

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, 4078377511 Printed: 2013-07-03



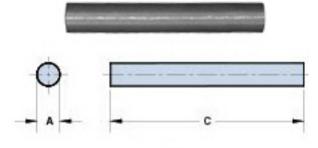


Figure 1

Part Number:	4078377511
i all Number.	40/03//311

Frequency Range: Medium Permeability, 77 (ui=2000) & 78 (ui=2300) materials

- Description: 78 ROD
- Application: Inductive Components
- Where Used: Open Magnetic Circuit
- Part Type: Rods

#### **Mechanical Specifications**

Weight: 24.000 (g)

# Part Type Information

Pressed Fair-Rite rods are used extensively in high-energy storage designs. These rods can also be used for inductive components that require temperature stability or have to accommodate large dc bias requirements.

-The 'A' dimension can be centerless ground to tighter tolerances.

-Figure 2 rods have a 0.6 mm (.024") maximum chamfer on the end faces.

-For frequency tuned rod designs see section Antenna/RFID Rods.

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

Fair-Rite Products Corp. Your Signal Solution®

Fair-Rite Products Corp. PO Box J.One Commercial Row, Wallkill, NY 12589-0288 Phone: (888) 324-7748 www.fair-rite.com

Ferrite Components for the Electronics Industry

Fair-Rite Product's Catalog Part Data Sheet, 4078377511 Printed: 2013-07-03



# **Mechanical Specifications**

Dim	mm	mm	nominal	inch
		tol	inch	misc.
А	9.50	±0.25	0.374	-
В	-	-	-	-
С	70.00	±1.50	2.756	-
D	-	-	-	-
E	-	-	-	-
F	-	-	-	-
G	-	-	-	-
Н	-	-	-	-
J	-	-	-	-
К	-	-	-	-

# **Electrical Specifications**

Typical Impedance (Ω)	
Electrical Properties	

# Land Patterns

 V	vv	~	Ĭ	~
-	-	-	-	-

## Winding Information

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

## **Reel Information**

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

## Package Size

Pk	g 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.

LI/A - Core Constant

A<sub>e</sub>: Effective Cross-Sectional Area

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

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

I e: Effective Path Length

V<sub>e</sub>: Effective Core Volume

NI - Value of dc Ampere-turns



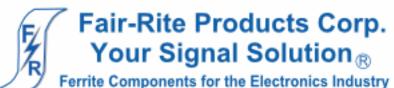




# **Ferrite Material Constants**

Specific Heat	0.25 cal/g/ºC
Thermal Conductivity	3.5 - 4.5 mW/cm - °C
Coefficient of Linear Expansion	8 - 10x10 <sup>-6</sup> /ºC
Tensile Strength	4.9 kgf/mm <sup>2</sup>
Compressive Strength	42 kgf/mm <sup>2</sup>
Young's Modulus	15x10 <sup>3</sup> kgf/mm <sup>2</sup>
Hardness (Knoop)	650
Specific Gravity	$\approx$ 4.7 g/cm <sup>3</sup>
The above quoted properties are typical for Fair-Rit	e MnZn and NiZn ferrites.

See next page for further material specifications.



Fair-Rite Products Corp. PO Box J,One Commercial Row, Wallkill, NY 12589-0288 Phone: (888) 324-7748 www.fair-rite.com

A MnZn ferrite specifically designed for power applications for frequencies up to 200 kHz.

RFID rods, toroids, U cores, and E&I cores are all available in 78 material.

**Complex Permeability vs. Frequency** 

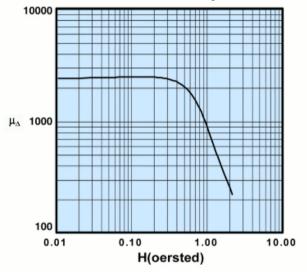
#### Fair-Rite Product's Catalog Part Data Sheet, 4078377511 Printed: 2013-07-03

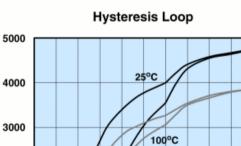


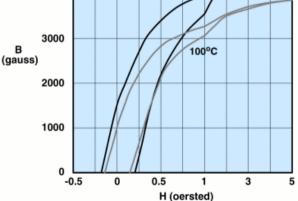
#### 78 Material Characteristics:

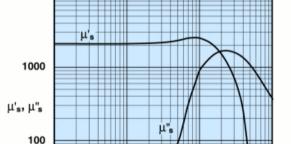
Property	Unit	Symbol	Value
Initial Permeability @ B < 10 gauss		μ	2300
Flux Density	gauss	в	4800
@ Field Strength	oersted	н	5
Residual Flux Density	gauss	B,	1500
Coercive Force	oersted	Hc	0.20
Loss Factor	10-6	tan δ/μ	4.5
@ Frequency	MHz		0.1
Temperature Coefficient of Initial Permeability (20 -70°C)	%/°C		1.0
Curie Temperature	°C	To	>200
Resistivity	Ωcm	ρ	2x10 <sup>2</sup>

Incremental Permeability vs. H









10000

10 10<sup>4</sup> 10<sup>5</sup> 10<sup>6</sup> 10<sup>7</sup> Frequency (Hz)

Measured on an 18/10/6mm toroid using the HP 4284A and the HP 4291A.



5000 4000 4000 4000 2000 2000 1000 -50 0 50 100 150 200 200 200 200 0 50 100 150 200 200 200 50 Temperature(°C)

Measured on an 18/10/6mm toroid at 100kHz.

Measured on an 18/10/6mm toroid at 10kHz.