ITEM OPPORTUNITY SYNOPSIS:

Magnets for Motors

2021-001

Supplier Scouting Number

TECHNICAL INFORMATION:

1. Describe the Item:

Please describe the item application/ the end use of item.

Ceramic magnets used on permanent electric motors.

Provide the item number if applicable: (N95 Mask vs Protective Mask).

N/A

2. Summary of Technical Specifications and Performance Requirements:

a. Provide dimensions / size / tolerances / performance specifications for the item.

See the attached engineering drawing for specifications.

b. List required materials needed to make the product, Including materials of product components, if applicable.

Various grades of ceramic magnet material

c. Are there applicable certification requirements to supply this item? (i.e. ISO certification) Are there any applicable regulations that apply to the production of this item? (i.e. FDA regulations or EPA regulations) Are there any other standard requirements? (i.e. ASME Standard, IEEE Standard) Please specify.

N/A

d. Describe the manufacturing processes (elaborate to provide as much detail as possible).

Similar to making bricks, the ceramic magnet powder is pressed to the required shape, such as an arc. Then the pressed magnets are sintered in an oven and become very hard. There is a grinding operation that finish grinds ID and OD. Normally these finished magnets are magnetized by the customer when assembled into the motor.

f. Additional Comments:
Is there other information that would impact the item's performance or usefulness? Please explain.

BUSINESS INFORMATION:		**Potential Business Volume Estimate (i.e., # Units Per Day, Month, Year):**
		Approximately 250,000 per year of various sizes.
		Target Price / Unit Cost Information:
		Flexible and negotiable.
	Delivery Requirements:	**When is it needed by? (Immediate, 30 Days, 6 months, etc.)**
		No immediate need. Company buys from China now and wish to buy magnets from a USA supplier.
		Describe packaging requirements (i.e., individually/ group packaging).
		Boxes on a skid. Typically very heavy product.
		Where is this opportunity located? Is there a preferred shipping proximity - if applicable?
		Deliveries expected to be made to company's location in Watertown, NY.
Additional Comments:		**How long would you like to leave this opportunity open to the National Network?**
		☐ 3 days ☐ 5 days ☐ 7 days ☒ 10 days _____ Other
		Is there other information you would like to include?

Photos or diagrams of the item (helpful but not required).

FERRIMAG 7B
TECHNICAL DATA

NOMINAL MAGNETIC PROPERTIES

Br	(RESIDUAL INDUCTION)	3800 Gauss	380 mTesla
Hc	(COERCIVE FORCE)	3500 Oersteds	275 kA/m
Hci	(INTRINSIC COERCIVE FORCE)	4000 Oersteds	315 kA/m
BHmax	(MAXIMUM ENERGY PRODUCT)	3.3 x 10^6 GOe	26.2 kJ/m^3
OPERATING POINT FOR MAXIMUM ENERGY PRODUCT			
	Bo	1900 Gauss	190 mTesla
	Ho	1750 Oersteds	140 kA/m
PERMEANCE COEFFICIENT AT Bo/Ho		1.08	
REVERSIBLE PERMEABILITY		1.05 - 1.07	
	(RECOIL PERMEABILITY, u rev)		
REVERSIBLE TEMPERATURE COEFFICIENT OF Br		-0.20%/°C(-60° TO 100° C)	
REVERSIBLE TEMPERATURE COEFFICIENT OF INTRINSIC COERCIVE FORCE		+0.35%/°C(-60° TO 100°C)	

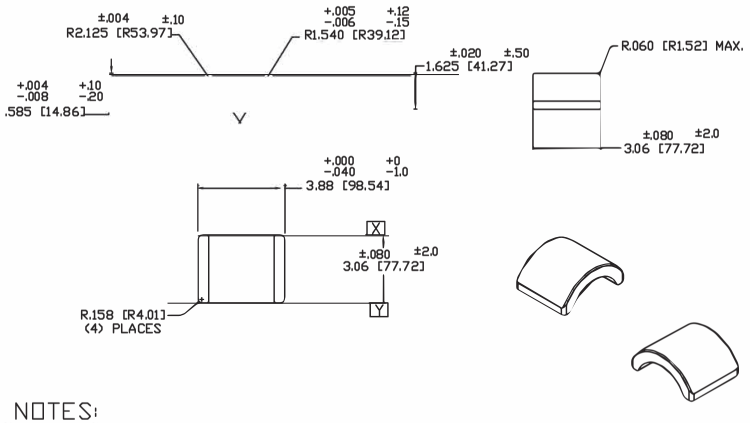
TYPICAL PHYSICAL PROPERTIES

NOMINAL CHEMICAL COMPOSITION	$SrO \cdot 6 Fe_2O_3$	
DENSITY	.174 lbs./in^3	4.8 g/cm^3
CURIE TEMPERATURE	842 °F	450 °C
RECOMMENDED MAXIMUM OPERATING TEMPERATURE	480 °F	250 °C
SPECIFIC HEAT	715 - 835 J/kg°C	
THERMAL CONDUCTIVITY	4.5 W/m°C	
COEFFICIENT OF LINEAR EXPANSION	10 X 10^{-6} /°C ⊥ TO ORIENTATION	
(25°C TO 200°C)	14 X 10^{-6} /°C || TO ORIENTATION	
ELECTRICAL RESISTIVITY	>10^6 Ohm•cm	

MECHANICAL PROPERTIES

YOUNG'S MODULUS	2.5 X 10^7 lbs./in^2	1.7 X 10^{11} N/m^2
COMPRESSIVE STRENGTH	2.0 X 10^5 lbs./in^2	1.3 X 10^9 N/m^2
TENSILE STRENGTH	4.0 X 10^3 lbs./in^2	2.7 X 10^7 N/m^2
FLEXURAL STRENGTH	9.0 X 10^3 lbs./in^2	6.2 X 10^7 N/m^2

MOST PERMANENT MAGNET MATERIALS ARE A CLASS OF MATERIALS THAT LACK DUCTILITY AND ARE INHERENTLY BRITTLE. SUCH MATERIALS SHOULD NOT BE DESIGNED AS STRUCTURAL COMPONENTS IN A CIRCUIT. MEASUREMENT OF SUCH PROPERTIES AS HARDNESS AND TENSILE STRENGTH ARE NOT FEASIBLE ON COMMERCIAL MATERIALS WITH THESE INHERENT CHARACTERISTICS. THEREFORE, SPECIFICATIONS OF THESE PROPERTIES ARE NOT ACCEPTABLE. THE EXTREME HARDNESS OF THESE MATERIALS MAKES MACHINING IMPRACTICAL EXCEPT BY THE USE OF ABRASIVE GRINDING METHODS.



NOTES:

1. VISUAL IMPERFECTIONS NOT AFFECTING MAGNET PERFORMANCE WILL BE ACCEPTABLE.

MATERIAL SPECIFICATIONS (SEE ATTACHED DATA SHEETS FOR ADDITIONAL SPECS)		
	NOMINAL VALUES	
	CHINA (GRADE FM-7B)	TDK (GRADE M-9) PART #Q1282B436C
Br	3800 GUASS (NOM)	3700 GUASS (NOM)
Hc	3500 OERSTEDS (NOM)	3425 OERSTEDS (NOM)
Hci	4000 OERSTEDS (NOM)	4200 OERSTEDS (NOM)
BHmax	3.3 x 10^6 GUASS-OERSTEDS (NOM)	3.2 x 10^6 GUASS-OERSTEDS (NOM)

2. PART MUST PASS THROUGH A GAGE WITH AN OUTSIDE RADIUS OF 2.129, AN INSIDE RADIUS OF 1.545, AND AN OPENING OF 3.884. MINIMUM LENGTH OF GAGE TO BE 3.140. GAGE MUST ALLOW FLAT LEG TIP.
3. BACK FLATNESS NOT TO EXCEED .010 TOTAL.
4. MAGNETIC CERTIFICATION REQUIRED WITH EACH SHIPMENT.
5. RADIAL ORIENTATION REQUIRED.
6. SURFACES X & Y TO BE PARALLEL TO EACH OTHER WITHIN .030.

REV	ECN	REVISION RECORD	BY	DATE	CHK'D
B	1711	UPDATED PRINT	TR	4/2/12	
A	1579	NEW ISSUE	TR	12/7/10	

UNLESS OTHERWISE SPECIFIED:
TOLERANCES:
FRACTIONAL: ± 1/64"
ANGULAR: ± 30'
ONE PLACE DECIMAL: ±.020"
TWO PLACE DECIMAL: ±.010"
THREE PLACE DECIMAL: ±.005"

PROJECT NUMBER: 1192

	NAME	DATE
DRAWN	CG	12/7/10
CHECKED		

DATE STAMP

PART USED ON MODEL NUMBER:

WWW.CURRENTAPPS.COM

MATERIAL:

275 BELLEW AVENUE SOUTH
WATERTOWN, NY 13601
PHONE: (315) 788-4689
FAX: (315) 788-4693

TITLE: (B) CERAMIC ARC

SIZE	DWG. NO.	REV
A	20816-13	B

SCALE: 1:1 | WEIGHT: | SHEET 1 OF 1