

SPECIALTY MATERIALS, INC.

Manufacturer of Boron and Silicon Carbide Fiber and Boron Nanopowder

SPECIALTY MATERIALS, INC.

SAFETY DATA SHEET

Reinforced Aluminum Composite – A201 Aluminum Matrix

----- SECTION 1 – PRODUCT AND COMPANY IDENTIFICATION -----

Product Name: Fiber Reinforced Aluminum (FRA Composites™)

Product Use Description: A201 cast aluminum containing 25 wt% to 40 wt% aluminosilicate reinforcement fiber for improved wear and elevated temperature properties.

Manufacturer's Name: Specialty Materials, Inc.
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Date Prepared: July 30, 2014

----- SECTION 2 – HAZARDS IDENTIFICATION -----

Ingredient Name	CAS #	Percent	OSHA PEL	ACGIH TLV	Other Limit Recommendations for respirable fibers	
Aluminum	7429-90-5	55 - 70	15.0 (Total) 5.0 (Resp.)	10.0 (Total) 5.0 (Resp.)	Reportable under SARA Title III, Section 313	
Aluminum Oxide III (fibrous form)	1344-28-1	25 - 40	15.0 (Total) 5.0 (Resp.)	TLV not established; recommended 3 mg/m ³	STEL (8 hr TWA ppm): 0.5; LTEL 5.0 mg/m ³	
Copper	7440-50-8	4 - 5	1.0 (Total); 0.1 (Dust)	1.0 (Total); 0.1 (Dust)	Reportable under SARA Title III, Section 313	
Manganese	7439-96-5	< 1	5.0 – fume (mg/m ³)	0.2 (mg/m ³)	Reportable under SARA Title III, Section 313	
Silver	7440-22-4	0.5- 1	0.01 (mg/m ³)	0.01 (mg/m ³)	Reportable under SARA Title III, Section 313	

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Overview:

Not classified as dangerous. This composite is a combination of aluminum alloy and polycrystalline alumina, in chopped fiber form. Once aluminum and fiber components are cast to form a shape, it has the appearance of wrought aluminum products. No known hazards from this composite casting when in bulk solid form or final machined part shape. The solid casting is not flammable.

HMIS LABEL

HEALTH	1
FIRE	1
REACTIVITY	1
PPE	X

Dust and fumes from processing can cause irritation of eyes, skin and respiratory tract; lung disease and other systemic effects.

Dust and fumes generated by machining, grinding, or welding of the cast composite may produce airborne contaminants; primarily aluminum, copper and aluminum oxide. Other metals in the alloy that are present in small amounts should not present a hazard if aluminum and copper dust and fume are adequately controlled.

Explosion or fire hazard may be present when molten aluminum comes in contact with water, dust or fines are dispersed in the air, or when chips, dust or fines are in contact with water, chlorinated solvents or certain metal oxides. This compound is not specifically cited by OSHA or ACGIH, therefore the particulates not otherwise classified (PNOC) standard should be used for exposure evaluation.

Classifications:

Not classifiable as a human carcinogen (ACGIH TLV-A4 and IARC-3); however, the long-term effects of ingested sub 3-micron fibers are not well understood at this time.

All substances contained in this product are listed in the TSCA Chemical Inventory (Section 8[b]), and the European Inventory of Existing Commercial Substances.

Physical Hazards:



R20/22 – Dust: Harmful by inhalation and if swallowed

R36/37/38 – Dust: Irritating to eyes, respiratory system and skin.

Acute Health Effects:



When reduced to its composite constituents, reinforcing fiber particulate can be irritating to the skin (H312) and eyes (H320) on contact. Harmful if swallowed (H302). Inhalation

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may cause irritation the lungs and mucus membrane (H332 & H335). Irritation to eyes will cause watering and redness.

Reddening, scaling and itching are characteristics of skin inflammation. See Section 11 for further information.

Chronic Health Effects:

Classifiable as a human carcinogen (ACGIH TLV-A4 and IARC-3); however, the long-term effects of ingested sub 3-micron fibers are not well understood at this time.



Warning:

This compound contains a substance which, when reduced to powder or dust form, has been identified by the International Agency for Research on Cancer (IARC) as possibly carcinogenic to humans. **Avoid breathing fiber particulates and dust.**

----- SECTION 3 – COMPOSITION/INFORMATION ON INGREDIENTS -----

Composition:

55 - 70% Aluminum (CAS No. 7429-90-5)
4 - 5% Copper (CAS No. 7440-50-8)
0.5 - 1% Silver (CAS No. 7440-22-4)
25 - 40% Fibrous Alumino-Silicate (CAS No. 1344-28-1)

----- SECTION 4 – FIRST AID MEASURES -----

First Aid for Eyes:

If metallic dust from this material enters the eyes, open eyes while under gently running water. Use sufficient force to open eyelids. Have contaminated individual roll their eyes while continuing to flush with water for at least 15 minutes. Seek immediate medical attention.

First Aid for Inhalation:

Consult physician immediately. Remove contaminated clothing while preventing further spread of material. Remove individual to fresh air away from exposure. In case of irregular respiration or respiratory arrest, provide artificial respiration. Do not induce vomiting.

First Aid for Ingestion:

Consult physician immediately. Remove contaminated clothing while preventing further spread of material. Remove individual to fresh air away from exposure. In case of irregular respiration or respiratory arrest, provide artificial respiration. Do not induce vomiting.

First Aid for Skin:

In case of contact, flush affected areas with clean water. Follow-up with mild soap or similar surfactant, apply an emollient and cover. Seek immediate medical attention.

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----- **SECTION 5 - FIRE & EXPLOSION DATA** -----

Flammability:	Will not ignite and burn in bulk form. Slightly flammable to flammable in small in the presence of open flames and sparks.
Flash Points:	Not Applicable
Auto-Ignition Temperature:	N/A
Unusual Fire and Explosion Hazards:	The material is not explosive, but the formation of explosive dust/air mixtures may be possible. An exothermic reaction may occur when contact with acids and alkalis, generating hydrogen and heat.
Extinguishing media:	Small Fire: use dry chemical powder.
Special Remarks-Fire:	Large Fire: use Type D dry powder extinguisher identified for aluminum.
Special Remarks-Explosion:	Molten metal may explode on contact with water. Avoid contact with water; Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

----- **SECTION 6 – ACCIDENTAL RELEASE MEASURES** -----

Steps to be Taken In Case Material Is Released or Spilled:	Aluminum is not listed as a hazardous or toxic waste. Aluminum Composite in bulk form can be handled in the same manner as wrought aluminum product. Wear protective gloves when handling sharp pieces of material. If aluminum composite has been subject to grinding, machining or filing, clean area in a manner that does not disperse metal dust into the air. Area can be washed with water. Collect wash water for approved disposal. Keep wash water from entering drains or ground water. Place all residue in a suitable container. Dispose of in accordance with Section 13.
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----- **SECTION 7 – HANDLING & STORAGE** -----

This is a fully dense aluminum material, no special packaging or storage is required.

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-- SECTION 8 – EXPOSURE CONTROLS/PERSONAL PROTECTION --

Respiratory Protection	Dust respirator when transferring or manipulating fine particles of this product, or if dust concentration is above threshold limit value.
(Specify Type):	
Ventilation:	As per ACGIH for good quality indoor air, nuisance particulate level is 10 mg/m ³ of total dust or 5 mg/m ³ breathable dust.
Local Exhaust:	Not Applicable
Mechanical (General):	Not Applicable
Protective Gloves:	Recommended (29 CFR 1910.132) latex or nitrile gloves recommended
Eye Protection:	Recommended (29 CFR 1910.133) safety goggles recommended
Other Protective Clothing or Equipment:	Additional protective clothing to include long-sleeved garments, goggles and face shield for high sensitivity individuals
Work/Hygienic Practices:	Wash hands thoroughly before eating or smoking.

----- SECTION 9 – PHYSICAL & CHEMICAL PROPERTIES -----

Physical Form:	Odorless silvery gray solid containing finely-chopped alumina reinforcing fiber. Not combustible in this form.
Boiling Point:	not determined for composite; 4521°F for pure aluminum.
Specific Gravity (H ₂ O = 1):	2.45 to 3.45
Vapor Pressure (mm Hg):	Negligible
Solubility in Water:	Negligible
Reactivity in Water:	Negligible
Melting Point:	~ 1220°F

----- SECTION 10 – STABILITY & REACTIVITY DATA -----

Stability:	Unstable () Stable (X) at standard temperatures and pressure.
Conditions to Avoid:	Aluminum reacts with acids, bases, halogenated hydrocarbons and strong oxidizers.
Incompatibility (Materials to Avoid):	Reactive with strong oxidizing agents, strong acids and halogens.
Hazardous Decomposition Products:	The molten metal may explode on contact with water.
Hazardous Polymerization:	N/A
Conditions to Avoid:	Avoid heat, spark or open flame when material is suspended in air.

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-----SECTION 11 -TOXICOLOGICAL INFORMATION-----

Health hazards are associated with short-term irritant effects on the upper respiratory tract, nasopharynx and eye.

1. Acute: If reduced to (small) dust particulate sizes, can be irritating to the skin (H312) and eyes (H320) on contact. Harmful if swallowed (H302). Inhalation may cause irritation the lungs and mucus membrane (H332 & H335). Irritation to eyes will cause watering and redness. Reddening, scaling and itching are characteristics of skin inflammation.
2. Chronic: Not classifiable as a human carcinogen (ACGIH TLV-A4 and IARC-3); however, the long-term effects of ingested powders or very fine particulate in the size range at or below 3 microns in diameter, are not well understood at this time.

Signs and Symptoms of Exposure:

Irritation of Skin or Eyes

Medical Conditions Generally Aggravated by Exposure:

Dermatitis

Emergency and First Aid Procedures:

Excessive skin contact may cause irritation. Wash affected areas with water and soap. If eye contact occurs flush with copious amounts of water.

CHEMICAL LISTED AS CARCINOGEN OR POTENTIAL CARCINOGEN:

National Toxicology Program: Yes () No (X)

I.A.R.C. Monographs: Yes () No (X)

OSHA: Yes () No (X)

Information on Toxicity to Animals: Not available for the subject aluminum matrix composite material.

-----SECTION 12 -ECOLOGICAL INFORMATION-----

Ecological effects are not generally known at this time. EPA Code: 128945

Ecotoxicity: Not available; likely to be the same as wrought aluminum products.

Persistence and Biodegradability: Hazardous short term degradation products are not likely; however, long term degradation products may arise. Alumina fiber degradation would be considered to be more toxic than the product itself.

Mobility in Soil: Not available

Other adverse effects: No available

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-----*SECTION 13 – DISPOSAL CONSIDERATIONS*-----

Waste Disposal Method: Bulk material is not a hazardous waste by definition of OSHA Hazard Communication Standard (29 CFR 1910.1200). Dispose of in accordance with Federal, State and Local Regulations. See transport information.

-----*SECTION 14 – TRANSPORT INFORMATION*-----

DOT Hazard Classification: Not regulated
Identification Number: None
Packing Group: N/A
Proper Shipping Name: Aluminum casting, fiber reinforced, composite

IATA Classification:
Identification Number: None
Packing Group: N/A
Proper Shipping Name: Stable solid, inorganic, n.o.s.

-----*SECTION 15 – REGULATORY INFORMATION*-----

OSHA: This product is not classified as hazardous under the criteria of OSHA Hazard Communication Standard (29 CFR 1910.1200).

Federal and State Regulations: There is no classification data available on carcinogenic properties of this material from EPA, IARC, NTP, OSHA or ACGIH. This Product is listed with the Toxic Substance Control Act inventory and the European Inventory of Existing Commercial Substances.

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----- **SECTION 16 – OTHER INFORMATION** -----

SDS history:

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NOTICE:

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