. They will provide high Q up to 40 MHz and are the most popular materials for amateur radio and a variety of other communication applications. They are also useful for moderate band transformers in the 200 to 400 MHz frequency range.

-10, -17 Materials: These Materials are the highest frequency carbonyl irons. They will provide high Q up to 150 MHz and are popular materials for cable television applications. They will produce moderate band transformers typically covering 400 to 700 MHz.

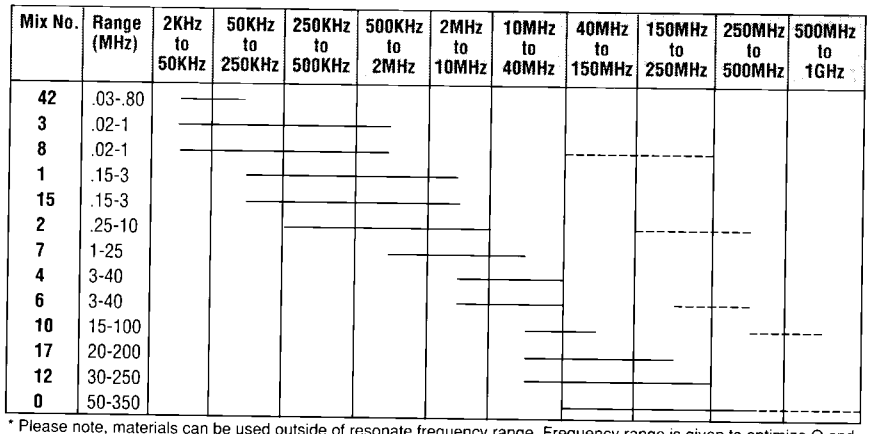
-0 Material: This is a non-magnetic material. It provides a solid form for winding air coils. It has excellent temperature stability and will provide high Q up to the highest frequencies. It is also useful for moderate band transformer applications covering a typical range from 600 to 1000 MHz.

GENERAL MATERIAL PROPERTIES

Material Mix No.	Basic Iron Powder	Material Permeability (μ_o)	Temperature[1] Stability (ppm/°C)	Relative Cost	Toroidal Color Code
1	Carbonyl C	20	280	2.7	Blue/Clear
2	Carbonyl E	10	95	1.7	Red/Clear
3	Carbonyl HP	35	370	2.5	Gray/Clear
4	Carbonyl J	9.0	280	2.0	Blue/White
6	Carbonyl SF	8.5	35	2.0	Yellow/Clear
7	Carbonyl TH	9.0	30	2.0	White/Clear
8	Carbonyl GQ4	35	255	2.5	Orange/Clear
10	Carbonyl W	6.0	150	4.7	Black/Clear
12*	Synthetic Oxide	4.0	170**	1.5	Green/White
15	Carbonyl GS6	25	190	3.1	Red/White
17	Carbonyl	4.0	50	3.1	Blue/Yellow
42	Hydrogen Reduced	40	550	1.4	Blue/Red
0	Phenolic	1	0	1.0	Tan/Tan

[1] Temperature stability values listed are for closed magnetic structures.
* Non-linear
** Mix 17 was developed as a temperature stable alternative to mix 12 and is recommended for all new designs.

RESONANT FREQUENCY (—) AND BROADBAND (----) RANGE



* Please note, materials can be used outside of resonate frequency range. Frequency range is given to optimize Q and core loss.

Q VERSUS FREQUENCY CURVES