MICROMETALS™

POWDER CORE SOLUTIONS

2019 Iron Powder RF Materials

Radio Frequency

General Material Properties

-0	1	N/A	Phenolic	N/A	N/A	N/A	1.3	Tan/Tan	✓	
-1	20	±10	Carbonyl Iron	280	6.4	10	3.8	Blue/Clear	✓	
-2	10	±5	Carbonyl Iron	95	5.0	45	2.2	Red/Clear	✓	✓
-3	35	±10	Carbonyl Iron	255	6.5	5.0	3.3	Gray/Clear	✓	
-4	9	±5	Carbonyl Iron	280	5.0	17	2.2	Blue/White	✓	
-6	8.5	±5	Carbonyl Iron	35	5.0	55	3.6	Yellow/Clear	✓	
-7	9	±5	Carbonyl Iron	30	5.0	50	3.0	White/Clear	✓	
-8	35	±10	Carbonyl Iron	255	6.5	5.0	3.1	Yellow/Red	✓	✓
-10	6	±5	Carbonyl Iron	150	4.9	83	5.5	Black/Clear	✓	
-15	25	±10	Carbonyl Iron	190	6.4	7.0	3.4	Red/White	✓	
-17	4	±5	Carbonyl Iron	50	4.8	170	3.5	Blue/Yellow	✓	

*Relative cost as compared to Micrometals -26 or -40 materials for a 25mm toroid.

Material Information

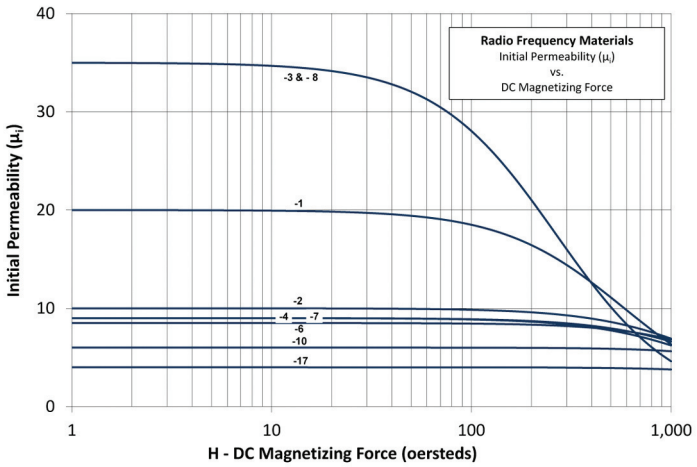
-2, -4, -6 & -7 Materials: These are the most popular carbonyl iron mixes. They will provide High Q up to 40 MHz and the most popular for amateur radio and variety of other communication applications. They are also useful for moderate band transformers in the 200 to 400 MHz frequency range

-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 and will provide the broadest band transformers covering a typical range from 50 to 500 MHz.

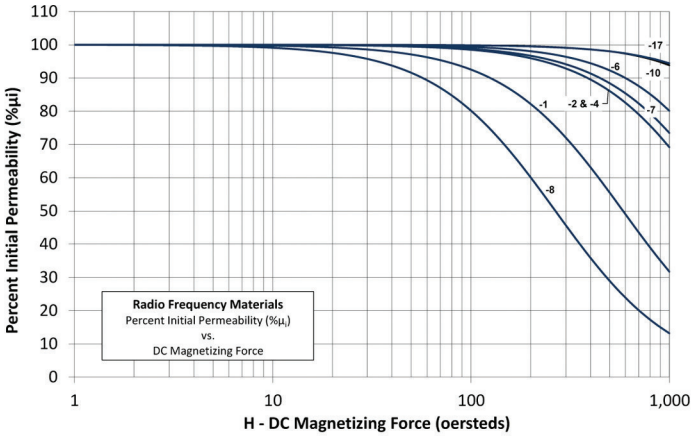
-10 & -17 Materials: These materials are the highest frequency carbonyl irons. They will provide high Q up to 150 MHz and are a popular material for cable television applications. They will produce moderate band transformers covering 400 to 700 MHz.

-0 Material: This is a non-magnetic material. It provides a solid winding 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 MHz to 1 GHz.

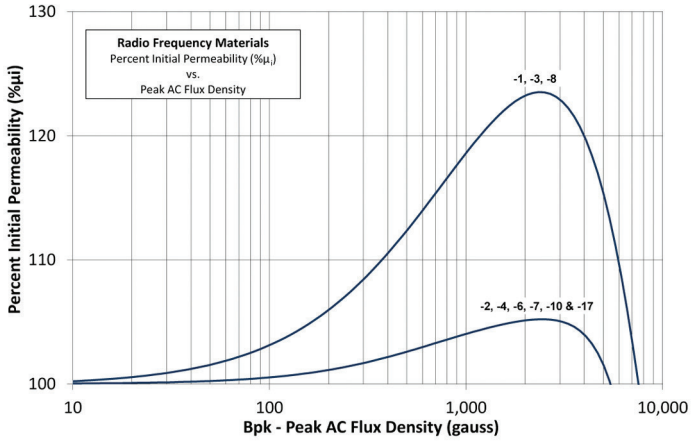
Initial Permeability (μi) vs. DC Magnetizing Force



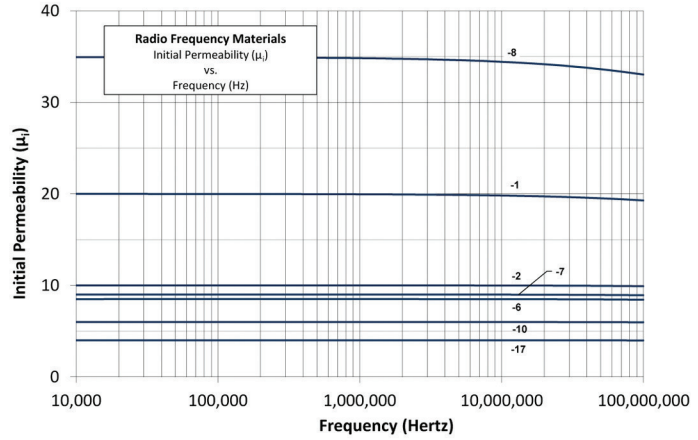
Percent Initial Permeability (%μi) vs. DC Magnetizing Force



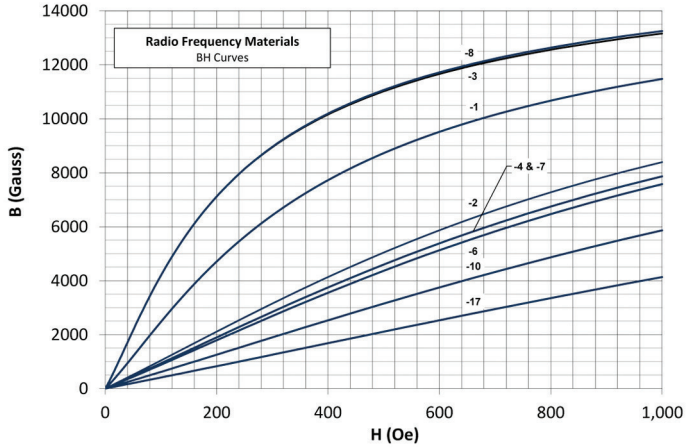
Percent Initial Permeability (%μi) vs. Peak AC Flux Density



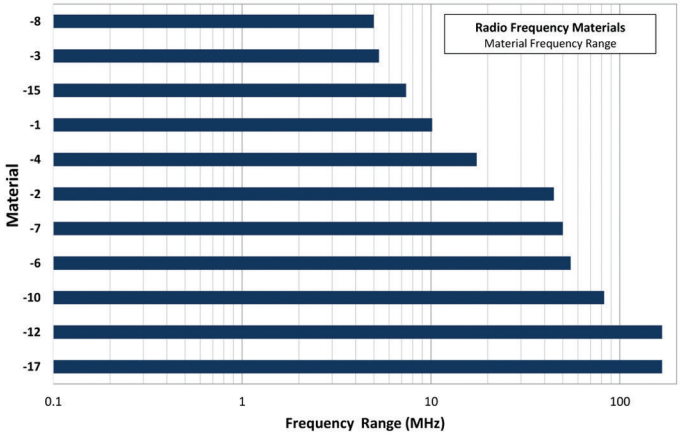
Initial Permeability (μi) vs Frequency (Hz)



BH Curves



Material Frequency Range

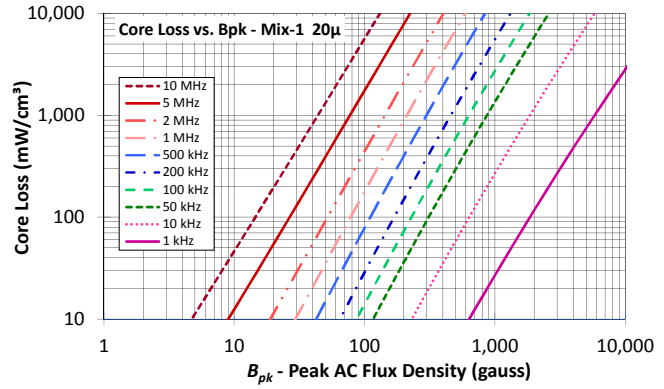


Mix:	-1

Revision 20160429 - Generated 2016-May-02

-1 material is an annealed carbonyl iron providing the highest carbonyl permeability. -1 is useful for high Q applications below 1 MHz and will provide the broadest band transformers covering a typical range from 50 to 500 MHz.

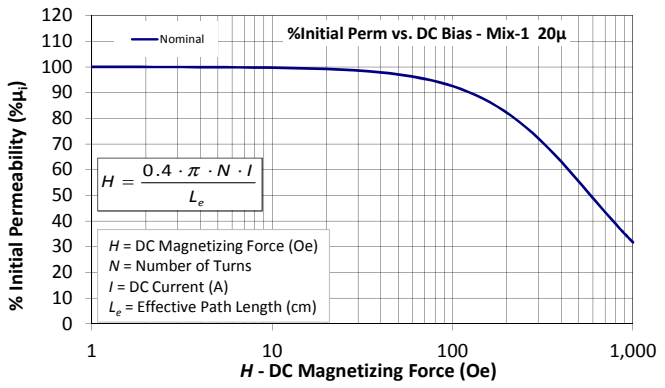
µi(reference)	20
Color Code	Blue/Clear
Density	6.4 g/cm³
Bsat	17.5kG
Core Loss (100kHz, 140g)	31 mW/cm³ (nom) 36 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	82.2% (nom) 78.0% (min)



$$\text{Core Loss (mW/cm}^3\text{)} = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

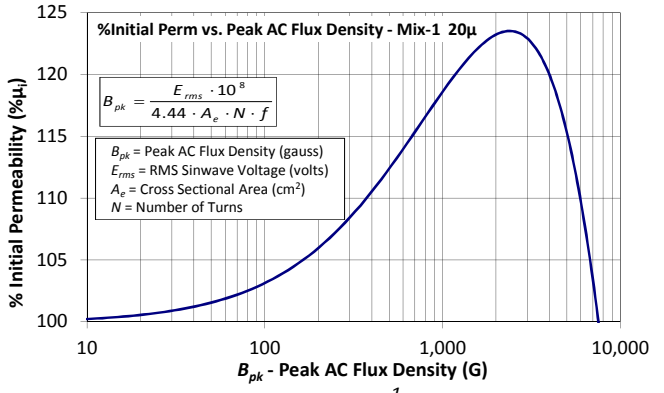
a=1.90E+09, b=2.00E+08, c=9.00E+05, d=4.30E-15



$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

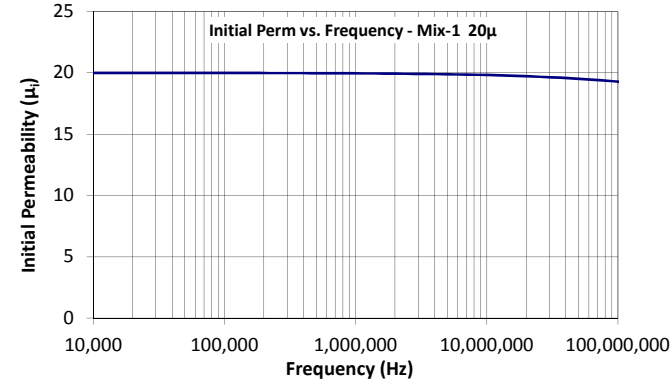
a=1.00E-02, b=1.14E-06, c=1.43, d=0.00



$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

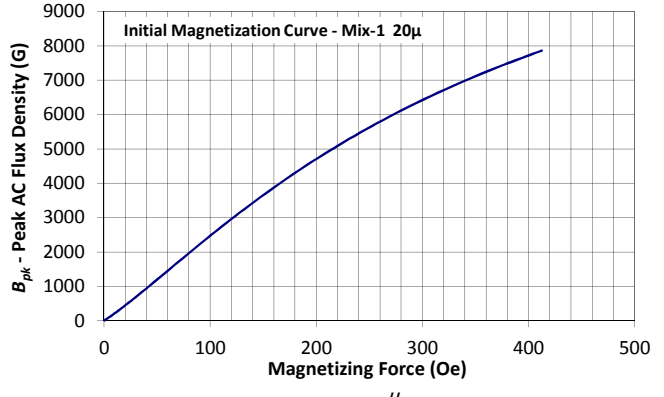
a=3.50E+02, b=3.78E-01, c=1.03E+00, d=1.76E+10, e=-1.98E+00, f=1.40E+02



$$\mu_i = \frac{1}{a + bf^{\ c}} + d$$

where f expressed in hertz, and:

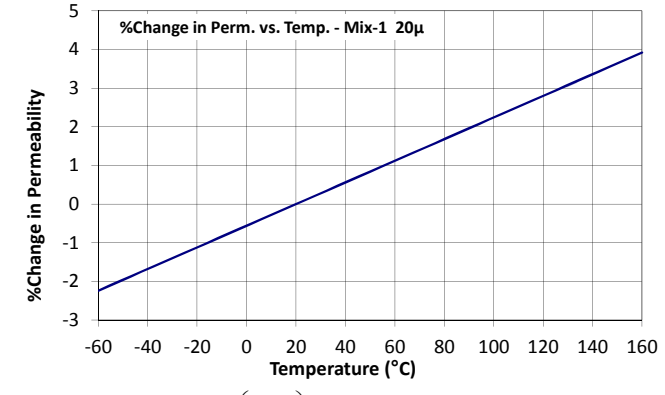
a=2.19E-01, b=1.98E-07, c=6.64E-01, d=1.54E+01



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=2.69E-02, b=1.75E+00, c=4.65E+01, d=5.67E-01, e=8.73E+02



$$\left(\frac{\Delta\mu_i}{\mu_i}\right)ppm = a(T - 20)$$

where T expressed in celsius, and:

a=280

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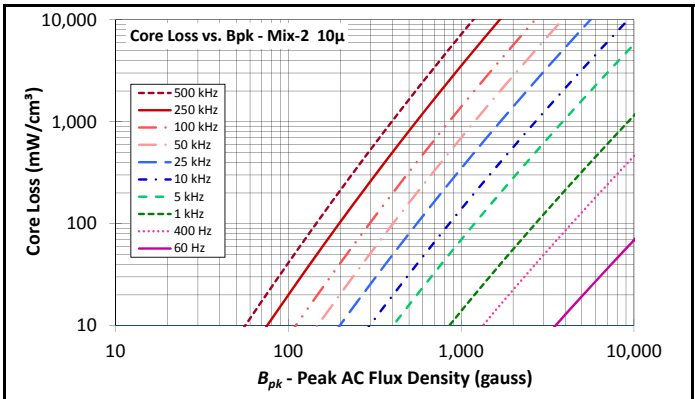
-2 material is a popular carbonyl iron mix that provides High Q up to 40 MHz and is very popular for amateur radio and a variety of other communication applications. -2 is also useful for moderate band transformers in the 200 to 400 MHz frequency range. The low permeability of -2 material will result in lower operating AC flux density than other materials with no additional gap-loss. For a slightly higher permeability consider -14 material.

Mix:	-2

Revision 20160422 - Generated 2016-Apr-26

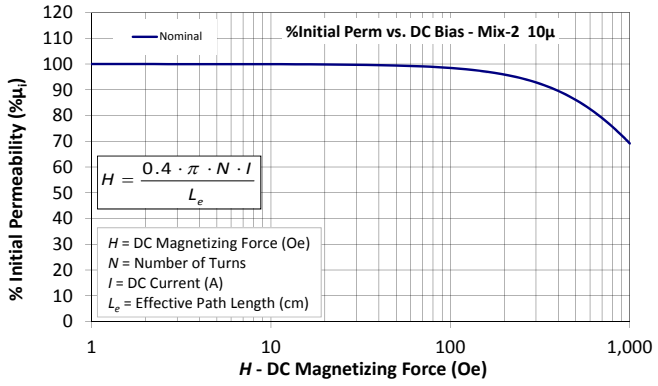
µi(reference)	10
Color Code	Red/Clear
Density	5.0 g/cm³
Bsat	14.8kG
Core Loss (100kHz, 140g)	18 mW/cm³ (nom) 20 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	95.9% (nom) 94.8% (min)



$$Core\ Loss\ (mW/cm^3) = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

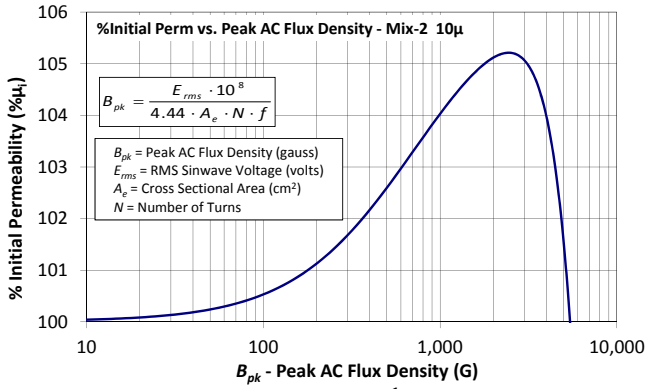
a=4.00E+09, b=3.00E+08, c=2.70E+06, d=9.60E-16



$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

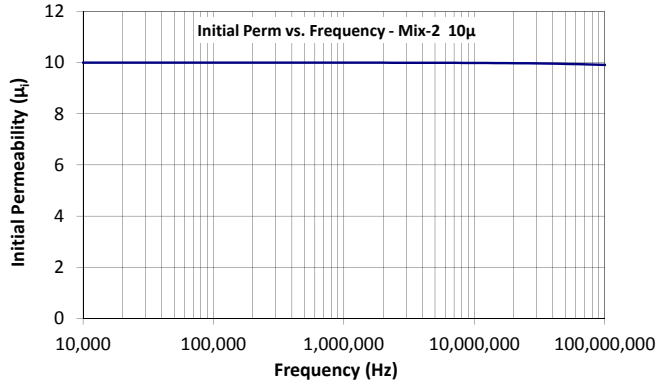
a=1.00E-02, b=1.83E-07, c=1.46, d=0.00



$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

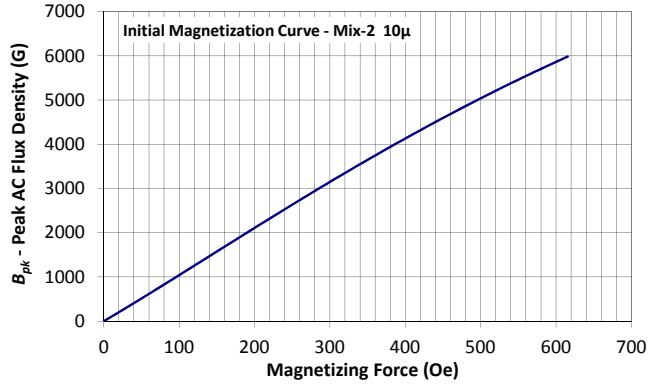
a=1.57E+03, b=4.50E-01, c=1.25E+00, d=1.16E+17, e=-3.70E+00, f=1.07E+02



$$\mu_i = \frac{1}{a + bf^{\ c}} + d$$

where f expressed in hertz, and:

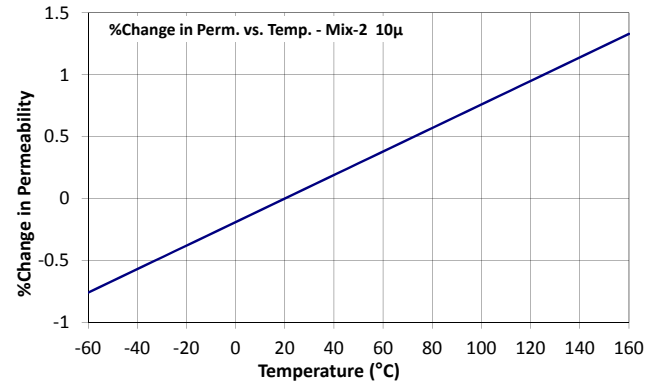
a=1.11E-01, b=7.01E-11, c=9.00E-01, d=1.00E+00



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=1.50E-03, b=1.96E+00, c=1.97E+04, d=9.18E-04, e=1.48E+03



$$\left(\frac{\Delta\mu_i}{\mu_i}\right) ppm = a(T - 20)$$

where T expressed in celsius, and:

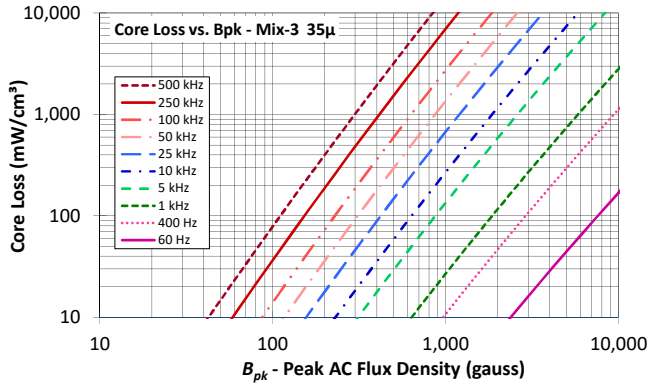
a=95

-3 material is an annealed carbonyl iron providing the highest carbonyl permeability. -3 is useful for high Q applications below 1 MHz and will provide the broadest band transformers covering a typical range from 50 to 500 MHz.

Mix:	-3

Revision 20170809 - Generated 2017-Aug-18

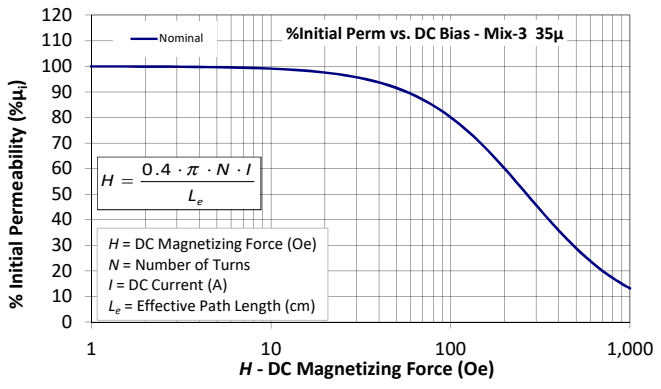
µi(reference)	35
Color Code	Gray/Clear
Density	6.5 g/cm³
Bsat	17.6kG
Core Loss (100kHz, 140g)	31 mW/cm³ (nom) 36 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	60.1% (nom) 53.7% (min)



$$Core\ Loss\ (mW/cm^3) = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

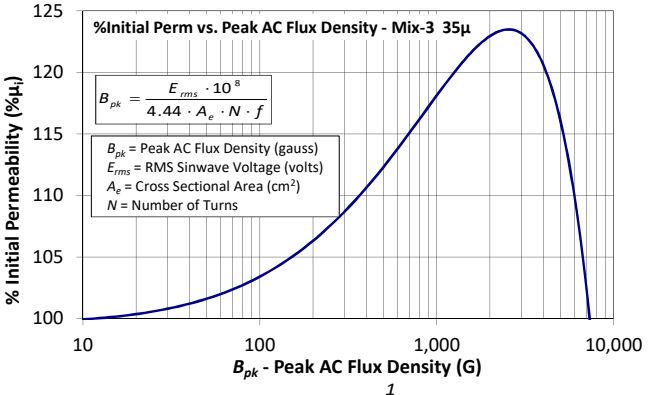
a=1.90E+09, b=2.00E+08, c=9.00E+05, d=4.30E-15



$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

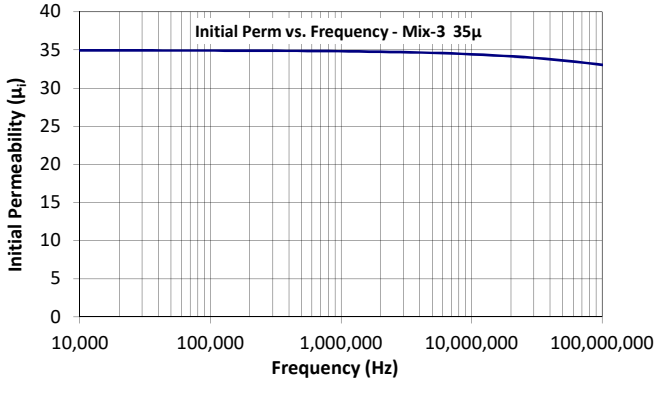
a=1.00E-02, b=3.49E-06, c=1.43, d=0.00



$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

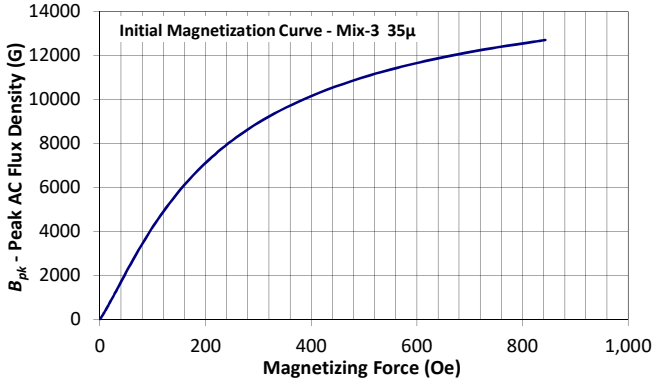
a=3.50E+02, b=3.78E-01, c=1.03E+00, d=1.76E+10, e=-1.98E+00, f=1.40E+02



$$\mu_i = \frac{1}{a + bf^{\ c}} + d$$

where f expressed in hertz, and:

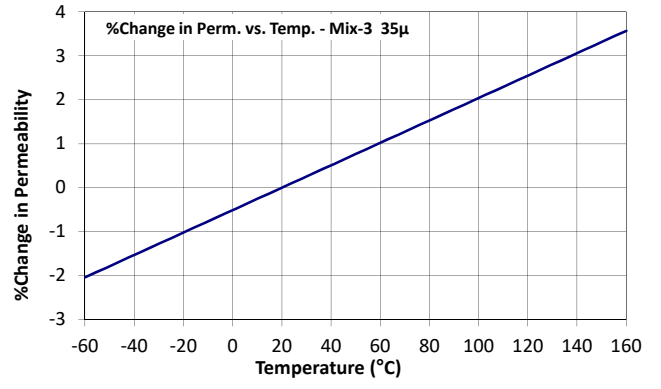
a=1.27E-01, b=1.98E-07, c=6.64E-01, d=2.70E+01



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=4.11E-02, b=1.75E+00, c=3.64E+01, d=5.64E-01, e=5.04E+02



$$\left(\frac{\Delta\mu_i}{\mu_i}\right) ppm = a(T - 20)$$

where T expressed in celsius, and:

a=255

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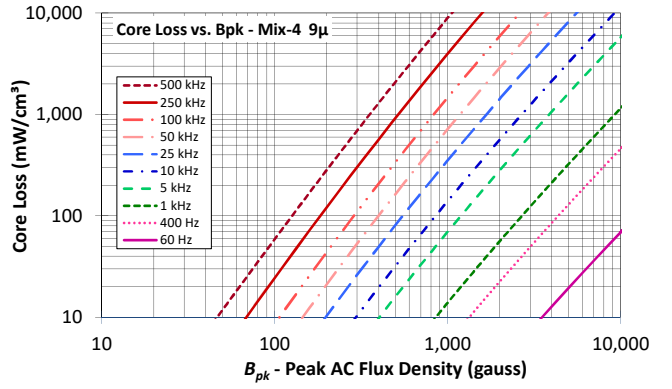
-4 material is a popular carbonyl iron mix that provides High Q up to 40 MHz and is very popular for amateur radio and a variety of other communication applications. -4 is also useful for moderate band transformers in the 200 to 400 MHz frequency range.

Mix:	-4

Revision 20171027 - Generated 2017-Nov-08

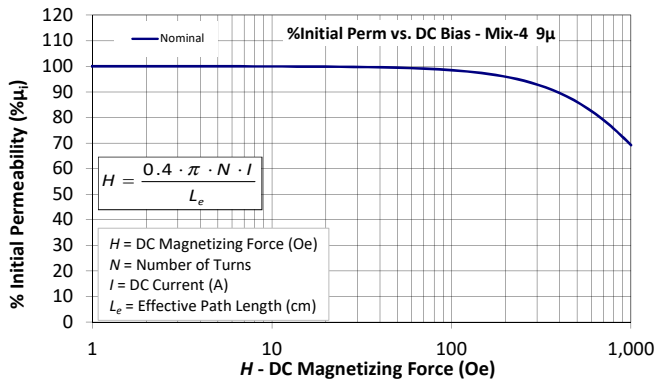
µi(reference)	9
Color Code	Blue/White
Density	5.0 g/cm³
Bsat	14.8kG
Core Loss (100kHz, 140g)	19 mW/cm³ (nom) 22 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	95.9% (nom) 94.8% (min)



$$\text{Core Loss (mW/cm}^3) = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

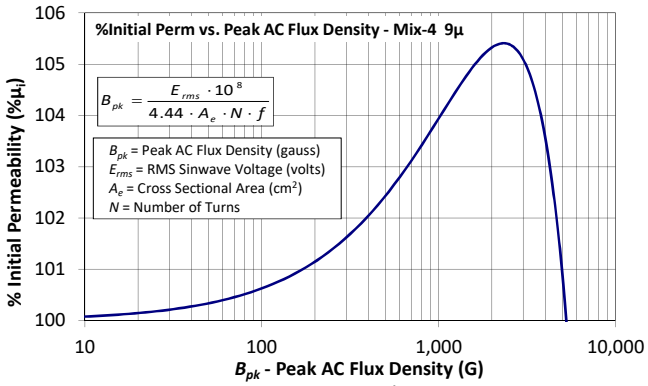
a=4.00E+09, b=3.00E+08, c=2.70E+06, d=8.00E-15



$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

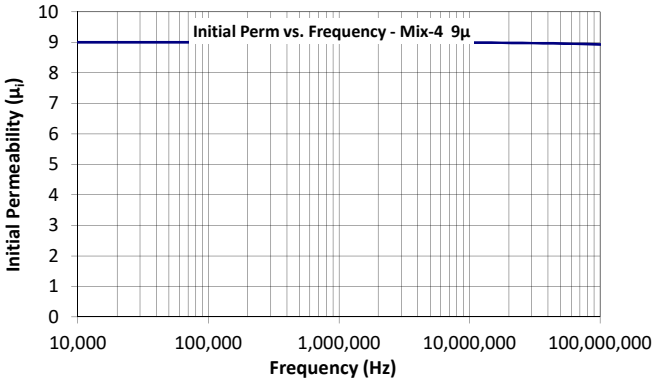
a=1.00E-02, b=1.83E-07, c=1.46, d=0.00



$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

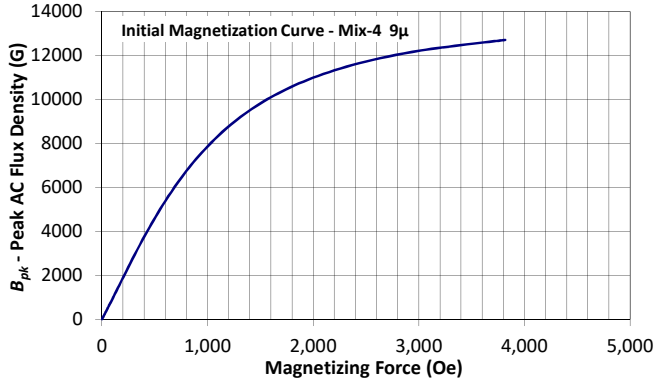
a=1.57E+03, b=4.50E-01, c=1.25E+00, d=1.16E+17, e=-3.70E+00, f=1.07E+02



$$\mu_i = \frac{1}{a + bf^{\ c}} + d$$

where f expressed in hertz, and:

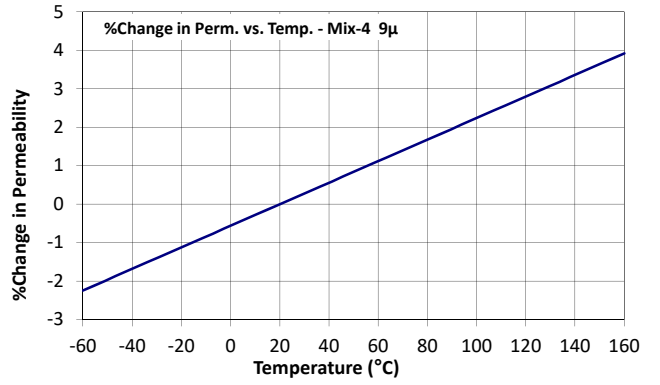
a=1.25E-01, b=7.01E-11, c=9.00E-01, d=1.00E+00



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=1.35E-03, b=1.96E+00, c=2.19E+04, d=9.18E-04, e=1.65E+03



$$\left(\frac{\Delta\mu_i}{\mu_i}\right) ppm = a(T - 20)$$

where T expressed in celsius, and:

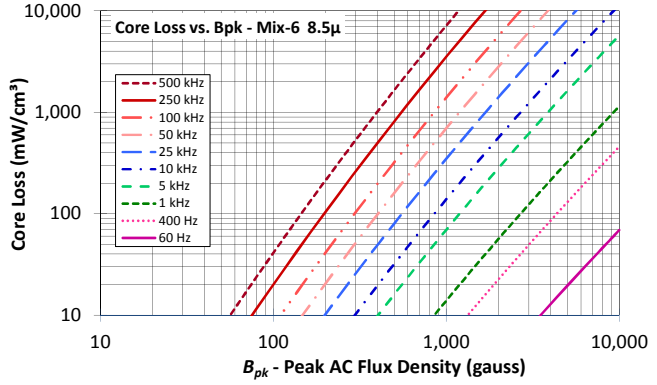
a=280

-6 material is a popular carbonyl iron mix that provides High Q up to 40 MHz and is very popular for amateur radio and a variety of other communication applications. -6 is also useful for moderate band transformers in the 200 to 400 MHz frequency range.

Mix:	-6

Revision 20160216 - Generated 2016-Feb-25

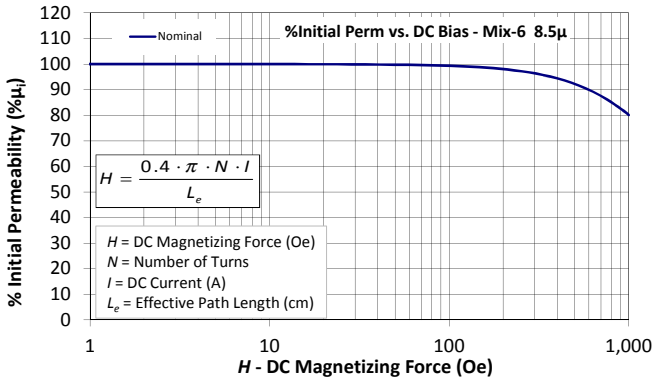
µi(reference)	8.5
Color Code	Yellow/Clear
Density	5.0 g/cm³
Bsat	14.8kG
Core Loss (100kHz, 140g)	18 mW/cm³ (nom) 20 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	98.1% (nom) 97.4% (min)



$$Core\ Loss\ (mW/cm^3) = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

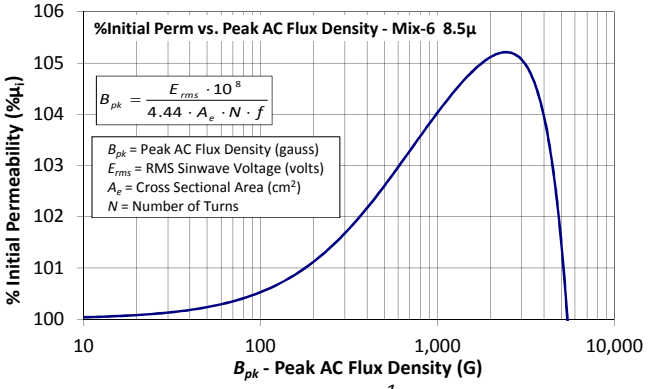
a=4.00E+09, b=3.00E+08, c=2.70E+06, d=8.90E-16



$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

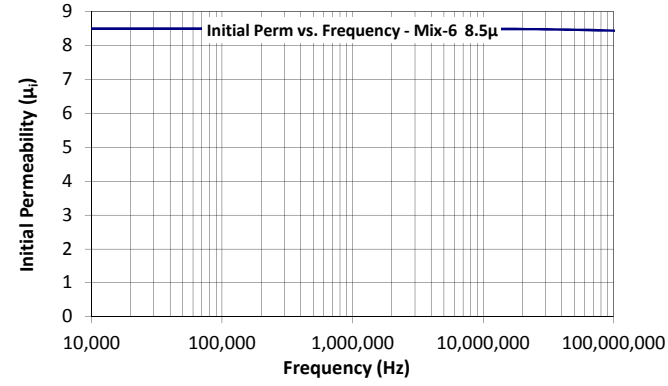
a=1.00E-02, b=4.87E-08, c=1.57, d=0.00



$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

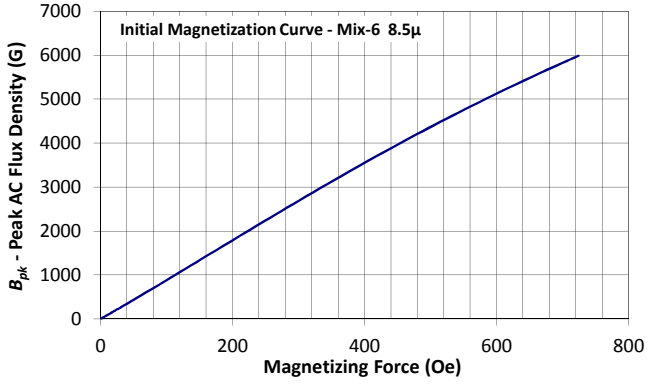
a=1.57E+03, b=4.50E-01, c=1.25E+00, d=1.16E+17, e=-3.70E+00, f=1.07E+02



$$\mu_i = \frac{1}{a + bf^c} + d$$

where f expressed in hertz, and:

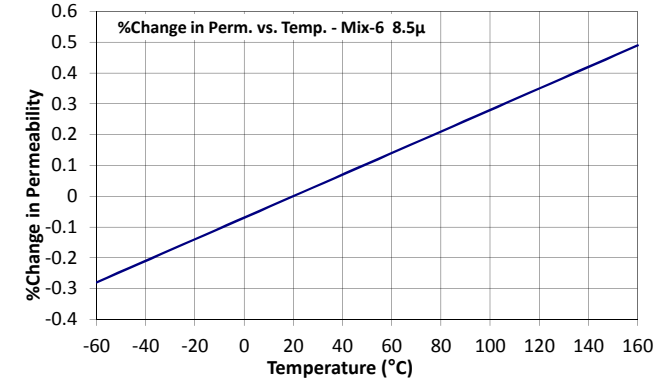
a=1.33E-01, b=7.01E-11, c=9.00E-01, d=1.00E+00



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=1.28E-03, b=1.96E+00, c=2.30E+04, d=9.19E-04, e=1.74E+03



$$\left(\frac{\Delta\mu_i}{\mu_i}\right) ppm = a(T - 20)$$

where T expressed in celsius, and:

a=35

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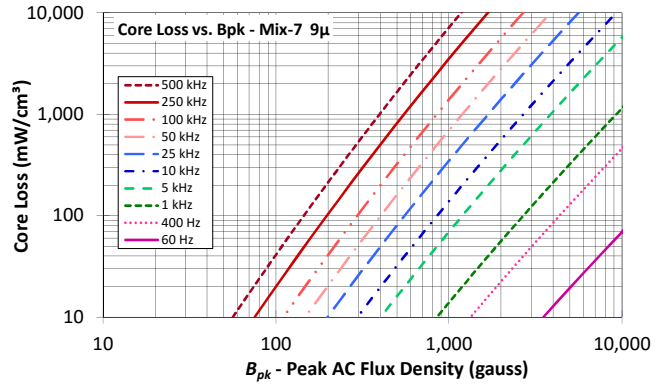
-7 material is a popular carbonyl iron mix that provides High Q up to 40 MHz and is very popular for amateur radio and a variety of other communication applications. -7 is also useful for moderate band transformers in the 200 to 400 MHz frequency range.

Mix:	-7

Revision 20160906 - Generated 2016-Sep-13

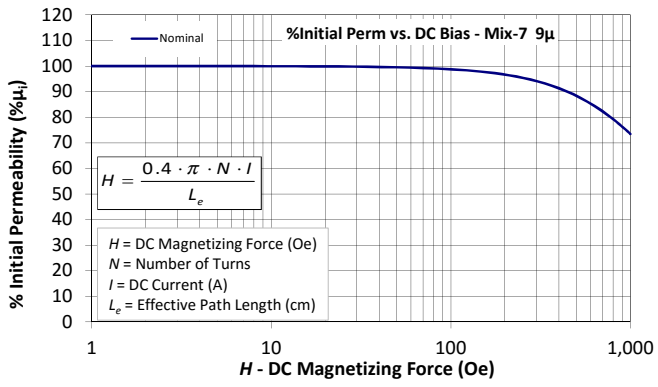
µi(reference)	9
Color Code	White/Clear
Density	5.0 g/cm³
Bsat	14.8kG
Core Loss (100kHz, 140g)	18 mW/cm³ (nom) 20 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	96.7% (nom) 95.7% (min)



$$\text{Core Loss (mW/cm}^3) = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

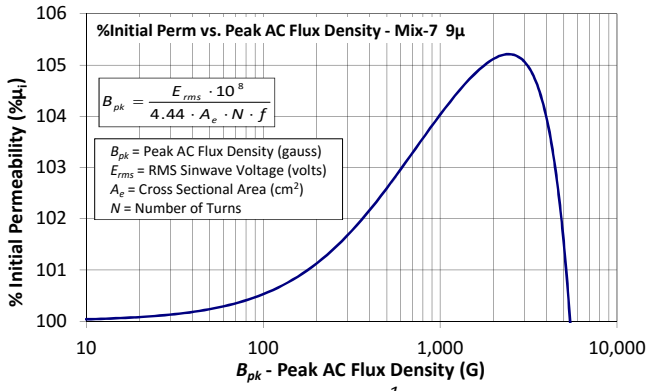
a=4.00E+09, b=3.00E+08, c=2.70E+06, d=9.60E-16



$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

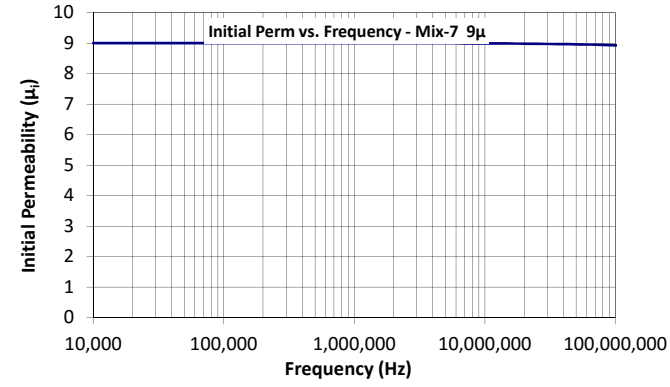
a=1.00E-02, b=1.48E-07, c=1.46, d=0.00



$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

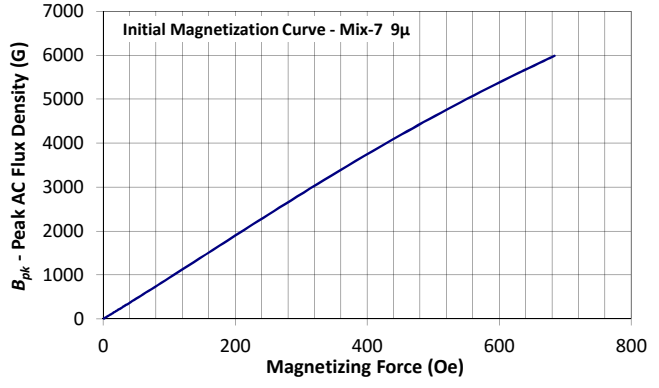
a=1.57E+03, b=4.50E-01, c=1.25E+00, d=1.16E+17, e=-3.70E+00, f=1.07E+02



$$\mu_i = \frac{1}{a + bf^{\ c}} + d$$

where f expressed in hertz, and:

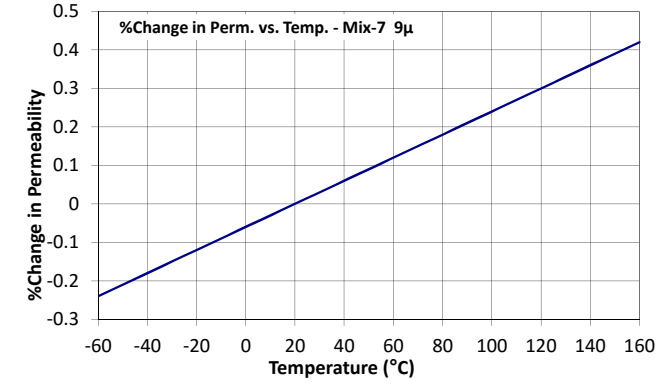
a=1.25E-01, b=7.01E-11, c=9.00E-01, d=1.00E+00



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=1.35E-03, b=1.96E+00, c=2.19E+04, d=9.18E-04, e=1.65E+03



$$\left(\frac{\Delta\mu_i}{\mu_i}\right) ppm = a(T - 20)$$

where T expressed in celsius, and:

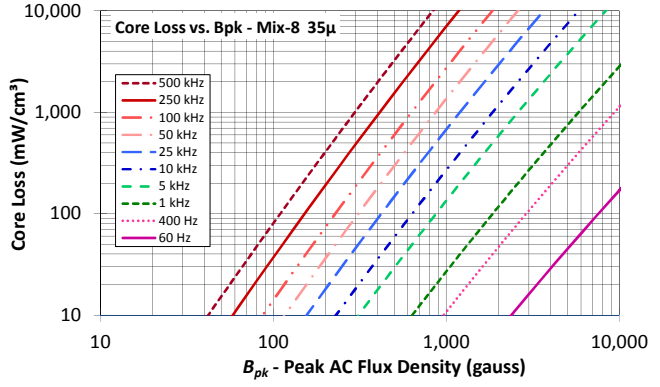
a=30

-8 material is an annealed carbonyl iron providing the highest carbonyl permeability. -8 is useful for high Q applications below 1 MHz and will provide the broadest band transformers covering a typical range from 50 to 500 MHz. This material has low core loss and good linearity under high bias conditions. A good high frequency material but also the highest cost iron powder material.

Mix:	-8

Revision 20160429 - Generated 2016-May-24

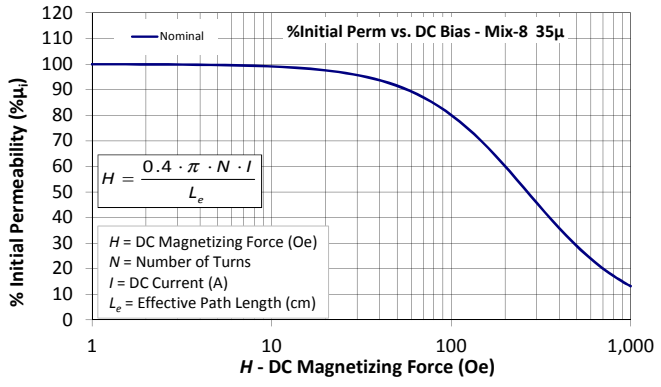
µi(reference)	35
Color Code	Yellow/Red
Density	6.5 g/cm³
Bsat	17.6kG
Core Loss (100kHz, 140g)	32 mW/cm³ (nom) 36 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	60.1% (nom) 53.7% (min)



$$Core\ Loss\ (mW/cm^3) = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

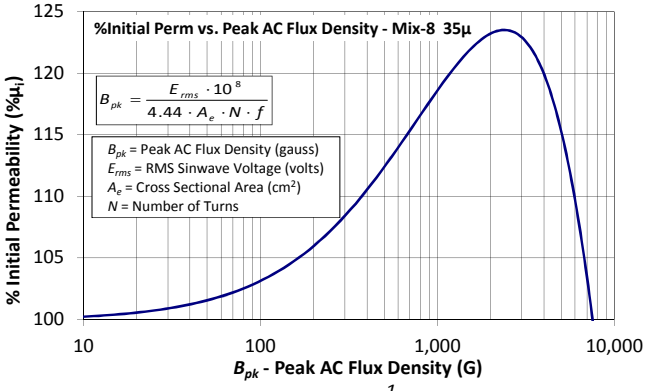
a=1.90E+09, b=2.00E+08, c=9.00E+05, d=5.00E-15



$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

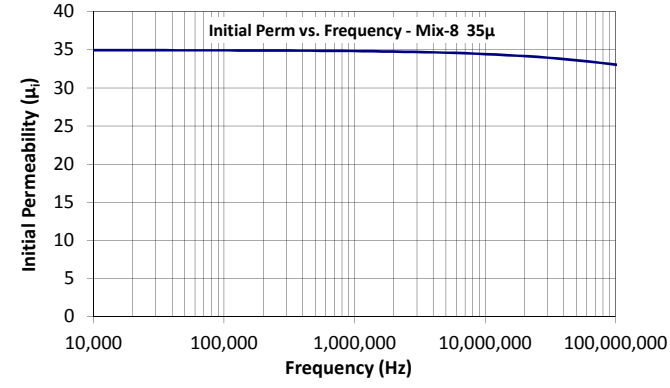
a=1.00E-02, b=3.49E-06, c=1.43, d=0.00



$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

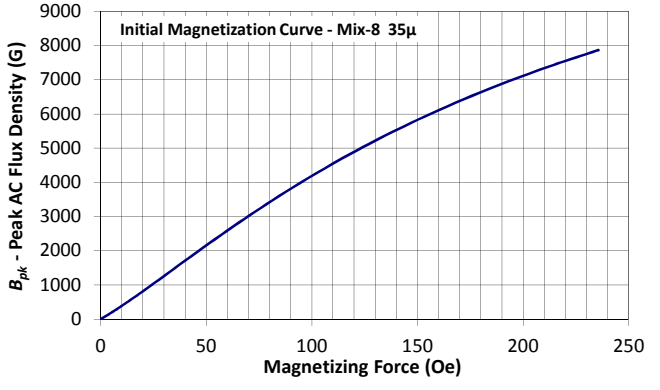
a=3.50E+02, b=3.78E-01, c=1.03E+00, d=1.76E+10, e=-1.98E+00, f=1.40E+02



$$\mu_i = \frac{1}{a + bf^c} + d$$

where f expressed in hertz, and:

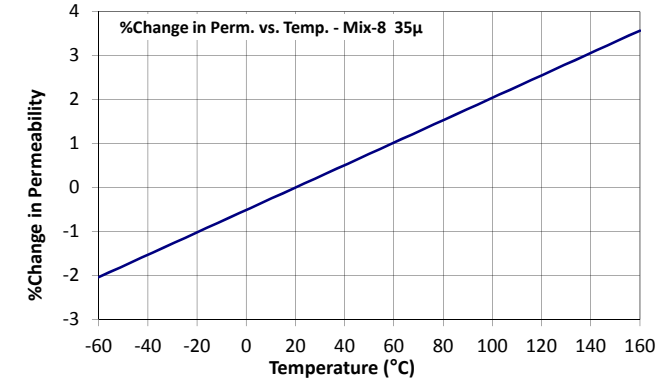
a=1.27E-01, b=1.98E-07, c=6.64E-01, d=2.70E+01



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=4.36E-02, b=1.74E+00, c=3.26E+01, d=5.86E-01, e=5.04E+02



$$\left(\frac{\Delta\mu_i}{\mu_i}\right) ppm = a(T - 20)$$

where T expressed in celsius, and:

a=255

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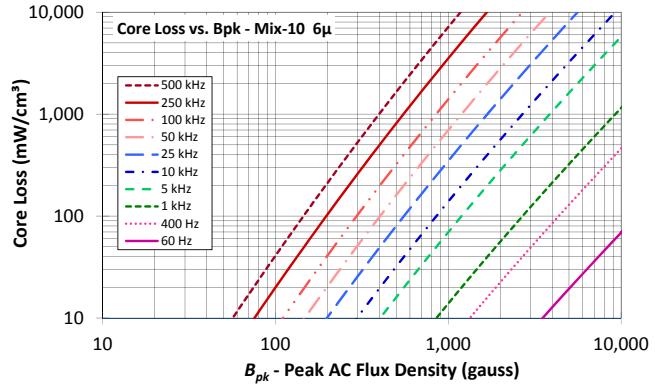
-10 material is a high frequency carbonyl iron. -10 will provide high Q up to 150 MHz and is a popular material for cable television applications. -10 will produce moderate band transformers covering 400 to 700 MHz.

Mix:	-10

Revision 20161006 - Generated 2016-Oct-10

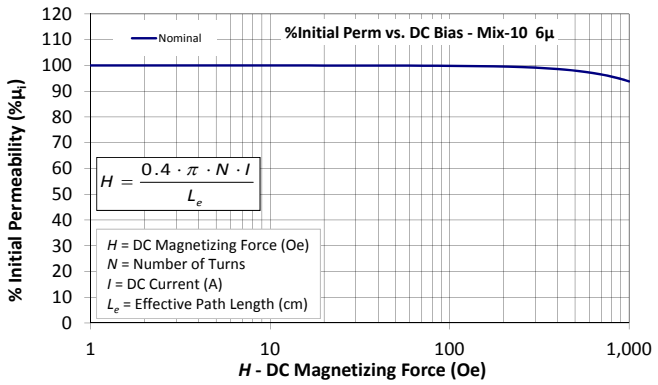
µi(reference)	6
Color Code	Black/Clear
Density	4.9 g/cm³
Bsat	14.6kG
Core Loss (100kHz, 140g)	18 mW/cm³ (nom) 20 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	99.6% (nom) 99.4% (min)



$$\text{Core Loss } (mW/cm^3) = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

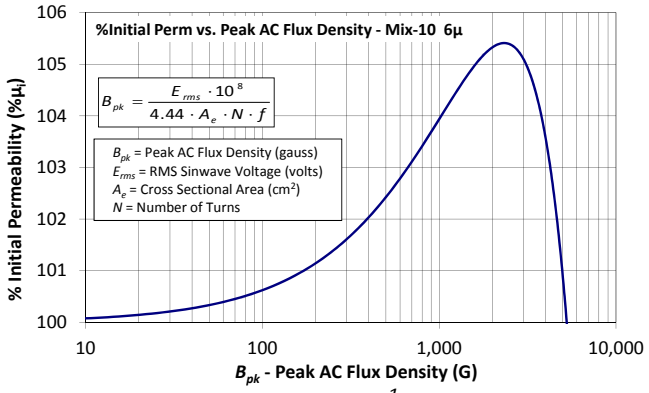
a=4.00E+09, b=3.00E+08, c=2.70E+06, d=8.00E-16



$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

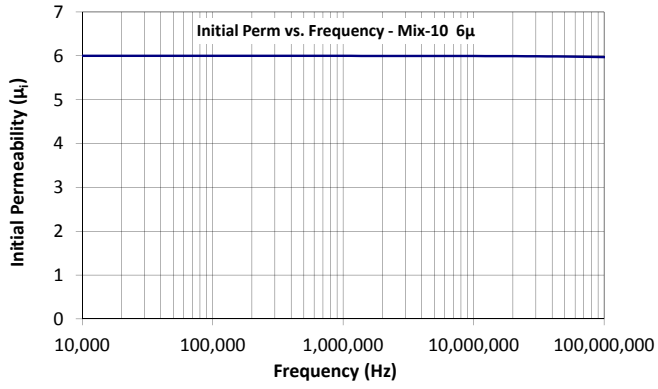
a=1.00E-02, b=5.54E-09, c=1.69, d=0.00



$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

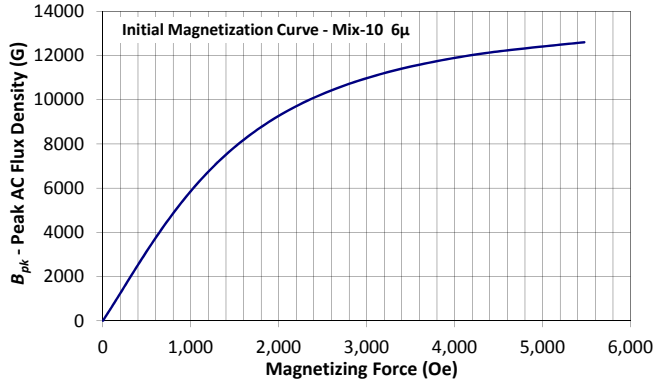
a=1.57E+03, b=4.50E-01, c=1.25E+00, d=1.16E+17, e=-3.70E+00, f=1.07E+02



$$\mu_i = \frac{1}{a + bf^{\ c}} + d$$

where f expressed in hertz, and:

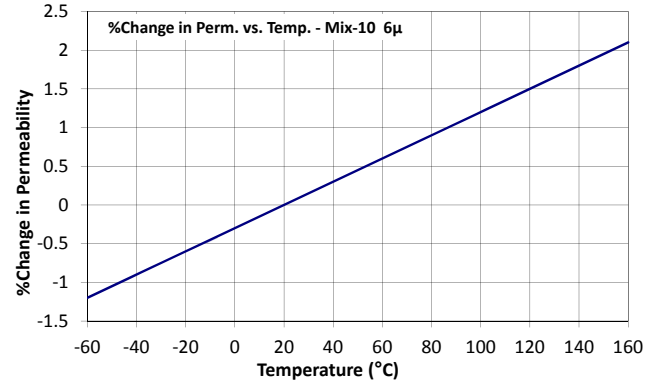
a=2.00E-01, b=7.01E-11, c=9.00E-01, d=1.00E+00



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=9.13E-04, b=1.96E+00, c=3.83E+04, d=9.23E-04, e=2.43E+03



$$\left(\frac{\Delta\mu_i}{\mu_i}\right) ppm = a(T - 20)$$

where T expressed in celsius, and:

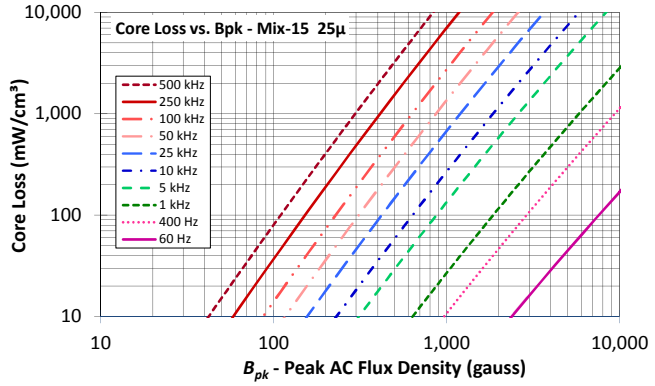
a=150

-15 material is an annealed carbonyl iron providing the highest carbonyl permeability. -15 is useful for high Q applications below 1 MHz and will provide the broadest band transformers covering a typical range from 50 to 500 MHz.

Mix:	-15

Revision 20160615 - Generated 2016-Jun-20

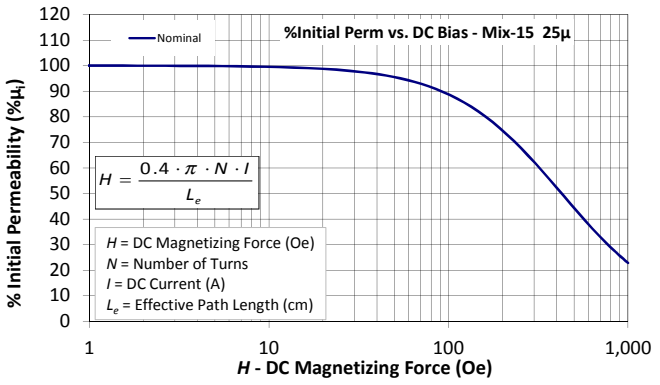
µi(reference)	25
Color Code	Red/White
Density	6.4 g/cm³
Bsat	17.5kG
Core Loss (100kHz, 140g)	32 mW/cm³ (nom) 36 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	74.7% (nom) 69.4% (min)



$$Core\ Loss\ (mW/cm^3) = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

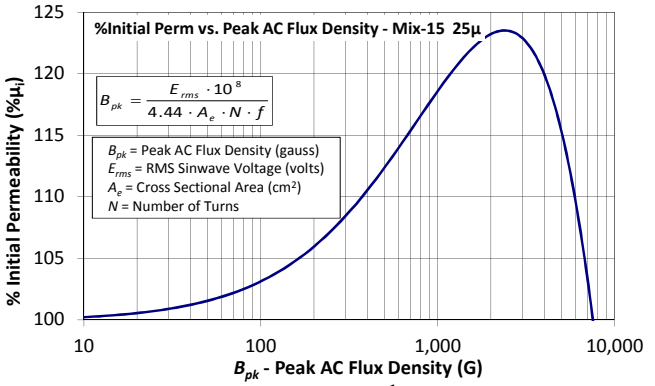
a=1.90E+09, b=2.00E+08, c=9.00E+05, d=5.00E-15



$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

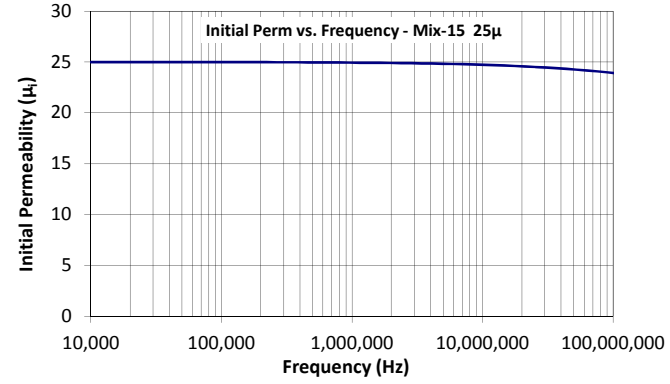
a=1.00E-02, b=1.78E-06, c=1.43, d=0.00



$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

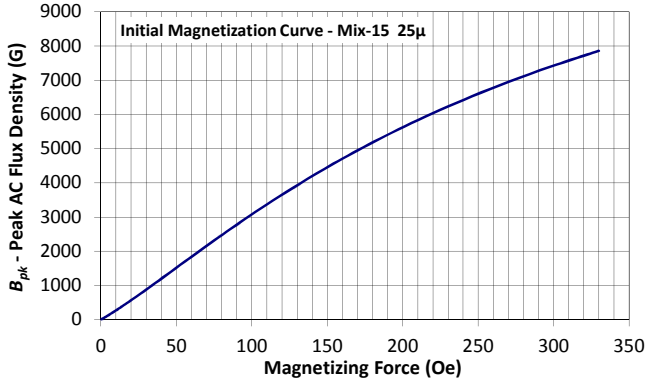
a=3.50E+02, b=3.78E-01, c=1.03E+00, d=1.76E+10, e=-1.98E+00, f=1.40E+02



$$\mu_i = \frac{1}{a + bf^{\ c}} + d$$

where f expressed in hertz, and:

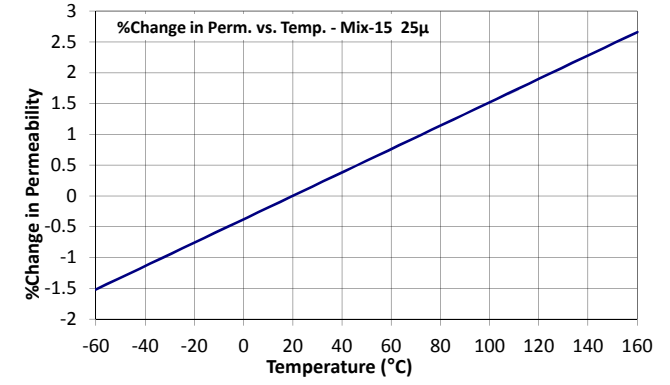
a=1.75E-01, b=1.98E-07, c=6.64E-01, d=1.93E+01



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=3.18E-02, b=1.75E+00, c=4.23E+01, d=5.67E-01, e=6.98E+02



$$\left(\frac{\Delta\mu_i}{\mu_i}\right) ppm = a(T - 20)$$

where T expressed in celsius, and:

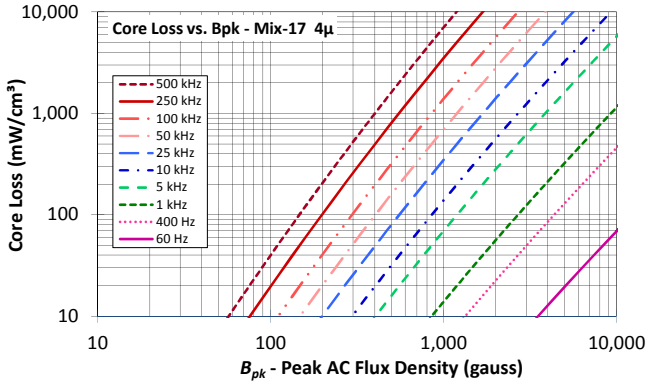
a=190

-17 material is one of the highest frequency carbonyl irons. -17 will provide high Q up to 150 MHz and is a popular material for cable television applications. -17 will produce moderate band transformers covering 400 to 700 MHz.

Mix:	-17

Revision 20160308 - Generated 2016-Mar-23

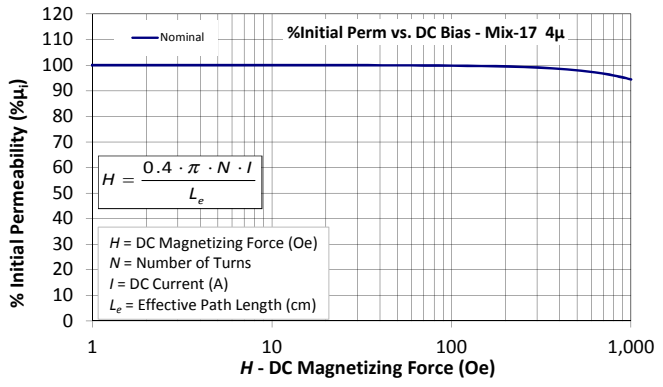
µi(reference)	4
Color Code	Blue/Yellow
Density	4.8 g/cm³
Bsat	14.4kG
Core Loss (100kHz, 140g)	18 mW/cm³ (nom) 20 mW/cm³ (max)
%Perm at DC Bias (200 Oe)	99.5% (nom) 99.4% (min)



$$\text{Core Loss (mW/cm}^3) = \frac{f}{\frac{a}{B_{pk}^{\ 3}} + \frac{b}{B_{pk}^{\ 2.3}} + \frac{c}{B_{pk}^{\ 1.65}}} + d \cdot B_{pk}^{\ 2} \cdot f^2$$

where B_{pk} expressed in gauss, f expressed in hertz, and:

a=4.00E+09, b=3.00E+08, c=2.70E+06, d=4.40E-16

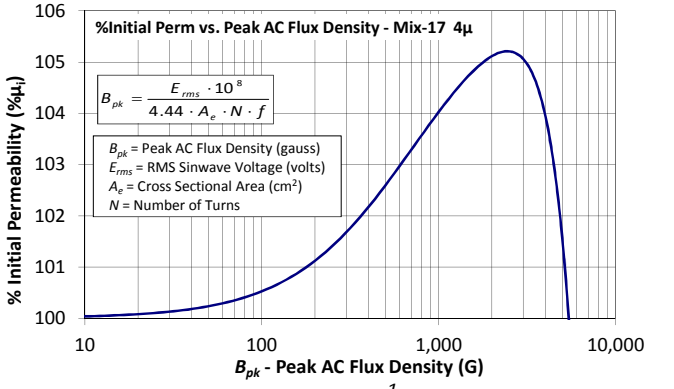


$$H = \frac{0.4 \cdot \pi \cdot N \cdot I}{L_e}$$

$$\%\mu_i = \frac{1}{a + b \cdot H^c} + d$$

where H expressed in oersteds, and:

a=1.00E-02, b=1.34E-08, c=1.55, d=0.00

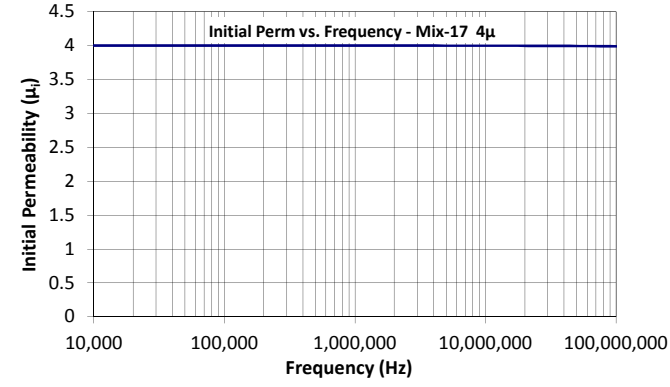


$$B_{pk} = \frac{E_{rms} \cdot 10^8}{4.44 \cdot A_e \cdot N \cdot f}$$

$$\%\mu_i = \frac{1}{\frac{1}{a + bB_{pk}^{\ c}} + \frac{1}{dB_{pk}^{\ e}} + \frac{1}{f}}$$

where B_{pk} expressed in gauss, and:

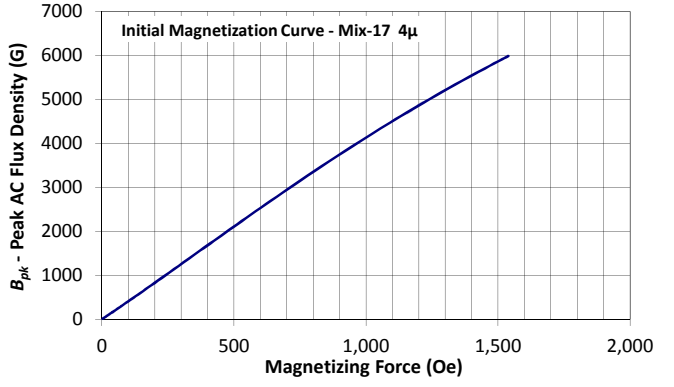
a=1.57E+03, b=4.50E-01, c=1.25E+00, d=1.16E+17, e=-3.70E+00, f=1.07E+02



$$\mu_i = \frac{1}{a + bf^{\ c}} + d$$

where f expressed in hertz, and:

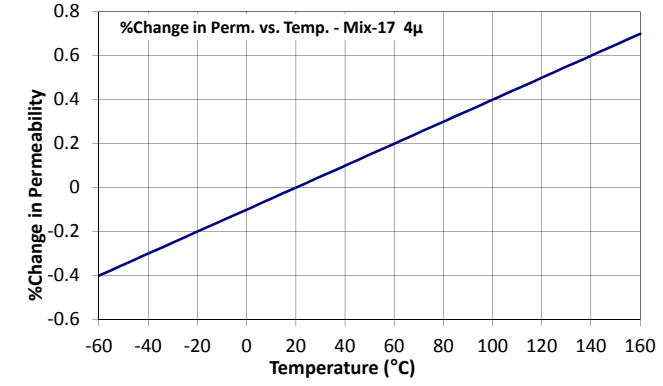
a=3.33E-01, b=7.01E-11, c=9.00E-01, d=1.00E+00



$$B_{pk} = \frac{\mu_i}{\frac{1}{H + aH^{\ b}} + \frac{1}{cH^{\ d}} + \frac{1}{e}}$$

where B_{pk} expressed in gauss, H in oested, and:

a=6.20E-04, b=1.96E+00, c=7.71E+04, d=9.31E-04, e=3.60E+03



$$\left(\frac{\Delta\mu_i}{\mu_i}\right) ppm = a(T - 20)$$

where T expressed in celsius, and:

a=50

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