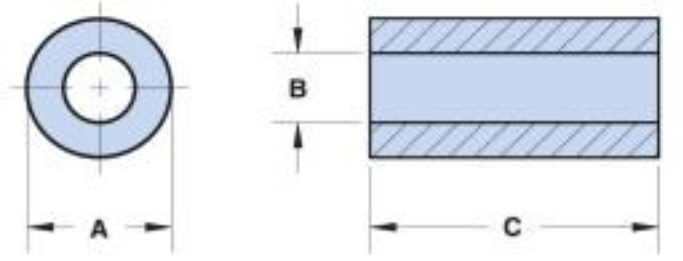
Fair-Rite Products Corp.
Your Signal Solution®
Ferrite Components for the Electronics Industry
Fair-Rite Products Corp. PO Box J,One Commercial Row, Wallkill, NY 12589-0288
Phone: (888) 324-7748 www.fair-rite.com

Fair-Rite Product's Catalog
Part Data Sheet, 2646102002
Printed: 2014-06-11



Part Number:	2646102002
Frequency Range:	Broadband Frequencies 25-300 MHz (Economical 46 material)
Description:	46 ROUND CABLE CORE
Application:	Suppression Components
Where Used:	Cable Component
Part Type:	Round Cable EMI Suppression Cores

Mechanical Specifications

Weight:	55.000 (g)

Part Type Information

Fair-Rite offers a broad selection of ferrite EMI suppression cable cores in several materials with guaranteed minimum impedance specifications.

-All cable cores have been burnished to remove the sharp edges.

-The column 'H' (Oe) gives for each cable core the calculated dc bias field in oersted for 1 turn and 1 ampere direct current. The actual dc H field in the application, is this value of 'H' times the actual NI (ampere-turns) product. For the effect of the dc bias on the impedance of the core material, see the figures 18-23 in the application note 'How to choose Ferrite Components for EMI Suppression'.

-Suppression cable cores are controlled for impedances only. Minimum impedance values are specified for the + marked frequencies. The minimum impedance is typically the listed impedance less 20%.

-Single turn impedance tests for 31, 43 and 46 material cores are performed on the 4193A Vector Impedance Meter. The 61 material parts are tested on the 4191A RF Impedance Analyzer and 75 material parts are tested on the 4285A LCR Meter. Cores are tested with the shortest Practical wire length.

-For smaller suppression parts, refer to the EMI Suppression Bead section of our catalog.

-For any cable suppression core not listed here, feel free to contact our customer service group for availability and pricing.

-The 'C' dimension, the core length, can be modified to suit specific applications.

-Our Expanded Cable and Suppressor Kit (part number 0199000005) Contains a selection of these suppression cores.

-Explanation of Part Numbers: Digits 1 & 2 =product class, 3 & 4 material grade and last digit 2 = burnished.

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Mechanical Specifications

Dim	mm	mm tol	nominal inch	inch misc.
A	25.90	±0.75	1.020	-
B	12.80	±0.25	0.505	-
C	28.60	±0.80	1.125	-
D	-	-	-	-
E	-	-	-	-
F	-	-	-	-
G	-	-	-	-
H	-	-	-	-
J	-	-	-	-
K	-	-	-	-

Electrical Specifications

Typical Impedance (Ω)	
10 MHz	74
25 MHz	118
100 MHz+	212
250 MHz	268

Electrical Properties	
H(Oe)	.22

Land Patterns

V	W ref	X	Y	Z
- -	- -	- -	- -	- -

Winding Information

Turns Tested	Wire Size	1st Wire Length	2nd Wire Length
-	-	-	-

Reel Information

Tape Width mm	Pitch mm	Parts 7 " Reel	Parts 13 " Reel	Parts 14 " Reel
-	-	-	-	-

Package Size

Pkg Size
- (-)

Connector Plate

# Holes	# Rows
-	-

Legend

+ Test frequency

Preferred parts, the suggested choice for new designs,have shorter lead times and are more readily available.

The column H(Oe) gives for each bead the calculated dc bias field in oersted for 1 turn and 1 ampere direct current. The actual dc H field in the application is this value of H times the actual NI (ampere-turn) product. For the effect of the dc bias on the impedance of the bead material, see figures 18-23 in the application note How to choose Ferrite Components for EMI Suppression.

A ½ turn is defined as a single pass through a hole.

Σl/A - Core Constant

l_e: Effective Path Length

A_e: Effective Cross-Sectional Area

V_e: Effective Core Volume

A_L - Inductance Factor $\left(\frac{L}{N^2}\right)$

NI - Value of dc Ampere-turns

N/AWG - Number of Turns/Wire Size for Test Coil

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Ferrite Material Constants

Specific Heat	0.25 cal/g/°C
Thermal Conductivity	**3.5 - 4.5 mW/cm** - °C
Coefficient of Linear Expansion	8 - 10×10^{-6}/°C
Tensile Strength	4.9 kgf/mm^2
Compressive Strength	42 kgf/mm^2
Young's Modulus	15×10^3 kgf/mm^2
Hardness (Knoop)	650
Specific Gravity	$\approx$ 4.7 g/cm^3

The above quoted properties are typical for Fair-Rite MnZn and NiZn ferrites.

See next page for further material specifications.

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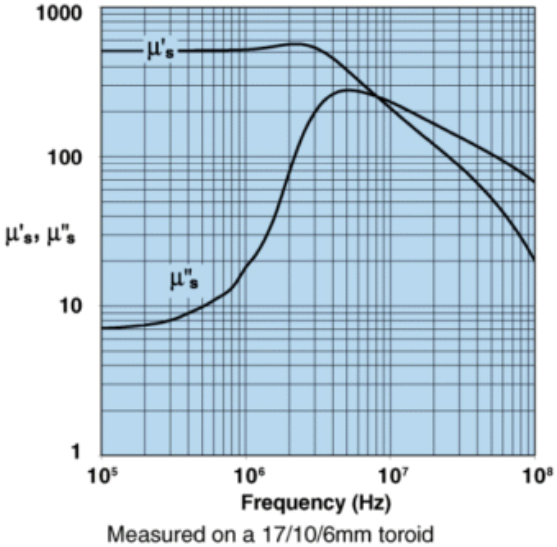
Our latest material development is a MgZn ferrite intended for suppression applications. This material does not use nickel in its composition, hence it avoids potential environmental issues as well as reduces the cost of the material component of suppression parts. The suppression performance of the 46 material is similar to our widely used 43 material.
The new Fair-Rite grade 46 is supplied in the larger sizes of the round cable EMI suppression and snap-it cores.

46 Material Characteristics:

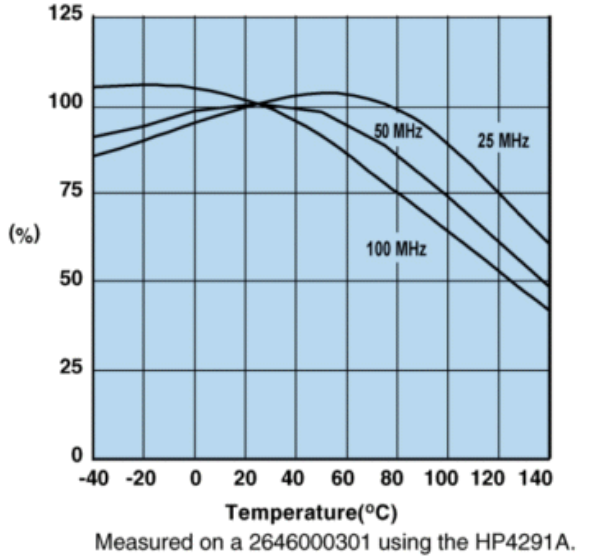
Property	Unit	Symbol	Value
Initial Permeability @ B < 10 gauss		μ_i	500
Flux Density @ Field Strength	gauss oersted	B H	3000 10
Residual Flux Density	gauss	B_r	1900
Coercive Force	oersted	H_c	0.40
Loss Factor @ Frequency	10^{-6} MHz	$\tan\delta/\mu_i$	60 0.1
Temperature Coefficient of Initial Permeability (20 -70°C)	%/°C		-------
Curie Temperature	°C	T_c	>140
Resistivity	Ω cm	ρ	$1x10^8$

Complex Permeability vs. Frequency



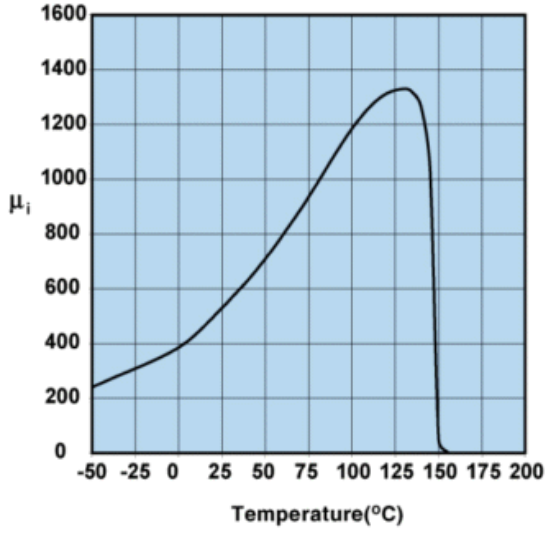
Measured on a 17/10/6mm toroid using the HP 4284A and the HP 4291A.

Percent of Original Impedance vs. Temperature



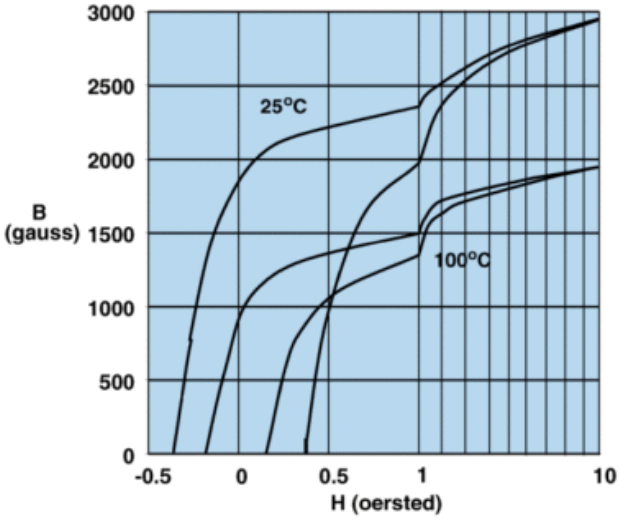
Measured on a 2646000301 using the HP4291A.

Initial Permeability vs. Temperature



Measured on a 17/10/6mm toroid at 100kHz.

Hysteresis Loop



Measured on a 17/10/6mm toroid at 10kHz.

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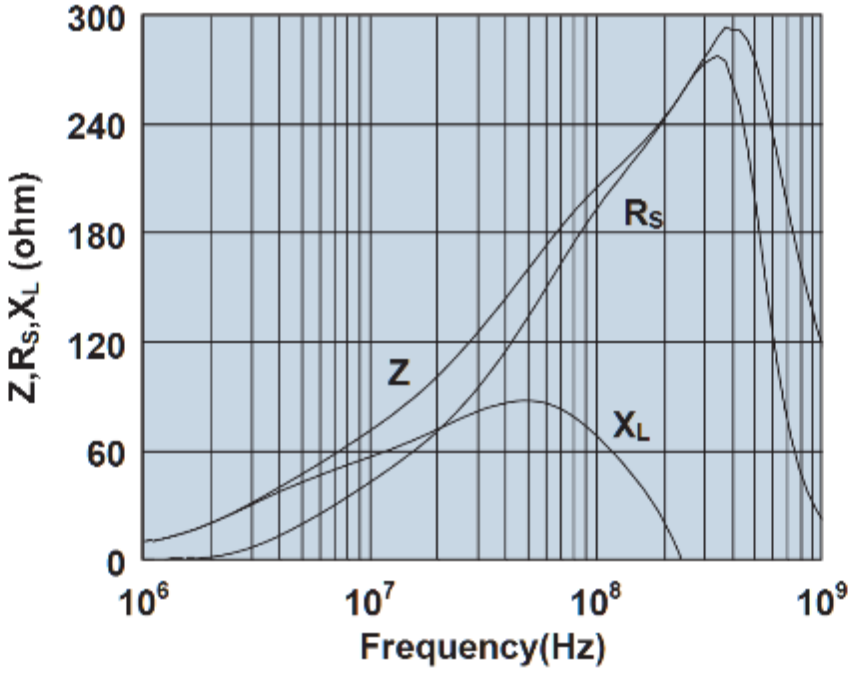

Impedance, reactance, and resistance vs. frequency.