Safety Data Sheet

Revised Date 03/23/2016

1. Identification

Product Trade Name: **LF-020SILVMX Satin Silver Coated Aluminum**
Chemical Formula: Mixture
Product Use: Various fabricated aluminum parts and products.
Synonym(s): Aluminum

Emergency Information: Direct Color Systems (860) 829-2244

Details of the supplier of the safety data sheet
Manufacturer/Supplier:
Direct Color Systems www.directcolorsystems.com
99 Hammer Mill Road
Rocky Hill, CT 06067
Phone: (860) 829-2244

2. Hazard(s) Identification

EMERGENCY OVERVIEW: Solid. Silver colored. Odorless. Non-combustible as supplied. Small chips, fine turnings and dust from processing may be readily ignitable.

Warning! Welding, brazing, grinding, and machining may cause dust and/or fumes to be released. These fumes may be harmful if inhaled and may irritate the eyes, skin, and respiratory tract. Molten material may cause thermal burns.

POTENTIAL HEALTH EFFECTS The health effects listed below are not likely to occur unless the processing of this product generates dust or fumes. The following statements summarize the health effects generally expected in cases of overexposure. User specific situations should be assessed by a qualified individual. Additional health information can be found in Section 11.

Eyes Dust and fumes from processing: Can cause irritation.

Skin Dust and fumes from processing: Can cause irritation. Prolonged or repeated skin contact may cause sensitization and allergic contact dermatitis.

Inhalation Health effects from mechanical processing (e.g., cutting, grinding): Dust: Can cause irritation of the upper respiratory tract. Chronic overexposures: Can cause scarring of the lungs (pulmonary fibrosis), central nervous system damage, secondary Parkinson's disease and reproductive harm in males.

Additional health effects from elevated temperature processing (e.g., welding, melting): Dust and fumes: Can cause irritation of the respiratory tract. Acute overexposures: Can cause metal fume fever (nausea, chills, fever, shortness of breath, and malaise), reduced ability of the blood to carry oxygen (methemaglobin) and the accumulation of fluid in the lungs (pulmonary edema). Chronic overexposures: Can cause lung cancer.

Carcinogenicity and Reproductive Hazard Product as shipped: Does not present any cancer or reproductive hazards.

Dust from mechanical processing: Can present a cancer hazard (Lead, Nickel). Can present a reproductive hazard (Lead, Manganese). Dust and fumes from welding or elevated temperature processing: Can present a cancer hazard (Hexavalent chromium compounds, Lead compounds, Nickel compounds, Welding fumes). Can present a reproductive hazard (Lead compounds, Manganese compounds).

Medical Conditions Aggravated By Exposure to Product: Dust or fume from processing: Asthma, chronic lung disease, Secondary Parkinson's disease and skin rashes.

3. Composition/Information on Ingredients

Hazardous Components	Cas#	Percent
Aluminum	7429-90-5	>85
Magnesium	7439-95-4	<6.4
Zinc	7440-66-6	<2.8
Manganese	7439-96-5	<1.9
Silicon	7440-21-3	<1.5
Iron	7439-89.6	<1.1
Chromium	7440-47-3	<1.1
Polyester Resin	P Trade Secret	<1.0
Polyester Resin	PT Secret	<1.0
Methylated Melamine	068002-20-0	<1.0
Acrylic Flow Add	PE-08-02	<1.0
Fumed Silica	112945-52-5	<1.0
TLV ACGIh 10MG/M3 Pel Osha 6 MG/M3 Napthalene Sulfonic Acid Catalyst	35322-17-2	<1.0
Polymerized Alkene	68527-08-2	<1.0

4. First Aid Measures

Emergency and First Aid Procedures

Eye Contact: Flush with warm water for at least 15 minutes. If irritation persists, seek medical attention.
Skin Contact: Remove particles by thoroughly washing with soap and water.
Ingestion: Not Applicable
Inhalation: Remove to fresh air.

5. Fire Fighting Measures

Flammable/Combustible Properties: This product does not present fire or explosion hazards as shipped. Small chips, fine turnings, and dust from processing may be readily ignitable.

Fire/Explosion Hazards: May be a potential hazard under the following conditions:

Dust clouds may be explosive. Even a minor dust cloud can explode violently. Dust accumulation on the floor, ledges and beams can present a risk of ignition, flame propagation and secondary explosions.
Chips, fines and dust in contact with water can generate flammable/explosive hydrogen gas. These gases could present an explosion hazard in confined or poorly ventilated spaces.
Dust and fines in contact with certain metal oxides (e.g., rust, copper oxide). A thermite reaction, with considerable heat generation, can be initiated by a weak ignition source.
Molten metal in contact with water/moisture or certain metal oxides (e.g., rust, copper oxide). Moisture entrapped by molten metal can be explosive. Contact of molten aluminum with certain metal oxides can initiate a thermite reaction. Finely divided metals (e.g., powders or wire) may have enough surface oxide to produce thermite reactions/explosions.

Extinguishing Media

Suitable Extinguishing Media: Use Class D extinguishing agents on fines, dusts, or molten metal. Use coarse water spray on chips and turnings.

Unsuitable Extinguishing Media: DO NOT USE halogenated extinguishing agents on small chips/fines. DO NOT USE water in fighting fires around molten metal. These fire extinguishing agents will react with the burning material.

Protection of Firefighters

Protective Equipment for Firefighters: Fire fighters should wear NIOSH approved, positive pressure, self-contained breathing apparatus and full protective clothing when appropriate.

6. Accidental Release Measures

Spill or Leak Procedure

Collect scrap for recycling. If molten*:* Contain the flow using dry sand or salt flux as a dam. All tooling (e.g., shovels or hand tools) and containers which come in contact with molten metal must be preheated or specially coated, rust free and approved for such use. Allow the spill to cool before remelting as scrap.

7. Handling and Storage

Precautions to Take in Handling

Keep away from halogen acids and sodium hydroxide which may generate explosive mixtures of hydrogen. Finely divided aluminum may form explosive mixtures in the air. The welding of aluminum alloys may generate carbon monoxide, carbon dioxide, ozone, nitrogen oxides, infrared radiation and ultraviolet radiation.

8. Exposure Controls/Personal Protection

Respiratory Equipment

Personal protective equipment, including the use of NIOSH-approved respirator, is required when machining, grinding, welding, or re-melting this material.

Eye Protection

Wear safety glasses to prevent the possibility of eye contact.

Protective Gloves and Clothing

Wear appropriate gloves and clothing, including long sleeved shirt, etc. to prevent skin irritation and accidental lacerations.

Engineering Controls

Use with adequate ventilation when required.

Additional Information

1. Halogen acids and sodium hydroxide in contact with aluminum may generate explosive mixtures of hydrogen.
2. Finely divided aluminum can form explosives in air. It can also form explosive mixtures in air in the presence

of bromates, iodates, or ammonium nitrate. 3. When re-melting aluminum scrap, entrapped moisture od strong oxidizers such as ammonium nitrate could cause an explosion. 4. Do not touch cast aluminum metal or heated metal without knowing the metal temperature. Aluminum exhibits no color change during heating. 5. Aluminum powder must be packed and shipped as flammable solid UN1396. 6. The welding of aluminum alloys may generate carbon monoxide, carbon dioxide, ozone, nitrogen oxides, infra-red radiation, and ultra-violet radiation.

The information in this MSDS was obtained from sources which we believe are reliable. However, the information is provided without any representation or warranty, express or implied regarding the accuracy or correctness. The conditions or methods of handling, storage, use and disposal of this product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume responsibility and expressly disclaim liability for loss, damage, or expense arising out of or in any way connected with the handling, storage, use or disposal of this product.

Components

U.S.-OSHA-Specifically Regulated Chemicals

Lead: (7439-92-1) 50 µg/m3 TWA (as Pb); 30 µg/m3 Action Level (as Pb, Poison-see 29 CFR 1910.1025).

Compounds Formed During Processing

U.S.-OSHA-Specifically Regulated Chemicals

Chromium (VI) compounds (CASNo. Not available) 2.5 µg/m3 Action Level (as Cr.) 5 µg/m3 TWA (as Cr, Cancer hazard-see 29 CFR 1910.1026)

Lead compounds, inorganic (CASNo. Not available) 50 µg/m3 TWA (as Pb); 30 µg/m3 Action Level (as Pb, Poison-see 29 CFR 1910.1025)

Occupational exposure limits

U.S.-OSHA

Components	**Type**	**Value**	**Form**
Aluminum (7429-90-5)	TWA	5 mg/m3	(respirable fraction)
	TWA (total dust)	15 mg/m3	(total dust)
Chromium (7440-47-3)	TWA	1 mg/m3	
Lead‡ (7439-92-1)	TWA	50 µg/m3	
Manganese (7439-96-5)	Ceiling	5 mg/m3	(fume)
Nickel† (7440-02-0)	TWA	1 mg/m3	
Silicon (7440-21-3)	TWA	5 mg/m3	(respirable fraction)

Compounds Formed During Processing	**Type**	**Value**	**Form**
Aluminum oxide (non-fibrous) (1344-28-1)	TWA	5 mg/m3	(respirable fraction)
	TWA (total dust)	15 mg/m3	(total dust)
Chromium (II) compounds (CASNo. Not available)	TWA	0.5 mg/m3	(as Cr)
Chromium (III) compounds (CASNo. Not available)	TWA	0.5 mg/m3	(as Cr)
Chromium (VI) compounds (CasNo. Not available)	Action	2.5 µg/m3	(as Cr)

	TWA (as Cr)	5 µg/m3	(as Cr)
Iron oxide (1309-37-1)	TWA	10 mg/m3	(fume)
Lead compounds, inorganic (CASNo. Not available)	TWA	50 µg/m3	(as Pb)
Magnesium oxide (1309-48-4)	TWA	15 mg/m3	(fume, total particulate)
Manganese compounds, inorganic (CASNo. Not available)	Ceiling	5 mg/m3	(as Mn)
Nickel compounds, insoluble (CASNo. Not available)	TWA	1 mg/m3	(as Ni)
Nitric oxide (10102-43-0)	TWA	25 ppm 30 mg/m3	
Nitrogen dioxide (10102-44-0)	Ceiling	5 ppm 9 mg/m3	
Oil mist, mineral (8012-95-1)	TWA	5 mg/m3	
Ozone (10028-15-6)	TWA	0.1 ppm 0.2 mg/m3	
Zinc oxide (1314-13-2)	TWA	5 mg/m3	(respirable fraction)
	TWA (fume)	5 mg/m3	(fume)
	TWA (total dust)	15 mg/m3	(total

ACGIH

Components	**Type**	**Value**	**Form**
Aluminum (7429-90-5)	TWA	1 mg/m3	(respirable fraction)
Chromium (7440-47-3)	TWA	0.5 mg/m3	
Lead‡ (7439-92-1)	TWA	0.05 mg/m3	
Manganese (7439-96-5)	TWA	0.2 mg/m3	
Nickel† (7440-02-0)	TWA	1.5 mg/m3	(inhalable fraction)

Compounds Formed During Processing	**Type**	**Value**	**Form**
Aluminum oxide (non-fibrous) (1344-28-1) (respirable fraction, as Al)	TWA	1mg/m3	
Chromium (III) compounds (CASNo. Not available)	TWA	0.5 mg/m3	(as Cr)
Chromium (VI) compounds, certain water insoluble forms (CASNo. Not available)	TWA	0,01 mg/m3	(as Cr)
Chromium (VI) compounds, water soluble forms (CASNo. Not available)	TWA	0.05 mg/m3	(as Cr)
Iron oxide (1309-37-1)	TWA	5 mg/m3	(respirable fraction)
Lead compounds, inorganic (CASNo. Not available)	TWA	0.05 mg/m3	(as Pb)
Magnesium oxide (1309-48-4)	TWA	10 mg/m3	(inhalable fraction)
Manganese compounds, inorganic (CASNo. Not available)	TWA	0.2 mg/m3	(as Mn)
Nickel compounds, insoluble (CASNo. Not available)	TWA	0.2 mg/m3	(inhalable fraction, As Ni)
Nitric oxide (10102-43-9)	TWA	25 ppm	
Nitrogen dioxide (10102-44-0)	STEL	5 ppm	
	TWA	3 ppm	
Ozone (10028-15-6)	TWA	0.06 ppm	(moderate work)

		0.1 ppm (light work) 0.2 ppm (any workload <= 2 hours)
	TWA	0.05 ppm (heavy work)
Zinc oxide (1314-13-2)	STEL	10 mg/m3 (respirable fraction)
	TWZ	2mg/m3 (respirable fraction)

9. Physical and Chemical Properties

Form: Solid
Appearance: Silver colored
Boiling Point: Not determined
Melting Point: 1050-1220°F (565.6-660°C)
Flash point: Not applicable
Auto Ignition temperature: Not applicable
Flammability limits in air, lower, % by volume: Not applicable
Flammability limits in air, upper, % by volume: Not applicable
Vapor Pressure: Not applicable
Vapor Density: Not applicable
Solubility (water): insoluble
Density: 2.64 – 2.72 g/cm3 (0.095-0.098 lb/in3)
pH : Not applicable
Odor: Odorless
Partition coefficient (n-octanol/water): Not applicable

10. Stability and Reactivity

Chemical stability: Stable under normal conditions of use, storage, and transportation as shipped.
Conditions to avoid: Chips, fines, dust, and molten metal are considerably more reactive with the following:
Water: Slowly generates flammable/explosive hydrogen gas and heat. Generation rate is greatly increased with smaller particles (e.g., fines and dusts). Molten metal can react violently/explosively with water or moisture, particularly when water is entrapped.
Heat: Oxidizes at a rate dependent upon temperature and particle size.
Strong oxidizers: Violent reaction with considerable heat generation. Can react explosively with nitrates (e.g., ammonium nitrate and fertilizers containing nitrate) when heated or molten.
Acids and alkalis: Reacts to generate flammable/explosive hydrogen gas. Generation rate is greatly increased with smaller particles (e.g., fines and dusts).
Halogenated compounds: Many halogenated hydrocarbons, including halogenated fire extinguishing agents, can react violently with finely divided aluminum.
Iron oxide (rust) and other metal oxides (e.g., copper and lead oxides): A violent thermite reaction generating considerable heat can occur. Reaction with aluminum fines and dusts requires only very weak ignition sources for initiation. Molten aluminum can react violently with iron oxide without external ignition source.
Iron powder and water: Explosive reaction forming hydrogen gas when heated above 1470°F (800°C).
Hazardous polymerization: Will not occur.

11. Toxicological Information

Toxicological Information: No specific information is available on this product.

Carcinogenicity/Other Information: No data available.

	Hazardous Components	CAS#	NTP	IARC	ACGIH	OSHA
1.	Aluminum	7429-90-5	n.a	n.a.	n.a.	n.a.
2.	Magnesium	7439-95-4	n.a	n.a	n.a	n.a
3.	Manganese	7439-96-5	n.a	n.a	n.a	n.a
4.	Chromium	7440-47-3	n.a	n.a	n.a	n.a
5.	Amonium Hexafluorotitanate	16962-40-6	n.a	n.a	n.a	n.a
6.	Zirconate(2-), Hexafluor-, Diammonium, (OC-6-11)	16919-31-6	n.a	n.a	n.a	n.a
7.	Iron	65996-670	n.a	n.a	n.a	n.a

12. Ecological Information

Ecological Information: No specific information on this product.

13. Disposal Considerations

Waste Disposal Method: Reuse or recycle material whenever possible. If reuse or recycling is not possible, disposal must be made according to local or governmental regulations.

14. Transport Information

Basic Shipping Descriptions:

UN Number	Not Regulated
Proper Shipping Name	Not Regulated
Hazard Class	Not Regulated
Packing Group	Not Regulated

15. Regulatory Information

No data available.

16. Other Information

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