Material Safety Data Sheet

Iron Alloys

SECTION 1 - Product Identification

Distributor: Winsert, Inc. **Emergency Telephone:** 715-732-1703
Address: 2645 Industrial Parkway South
P.O. Box 198
Marinette, Wisconsin 54143
Chemical Name and Synonyms: Iron Based Alloys
Chemical Family: Metals
Formula: Not Applicable

SECTION 2 - Product Description and Hazardous Ingredients/Identity Information

Iron Based Valve Seat Inserts and Other Products. See Tables on Pages 2 and 3 for Listing of Hazardous Ingredients.

SECTION 3 - Physical Data

Melting Point F (C): Greater Than 2550 (1400) **Specific Gravity:** Greater Than 7
Vapor Pressure: Not Applicable **%Volatile by Volume:** Not Applicable
Vapor Density (Air=1): Not Applicable **Evaporation Rate:** Not Applicable
Solubility in Water: Negligible
Appearance and Color: Grayish to silvery odorless ingot or casting

SECTION 4 - Fire and Explosion Hazard Data

Flash Point F (C): Not Applicable **Flammable Limits:** Not Applicable
Extinguishing Media: Dry Chemical,or other methods appropriate to material and surrounding areas.

Unusual Fire and Explosion Hazards: None

Special Fire Fighting Procedures: Use self-contained breathing apparatus for protection against degradation products and fire fighting technique or agent(s) applicable to material and surrounding areas.

purpose of satisfying informational requests made pursuant to that requirement. It is not intended to preempt, replace, or expand the terms contained in the Winsert, 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.

Hazardous Ingredients/Identity Information

Table 2-1
Iron Alloys - Weight Percent Composition

Alloy	Carbon 7440-44-0	Silicon 7740-21-3	Manganese 7439-96-5*	Molybdenum 7439-98-7	Chromium 7740-47-3*	Vanadium 7440-62-2*	Tungsten 7440-33-7	Cobalt 7440-48-4*	Nickel 7740-02-2*	Titanium 7440-32-6	Niobium 7440-03-01	Iron 7439-89-6
W42	3.10-3.60	1.95-2.40	0.60-0.90	0.40-0.60	0.85-1.50	--	--	--	0.20-0.45	--	--	Balance
W46	3.10-3.50	1.80-2.20	0.60-0.80	1.00-1.30	0.50-0.80	--	--	--	0.80-1.20	--	--	Balance
W50	2.50-3.00	1.50-2.50	0.50-0.80	4.00-5.00	2.50-3.50	--	--	--	--	--	--	Balance
W60/W65	3.00 max.	1.00-2.80	1.00-1.50	--	1.75-2.50	--	--	**Copper** 5.50-7.50	13.50-17.50	--	--	Balance
W70	1.20-1.50	0.30-0.60	0.30-0.60	6.00-7.00	3.50-4.25	--	5.00-6.00	--	1.00 max.	--	--	Balance
W70V	1.20-1.50	0.30-0.60	0.30-0.60	6.00-7.00	3.50-4.25	1.35-1.65	5.00-6.00	--	1.00 max.	--	--	Balance
W76/W76M	1.20-1.50	0.40-0.80	0.30-0.60	6.00-7.00	4.00-5.00 **W76M 7.0-8.0**	1.35-1.65	5.00-6.00	3.00-5.00	--	--	--	Balance
W90	1.25-1.75	1.90-2.60	0.20-0.60	--	19.00-21.00	--	--	--	1.00-1.60	--	--	Balance
W93/W93M	2.00-2.50	1.50 max.	1.00 max.	10.00-14.00	14.00-18.00	1.30-1.70	--	5.50-7.50 **W93M No Cobalt**	1.00-2.00	--	--	Balance
W95	1.80-2.30	1.80-2.10	0.60 max.	2.00-2.50	33.00-35.00	--	--	--	0.50 max.	--	--	Balance

Table 2-2
Iron Alloys - Exposure Limits and Carcinogenicity Data
(Values are time-weighted averages, unless otherwise noted)

Contam-inant & Exposure Limits	Carbon	Silicon	Manganese (as Mn dust and/or fume)	Molybdenum (as Mo dust or soluble/insol. compounds	Chromium (as Cr metal)	Vanadium (as V metal)	Tungsten (as W soluble/ insol. compounds)	Cobalt (as Co metal, dust, or fume)	Nickel (as Ni metal)	Titanium	Niobium	Iron (as Fe or Iron Oxide, partic-ulate or fume))
OSHA Permissible Exposure Limit (PEL) mg/m3	Not listed	10 - Total Dust 5 - Resp. Fraction	5 - Ceiling	15 - Total Dust 5 - Soluble 10 - Insoluble	1	Not listed (1 - NIOSH recommended exposure limit)	1 - Soluble 3 - Ceiling	0.05	1 (0.015 - NIOSH recommended exposure limit)	Not listed	Not listed	10
ACGIH Threshold Limit Value (TLV) mg/m3	Not listed	10	5 - Dust 1 - Fume 3 - Fume (STEL)	5 - Soluble 10 - Insoluble	0.5	Not listed	5- Insolu-ble 10 - Ceiling	0.05	1	15.0 (as TiO2)	Not listed	5
Carcino-genicity												
NTP	No	No	No	No	Yes	No	No	No	Yes	No	No	No
IARC	No	No	No	No	Yes	No	No	No	Yes	No	No	No
OSHA Z List	No	No	No	No	No	No	No	No	No	No	No	No
OSHA Reg.	No	No	No	No	No	No	No	No	No	No	No	No

SECTION 5 - Health Hazard Data

Applicable Statutory or Recommended Occupational Limits: Winsert alloys, as distributed, do not present an inhalation, ingestion, or contact hazard. However, operations such as melting, welding, sawing, brazing, and grinding may result in the following effects if exposures exceed limits as listed in Table 2-2 of the individual constituents.

Effects of Overexposure:

Acute - Dust or fume may cause irritation to the eyes, nose, or throat; leave a metallic taste in the mouth; result in metal fume fever; or produce flu-like symptoms.

Chronic

Manganese -Lung, liver, kidney & central nervous system damage; weakness, loss of coordination, shortness of breath

Molybdenum -Liver, kidney, spleen, & blood damage; diarrhea, bone deformation, growth retardation

Chromium -Skin, nasal, & lung damage; physical irritation, cancer, possible mutations

Vanadium -Lung damage; physical irritation

Tungsten -Lung damage; hard metal disease with wheezing, coughing, shortness of breath

Cobalt -Blood, heart, bone marrow, thyroid, liver, lung & pancreatic damage; skin rash, itching, asthma attacks

Nickel -Skin, nasal, heart, liver, kidney & lung damage; physical irritation, cancer, possible mutations

Iron -Lung damage

Copper -Physical irritation

Note: Repeated long-term overexposure may aggravate existing allergies, and lung, kidney, etc. disorders.
Usual Route of Entry: Inhalation, skin and eye contact
Emergency First Aid Procedures: In event of acute exposure, remove to fresh air, administer oxygen, and seek medical attention.

SECTION 6 - Reactivity Data

Stability: Considered Stable
Incompatibility: Not Incompatible with Materials
Hazardous Polymerization: Not Applicable
Hazardous Decomposition Products: Not Applicable
Conditions to Avoid: May liberate metal fumes, metal oxides, or other oxides if exposed to elevated temperatures.

SECTION 7 - Spill or Leak Procedures

Steps to be Taken in Case Material is Released or Spilled: Not Applicable
Waste Disposal: This material may be reclaimed for reuse or recycling.

SECTION 8 - Special Protection Information

If operations are such that atmospheric levels of contaminants exceed prescribed limits, provide local exhaust ventilation and/or adequate respiratory protection. Consult your regional codes or Code of Federal Regulations, Title 29, Part 1910.252, Welding Cutting, and Brazing; 1910.134, Respiratory Protection; 1910-Subpart Z, Toxic and Hazardous Substances; and/or 1910.1000 Air Contaminants.

SECTION 9 - Superfund Amendments and Reauthorization Act of 1986 (SARA/Title III, Section 313)

The chemicals identified by (*) in Table 2-2 denote a chemical subject to reporting requirements of Section 313 of SARA/Title III, and 40 CFR Part 372. This information should be included in all MSDSs that are copied and distributed for this material.

SECTION 10 - California Proposition 65

One or more of the alloys listed on this MSDS contains a material known to the State of California to cause cancer or reproductive toxicity. These are:

Material	Listed Effect
Nickel	Cancer
Chromium	Cancer

Issued By: Winsert, Inc.

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