

# SAFETY DATA SHEET



## 1. Identification of Substance and Company

<b>Product Name:</b>	Austenitic Manganese Steel Castings: IndM; LCM; MLM; MSPC; SMC62; SMC65; SMC67; SMC68; SMC69; SMC70; SMC71; SMC72; SMC73; SMC 74; SMC75
<b>Manufacturer:</b>	The Frog, Switch & Manufacturing Company 600 East High Street Carlisle, PA 17013 USA Phone number: 717.243.2454
<b>Emergency Number:</b>	For any inquires about this product, call 717.386.5848 or email; <a href="mailto:MSDS@frogswitch.com">MSDS@frogswitch.com</a>

## 2. Hazard Identification

EMERGENCY OVERVIEW: WARNING

**Product Description:** Odorless silver gray solid.

**Health Hazards:** Under normal handling and use, exposure to the massive forms of austenitic manganese steel castings presents few health hazards in itself.

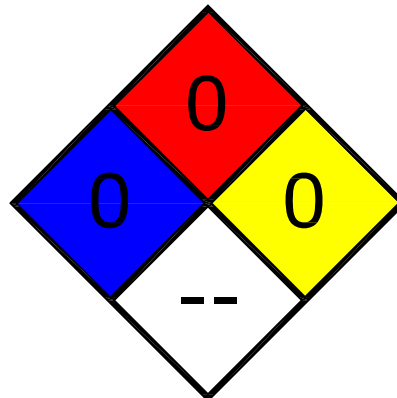
**Flammability Hazards:** This material will not burn.

**Reactivity Hazards:** This material is chemically stable.

**Environmental Hazards:** None.

**Emergency Recommendations:** None.

Scale: 0=Minimal 1= Slight 2= Moderate  
3= Serious 4= Severe \*= Chronic



**GHS CLASSIFICATION:**

Respiratory Sensitizer Category 0

Eye Irritant Category 0

Respiratory Tract Irritant Category 0











**HAZARDS NOT OTHERWISE CLASSIFIED:**

Subsequent operations such as grinding, cutting, melting or processing in any other fashion may produce potentially hazardous dust and fumes which can be inhaled, swallowed or come in contact with the skin and/or eyes.



### 3. COMPOSITION AND INFORMATION ON INGREDIENTS

Ingredients are suspended in a solid metallic state, listed below are the individual materials, in their purchased states.

Chemical	CAS Number	WT%	HAZARD CLASSIFICATION	RISK PHRASES
Carbon Black	1333-86-4	Trade Secret	Not Classified	R36/37/38
**Manganese (Dust)	7439-96-5	6.0%-25.0%		R36/37/38 ,R62
**Manganese (Fume)	7439-96-5	6.0%-25.0%		R36/37/38 ,R62
Silicon	7440-21-3	Trade Secret		R36/37/38
Molybdenum	7439-98-7	Trade Secret		R11
**Aluminum	7429-90-5	0.1% MAX	 (WET)	R36/37/38 ,R14
Titanium	13463-67-7	Trade Secret		R36/37/38
Iron	1309-37-1	Trade Secret		R36/37/38
**Vanadium	7440-62-2	Trade Secret	Not Classified	N/A
**Chromium	7440-47-3	Trade Secret		R36/37/38
**Sulfur	7446-09-5	0.002%-0.025%		R23, R34
**Phosphorus	7723-14-0	0.015%-0.05%		R11, R16, R52/53

\*\* This ingredient is subject to the reporting requirements of Section 313 of Title III, SARA 40 CFR, Part 372.

## 4. FIRST-AID MEASURES

**Eye Contact:** If this product enters the eyes in particulate form, flush well with running water or eye wash solution to remove particulate. Remove contact lenses if worn. Minimum flushing is for 15 minutes. Contaminated individual must seek medical attention if irritation develops or if visual changes occur.

**Skin Contact:** If this product contaminates the skin in particulate form, begin by running water over the contaminated area. Use soap if necessary. The individual should seek medical attention if any adverse effect occurs.

**Inhalation:** Not applicable.

**Ingestion:** Not applicable.

## 5. FIRE-FIGHTING MEASURES

**MELTING POINT:** 1300-1450°C

**FIRE EXTINGUISHING MATERIALS:** This material will not burn.

## 6. ACCIDENTAL RELEASE MEASURES

No special precautions are necessary for spills of bulk material.

## 7. HANDLING & STORAGE *(of cast product)*

No special precautions are necessary for handling or storing this material.

This material has the potential to be contaminated with coatings, paints, preservatives, cutting oils, and other components. If the material is contaminated, special precautions (such as process control and personal protective equipment, appropriate to the nature of the suspected contaminants) should be taken to avoid resulting exposures when handling, grinding, cutting (thermal or mechanical), and/or melting.

## 8. EXPOSURE CONTROLS - PERSONAL PROTECTION

### ACGIH/OSHA

Chemical	CAS Number	%	OSHA 8-hr TWA	ACGIH 8-hr TWA
Carbon Black	1333-86-4	Trade Secret	3.5 mg/m <sup>3</sup>	3.0 mg/m <sup>3</sup>
**Manganese (Dust)	7439-96-5	6.0%-25.0%	5.0 mg/m <sup>3</sup> C	0.02 mg/m <sup>3</sup>
**Manganese (Fume)	7439-96-5	6.0%-25.0%	5.0 mg/m <sup>3</sup> C	0.02 mg/m <sup>3</sup>
Silicon	7440-21-3	Trade Secret	15.0 mg/m <sup>3</sup>	~~10.0 mg/m <sup>3</sup>
Molybdenum	7439-98-7	Trade Secret	15.0 mg/m <sup>3</sup>	10.0 mg/m <sup>3</sup>
**Aluminum	7429-90-5	0.1% MAX	15.0 mg/m <sup>3</sup>	1.0 mg/m <sup>3</sup>
Titanium	13463-67-7	Trade Secret	15.0 mg/m <sup>3</sup>	10.0 mg/m <sup>3</sup>
Iron	1309-37-1	Trade Secret	10.0 mg/m <sup>3</sup>	5.0 mg/m <sup>3</sup>
**Vanadium	7440-62-2	Trade Secret	0.5 mg/m <sup>3</sup> C	0.5 mg/m <sup>3</sup>
**Chromium	7440-47-3	Trade Secret	1.0 mg/m <sup>3</sup>	0.5 mg/m <sup>3</sup>
**Sulfur	7446-09-5	0.002%-0.025%	13.0 mg/m <sup>3</sup>	0.65 mg/m <sup>3</sup> STEL
**Phosphorus	7723-14-0	0.015%-0.05%	0.1 mg/m <sup>3</sup>	0.1 mg/m <sup>3</sup>

\*\* This ingredient is subject to the reporting requirements of Section 313 of Title III, SARA 40 CFR, Part 372.

~~ NIOSH Number, ACGIH Number not available.

This information is furnished without warranty, representation, inducement or license of any kind, except that this information is accurate to the best of The Frog, Switch & Manufacturing Company's knowledge or is obtained from sources believed by The Frog, Switch & Manufacturing Company to be accurate. No warranty is expressed or implied regarding the accuracy of this information or the results to be obtained from the use thereof. The Frog, Switch & Manufacturing Company assumes no responsibility for injuries proximately caused by the Material of reasonable safety procedures are not adhered to as stipulated in this data sheet. Additionally, The Frog, Switch & Manufacturing Company assumes no responsibility for injuries proximately caused by abnormal use of the Material even if reasonable safety procedures are followed. Buyer assumes the risk entirely in its use of the Material.



## 9. PHYSICAL & CHEMICAL PROPERTIES

**Appearance:** dependent upon the processing method used and existing paints or coatings.

**Upper Flammability Limit:** N/A

**Lower Flammability Limit:** N/A

**Explosive Limits:** N/A

**Odor:** N/A

**Odor Threshold:** N/A

**pH:** N/A

**Vapor Pressure:** 1mm Hg @ 1787°C  
(of iron dust)

**Vapor Density:** N/A

**Melting Point:** 1300 - 1450°C

**Boiling Point (of iron dust):** 3000°C

**Relative Density:** N/A

**Solubility in water:** insoluble

**Specific Gravity (@60°F):** 7.84

**Flash Point:** N/A

**Evaporation Rate:** N/A

**Flammability:** N/A

**Partition Coefficient:** N/A

**Auto-ignition Temperature:** N/A

**Decomposition Temperature:** N/A

**Viscosity:** N/A

## 10. STABILITY & REACTIVITY

**STABILITY:** Stable under conditions of normal storage and usage. Massive material is stable at ordinary temperatures .

**HAZARDOUS DECOMPOSITION PRODUCTS:** None.

## 11. TOXICOLOGICAL INFORMATION

See Section 3. COMPOSITION AND INFORMATION ON INGREDIENTS.

## 12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

**ENVIRONMENTAL STABILITY:** This material is environmentally stable in its delivered form.

## 13. DISPOSAL CONSIDERATIONS

Dispose of in accordance with local, state and federal regulations.

## 14. TRANSPORTATION INFORMATION

This is a Non-Regulated Material.

## 15. REGULATORY INFORMATION

The following ingredients are subject to the reporting requirements of Section 313 of Title III, SARA 40 CFR, Part 372.

Aluminum, 7429-90-5      Chromium, 7440-47-3  
Manganese, 7439-96-5      Sulfur, 7446-09-5  
Vanadium, 7440-62-2      Phosphorus, 7723-14-0

## 16. OTHER INFORMATION

Prepared by: Daniel M. Gibbs; E.H.S. Director  
(The Frog, Switch & Manufacturing Company)  
Approval Date: March 15, 2018

