

# SAFETY DATA SHEET

**Strontium Ferrite  
Magnetized Material  
Ovation 35162 Circulator**

Issue Date: March 19, 2018

## Section 1 - Identification

Product Identifier: Strontium Ferrite, Magnetized  
Other Identification: Grade 8, solid ceramic, custom design, mounted in Circulator, an electronic device  
Specified Use: Installed inside industrial equipment, not accessible except by use of tools  
Restriction on Use: Use only within Ovation 35162, Radio Frequency Generator, industrial equipment  
Company Name: Advanced Energy Industries, Inc.  
1625 Sharp Point Drive  
Fort Collins, Colorado 80525 USA  
Website: [www.advanced-energy.com](http://www.advanced-energy.com)  
Emergency Contact: 1-800-446-9167  
USA Telephone: 1-970-221-0108  
Technical Support: [TechSupport@aei.com](mailto:TechSupport@aei.com)

## Section 2 - Hazard(s) Identification

Physical hazards: Not classified  
Health hazards: Not classified  
Environmental hazards: Not classified  
OSHA defined hazards: Not classified

### Label elements

Hazard symbol: None  
Signal word: None  
Hazard statement: Not available

### Precautionary statements

Prevention: Not available  
Response: Not available  
Storage: Not available  
Disposal: Not available

Hazard(s) not otherwise  
classified (HNOC): Magnetized material

### Supplemental information

This product is not a hazardous substance, not classified as hazardous according to OSHA CFR 1910.1200 (HazCom 2012). No adverse human health effects have been observed upon exposure to magnetized materials.

## Section 3 - Composition / Information on Ingredients

Strontium Ferrite                      Formula = SrFe<sub>12</sub>O<sub>19</sub>  
CAS Number 12023-91-5              EC Number 234-685-4  
Magnetized material

## Section 4 - First-Aid Measures

Inhalation: None, no vapor, no dust  
Skin Contact: Wash exposed skin with soap and water  
Eye Contact: None, no vapor, no dust  
Ingestion: Rinse mouth with water if licked  
Most important symptoms/effects, acute and delayed: Not available

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## Section 5 - Fire-Fighting Measures

Suitable extinguishing media: Use water, alcohol-resistant foam, dry chemical, or carbon dioxide  
Unsuitable extinguishing media: None known  
Specific hazards arising from the chemical: Strontium oxides, Iron oxides  
Special protective equipment and precautions for firefighters: Wear self-contained breathing apparatus for firefighting if necessary  
Fire-fighting equipment/instructions: If fire occurs in equipment, treat as an electrical fire  
Specific methods: None established

## Section 6 - Accidental Release Measures

Personal precautions, protective equipment & emergency procedures: Solid substance, if broken, avoid handling, sharp shards  
Methods and materials for containment and cleaning up: Sweep up and shovel, keep in suitable, closed containers  
Environmental precautions: None during use, see section 13 Disposal considerations.

## Section 7 - Handling and Storage

Precautions for safe handling: Brittle material, avoid dropping  
Conditions for safe storage, including any incompatibilities: Keep in a dry place

## Section 8 - Exposure Controls / Personal Protection

Occupational exposure limits: Contains no substances with occupational exposure limit values  
Biological limit values: No biological exposure limits noted for the ingredient(s).  
Exposure guidelines: No exposure hazard known  
Appropriate engineering controls: General industrial hygiene practice

### Individual protection measures, such as personal protective equipment

Eye/face protection: Not required  
Skin / hand protection: Handle with gloves, unless broken, sweep up sharp shards  
Respiratory protection: Not required  
Thermal hazards: None

## Section 9 - Physical and Chemical Properties

### Appearance

Physical state: Solid  
Color: Black  
Odor: None  
Odor threshold: Data not available  
pH: Data not available  
Melting point/freezing point: > 450 °C (> 842 °F)  
Initial boiling point and boiling range: Data not available  
Flash point: Not applicable  
Evaporation rate: Data not available  
Flammability (solid, gas): Data not available

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## Upper/lower flammability or explosive limits

Flammability limit - lower (%): Data not available  
Flammability limit - upper (%): Data not available  
Explosive limit - lower (%): Data not available  
Explosive limit - upper (%): Data not available

Vapor pressure: Data not available

Solubility (water): Negligible in water. Partially soluble in toluene and xylene.

Partition coefficient  
(n-octanol/water): Data not available

Auto-ignition temperature: > 400 °C (> 752 °F) at 1,013 kPa (760 mmHg)

Decomposition temperature: Data not available

Viscosity: Data not available

## Other information

Explosive properties: Data not available

Oxidizing properties: Data not available

## Section 10 - Stability and Reactivity

Reactivity: Data not available

Chemical stability: Stable under normal storage conditions

Possibility of hazardous reactions: Data not available

Conditions to avoid: None known

Incompatible materials: Strong oxidizers

Hazardous decomposition product: Data not available

## Section 11 - Toxicological Information

Symptoms related to the physical, chemical and toxicological characteristics: Data not available

### Acute toxicity

LD50 Oral - rat - female - > 2,000 mg/kg  
(OECD Test Guideline 423): Data not available

LD50 Dermal - rat - male and female - > 2,000 mg/kg  
(OECD Test Guideline 402): Data not available

### Skin corrosion/irritation

Skin - rabbit

Result: No skin irritation - 4 h  
(OECD Test Guideline 404)

### Serious eye damage/eye irritation

Eyes - rabbit

Result: No eye irritation  
(OECD Test Guideline 405)

### Respiratory or skin sensitization

Buehler Test - guinea pig

Result: Does not cause skin sensitization.  
(OECD Test Guideline 406)

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Germ cell mutagenicity:	mouse, lymphocyte, result negative
Carcinogenicity:	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen
Reproductive toxicity:	Data not available
Specific target organ toxicity - single exposure:	Data not available
Specific target organ toxicity - repeated exposure:	Data not available
Aspiration hazard:	Data not available
Additional Information:	RTECS data not available

## Section 12 - Ecological Information

Ecotoxicity:	Data not available
Persistence and degradability:	Data not available
Bioaccumulative potential:	Data not available
Mobility in soil:	Data not available
Other adverse effects:	Ferrous alloy leachate may be hazardous to ground water, avoid landfill disposal

## Section 13 - Disposal Considerations

### Disposal instructions

Used or unused waste material is not hazardous as defined by US EPA RCRA Regulations (40 CFR Part 261)  
Used and unused material may be recycled according to federal, state and local regulations, using licensed disposal company

## Section 14 - Transport Information

### DOT:

US Regulations do not consider magnetized material a hazardous material or dangerous goods  
US Domestic shippers should consult US Air Carriers policies and procedures prior to offering shipment for transportation

### IATA:

Dangerous Goods ?	Yes, magnetic field strength tested, met criteria to allow air transport, mark as Dangerous Goods
UN Number:	UN 2807
UN Shipping Name:	Magnetized Material
Transport Hazard Class:	9
Packing group:	953
Environmental hazards:	No
Magnet material weight:	2 magnets, 2.8 pounds (1.27 kg) total per circulator / per Ovation 35162

### Magnetized Material Testing - per IATA Dangerous Goods Regulations:

Magnetic strength tested using calibrated Air Shipment Milligauss Meter per IATA DGR, Packing Group 953, Method 1

Material tested in shipping box, magnets in circulator, installed in:	Magnetic Field Strength measured at 7 ft, 2.1 meters distance	Magnetic Field Strength measured at 15 ft, 4.6 meters distance
Ovation 35162 RF Generator	0.014 Gauss, maximum, all orientations	0.0016 Gauss, maximum, all orientations
Circulator alone, spare part	0.015 Gauss, maximum, all orientations	0.0017 Gauss, maximum, all orientations
Test Result:	<b>above</b> limit of 2 degree compass deflection = 0.002 Gauss at 2.1 meters	<b>below</b> limit of 2 degree compass deflection = 0.00525 Gauss at 4.6 meters
<b>IATA Dangerous Goods Regulations Test Conclusions:</b>	<b>Considered magnetized material</b>	<b>Acceptable for air transport, mark as Class 9 dangerous goods</b>

Note: Test results have same conclusion, with circulator magnets in Ovation 35162 Radio Frequency Generator or as spare part.

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IMDG: Not regulated as dangerous goods

ADR: Not regulated as dangerous goods

Further information:

Hazard Class 9: Articles and substances which during air transport, present a danger not covered by other classes  
Transportation Note: Magnetized materials are only considered dangerous goods when offered for transportation by air. Magnetized materials are determined hazardous goods after magnetic strength testing indicates it may produce a non-operating gauss interference reading and have the potential to cause compass deflection in aircraft equipped with non-electrical navigation equipment

## Section 15 - Regulatory Information

SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302  
SARA 311/312: No SARA Hazards  
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313  
SARA 304: Emergency release notification not required

Massachusetts Right To Know: No components are subject to the Massachusetts Right to Know Act.  
Pennsylvania Right To Know: strontium ferrite, CAS No. 12023-91-5  
New Jersey Right To Know: strontium ferrite, CAS No. 12023-91-5

## Section 16 - Other Information

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories:

Immediate Hazard - No  
Delayed Hazard - No  
Fire Hazard - No  
Pressure Hazard - No  
Reactivity Hazard - No

HMIS Rating:

Health hazard: 0  
Flammability: 0  
Physical Hazard: 0  
Personal Protection: 0

NFPA Rating:

Health hazard: 0  
Fire Hazard: 0  
Reactivity Hazard: 0  
Flammability: 0  
Physical Hazard 0

NFPA Rating:

Health hazard: 0  
Fire Hazard: 0  
Reactivity Hazard: 0

SDS Preparation:

Advanced Energy Industries, Inc.  
Environmental Compliance  
Fort Collins, Colorado, USA

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