

MATERIAL SAFETY DATA SHEET



LOVEJOY TOOL COMPANY, INC.
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Section 1 **Product Information** **Rev. Level: A** **Page 1 of 5**

Trade Name and Synonyms: Vasco Specialty Steels

Chemical Family: Ferrous of Nonferrous Alloys

Formula: High Speed, Tool & Die, Maraging, Vacuum Melted, and High Strength Steels

Section 2 **Product Description and Hazardous Ingredients/Identify Information**

The terms 'hazardous' and 'hazardous materials' as used within this MSDS should be interpreted as defined by, and in accordance with, the OSHA Hazard Communication Standard (29 CFR Part 1910, 1200) including cited Appendices, Lists, References, etc., all of which are hereby incorporated by reference.

Material or Component	CAS No.		OSHA PEL (Mg/M3)	ACGIH TLV (Mg/M3)	
Cobalt	7440-48-4		0.1	0.1	
Chromium	7440-47-3		1.0	.50	
Iron	1309-37-1		10	5	
Manganese	7439-96-5	(Dust) (Fume)	5 (Ceiling) ----	5 (Ceiling) 1	
Molybdenum	7439-98-7		15	10	
Nickel	7440-02-0		1	1	
Vanadium	1314-62-1	(Dust) (Fume)	.5 (Ceiling) .1 (Ceiling)	.05 .05	
Titanium	13463-67-7		15	5	
Carbon	1333-86-4		3.5	5	3.5 (As Carbon Black)
Tungsten	7440-33-7		----	5	
Silicon	7440-21-2	(Dust)	----	5.0	
Aluminum	7429-90	(Dust) (Fume)	---- ----	10 5	

Refer To Grade Chart Attached (Section 10, Page 5)

Section 3 **Physical Data**

Boiling Point: 5000°F

Specific Gravity (H₂O = 1): Approx. 7.8-8.2 (60°F)

% Volatile by Volume: Not applicable

Evaporation Rate: Not applicable

Appearance and Odor: Various shapes, solid, odorless metal

Melting Point F (C): Approx. 2500°F

Vapor Pressure: Not applicable

Vapor Density (Air = 1): Not applicable

Solubility in Water: Insoluble



Section 4**Fire and Explosion Hazard Data**Rev. Level: A Page 2 of 5

Flash Point F (C): None**Extinguishing Media:** Not applicable**Special Fire Fighting Procedures:** Not applicable**Flammable Limits:** None**Unusual Fire and Explosion Hazards:** Not applicable

Section 5**Health Hazard Data**

We do not consider this product in the form it is sold to constitute a physical hazard or a health hazard. Subsequent operations such as abrading, melting, welding, cutting or processing in any other fashion may produce potentially hazardous dust or fume which can be inhaled, swallowed, or come in contact with the skin or eyes.

Usual Route(s) of Entry: Inhalation, Eye Contact, Skin Contact, Ingestion**Emergency and First Aid Procedures****Inhalation:** Remove to fresh air, if condition continues, consult physician.**Eye Contact:** Flush well with running water to remove particulate. Get medical attention.**Skin Contact:** Brush off excess dust. Wash area well with soap & water.**Ingestion:** Seek medical help if large quantities of material have been ingested.**Applicable Statutory or Recommended Occupational Exposure Limits:** Section II lists specific ingredients and permissible exposure limits.**Effects of Overexposure:** No toxic effects would be expected from exposure to the solid form of specialty steel. Prolonged, repeated exposure to fumes or dusts generated during heating, cutting, brazing or welding may or may not cause adverse health effects associated with the listed constituents in excess of OSHA permissible exposure limits established in 29 CFR Subpart Z. **(See Section 2)****Exposure Limits:** Section II lists specific ingredients and permissible exposure limits.**Important:** Determine actual exposure by industrial hygiene monitoring.**POSSIBLE SIGNS AND SYMPTOMS OF EXPOSURE TO DUST, WELDING FUME AND GASES****Short Term Exposure:** Metallic taste; nausea, tightness of chest; fever; irritation of eyes, nose, throat and skin; loss of consciousness/death due to welding gases or lack of oxygen.**Long Term Exposure:** There are no adverse effects from the products in their solid form. Adverse effects may or may not result from long-term (chronic) exposure to dust, fume, gases, etc. that occur by way of subsequent operations on the product.

Some studies would associate one (or more) of the constituents (per Section 2) with the potential for neurologic, pulmonary, respiratory, skin or other disease.



Chromium, cobalt and nickel in various chemical compounds have been identified as suspect human carcinogens by the IARC, NTP Annual Report. We believe there are no reliable scientific studies which show that workers exposed to operations upon our alloys suffer increased incidence of lung cancer or other disease because of their exposure to the forms of chromium, nickel or other elements in our products.

AGGRAVATION OR PREEXISTING RESPIRATORY OR ALLERGIC CONDITIONS MAY OCCUR IN SOME WORKERS.

Section 6**Reactivity Data**

Stability: Chemically stable

Incompatibility: Reacts with strong acids to generate hydrogen gas

Hazardous Decomposition Products: Metallic oxides

Section 7**Spill or Leak Procedures**

Steps to be taken in Case Material is Released or Spilled: Not applicable

Waste Disposal Method

Solids - Sale as scrap for reuse

Dust, etc. - Follow Federal, State and Local Regulations Regarding Disposal

Section 8**Special Protection Information**

Ventilation Requirements

General - Recommended (to keep airborne concentration of dust and fumes below ACGIH TLV's);

Local - As required

Personal Protective Equipment

Respiratory Protection - If fumes, misting or dust condition occurs and TLV as indicated in Section II is exceeded, provide NIOSH approved respirators.

Eye Protection - Recommend approved safety glasses or goggles when working with dusty material.

Gloves - As required

Other Clothing or Equipment - As required

Use good housekeeping practices to prevent accumulations of dusts and keep airborne dust concentrations at a minimum.

This material is potentially contaminated with coatings such as oils for preservatives and other contaminants. 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, cutting (thermal or mechanical) and/or heating or melting.



The information contained herein is based upon data provided by manufacturers and suppliers of raw materials used in the manufacture of Vasco Specialty Steel. The information is offered in good faith as accurate and correct, but no representations, guarantees, or warranties of any kind are made as to its accuracy or completeness, suitability for particular applications, hazards connected with the use of the product, or the results to be obtained from the use of thereof. User assumes all risk and liability of any use or handling of any material beyond Lovejoy's control. Variations in methods, conditions, equipment used to store, handle, or process the material, and hazards connected with the use of the product are solely the responsibility of the user and remain at its sole discretion.

When applicable, the products described in this MSDS are considered to be "articles" within the meaning of Title 29 of the Code of Federal Regulations, Section 1910.1200 et seq. This MSDS is intended to be used solely for the purpose of satisfying informational request made pursuant to that requirement. It is not intended to pre-empt, replace, or expand the terms contained in the Lovejoy Tool Co., Inc. Conditions of Sale. Compliance with all applicable federal, state and local laws and regulations remains the responsibility of the user, and the user has the responsibility to provide a safe workplace, to examine all aspects of its operation, and to determine if or where precautions, in addition to those described herein, are required. This information may not be valid for these products when manufactured with alternate material meeting the special requirements of a particular user.

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IN CASE OF QUESTIONS PLEASE CALL

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Contact and Title of Individual: Kristi C. Morris Engineering Manager

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Tool & Die Steels

AISI Grade/Trade Name	C	SI	MN	W	CR	V	MO	CO
A-2 Airhard	1.00	.30	.60		5.25	.25	1.10	
0-1 Colonial No. 6	.95	.30	1.20	.50	.50	.20		

High Speed Tool Steels

AISI Grade/Trade Name	C	SI	MN	W	CR	V	MO	CO
M-2	.85	.30	.25	6.20	4.20	1.85	4.90	
M-3-1 Van Cut Type 1	1.02	.30	.25	6.25	4.00	2.50	6.25	
M-3-2 Van Cut Type 2	1.20	.30	.25	6.25	4.00	3.10	6.25	
T-15 Vasco Supreme	1.57	.25	.25	12.50	4.75	5.00	.65 Max	5.00