MATERIAL SAFETY DATA SHEET

SECTION I - GENERAL INFORMATION

MANUFACTURER'S NAME: Norseman Drill & Tool

TELEPHONE #: 612-227-8911

ADDRESS (Number, Street, City, State and Zip Code)
355 State St., St. Paul, MN. 55107

DATE: January 1, 1998

PRODUCT TYPE: **HIGH SPEED STEEL DRILL BITS**

GRADE NAME & TYPICAL CHEMISTRY (% Weight)

GRADE	c	Si	Mn	Cr	W	Mo	V	Co	Fe
M-1	.83	.35	.30	3.80	1.75	8.50	1.15	———	Bal.
M-2	.86	.30	.30	4.10	6.35	5.00	1.90	———	Bal.
M-7	1.00	.40	.30	3.80	1.75	8.50	1.90	———	Bal.
M-42	1.07	.30	.30	3.80	1.50	9.50	1.15	8.00	Bal.
M-50	.82	.45	.30	4.10	———	4.2.	1.00	———	Bal.

SECTION II - HAZARDOUS INGREDIENTS

Threshold limit values (TLV) for constituent elements

CONSTITUENT ELEMENT		CAS NO.	OSHA PEL (mg/m3)		ACGIH TLV (mg/m3)
Aluminum	(AL)	7429-90-5	———		10.00
Boron	(B)	1303-86-2	15.00		10.00
Carbon	(C)	1333-86-4	3.50		.50
Cobalt	(Co)	7440-48-4	.10		.05
Chromium	(Cr)	7440-47-3	1.00		.50
Copper	(Cu)	7440-50-8	.10		.20
Iron	(Fe)	1309-37-1	10.00		5.00
Manganese	(Mn)	7439-96-5	5.00*	(Dust)	5.00*
Molybdenum	(MO)	7439-98-7	15.00		10.00
Nickel	(Ni)	7440-02-0	1.00		1.00
Silicon	(Si)	7440-21-3	———		5.00
Tungsten	(W)	7440-33-7	———	(Ins. Comp.)	5.00
Titanium	(Ti)	13463067-7	15.00		5.00
Vanadium	(V)	1314-62-1	.50*	(Dust)	.05
			.10*	(Fume)	.05

*Ceiling Limits

No threshold limit values (TLV's) exist for specialty or high speed steels. Above TLV's are applicable to the constituent elements.

SECTION III - PHYSICAL DATA

BOILING POINT:	≥5000'F	MELTING POINT:	Approx. 2500'F
SPECIFIC GRAVITY (H20=1):	Approx. 7.8-8.2 (60'F)	VAPOR PRESSURE:	N/A
VAPOR DENSITY (AIR=I):	N/A	SOLUBILITY IN.H20:	Insoluble
% VOLATILES BY VOLUME:	N/A	EVAPORATION (BUTYL ACETATE=I):	N/A
APPEARANCE AND ODOR:	Various Shapes, Sizes, Odorless Metal		

SECTION IV - FIRE AND EXPLOSION DATA

FLASH POINT: NONE

FIRE POINT: NONE

SECTION V - HEALTH HAZARD INFORMATION

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 GRINDING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION MAY PRODUCE POTENTIALLY HAZARDOUS DUST OR FUMES WHICH CAN BE INHALED, SWALLOWED OR COME IN CONTACT WITH THE SKIN OR EYES.

SECTION V - HEALTH HAZARD INFORMATION (continued)

PRIMARY ROUTES OF ENTRY:	Inhalation	EMERGENCY FIRST AID:	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 with soap and water.
	Ingestion		Seek medical help if large quantities of material have been ingested.

SECTION VI - REACTIVITY DATA

STABILITY: Chemically Stable

INCOMPATIBILITY: Reacts with Strong Acids to Generate Hydrogen Gas

HAZARDOUS DECOMPOSITION PRODUCTS: Metallic Oxides

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL: N/A

WASTE DISPOSAL METHOD: Solids - Sale as Scrap

Dust, Etc. - Follow Federal, State and local regulations regarding disposal.

SECTION VIII - SPECIAL PROTECTION INFORMATION

VENTILATION REQUIREMENTS: General - Recommended 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: Recommended

Gloves: As Required

Other Clothing or Equipment: As Required

SECTION IX - SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUST AND USE GOOD VENTILATION PROCEDURES TO KEEP ALL AIRBORNE DUST CONCENTRATIONS TO A MINIMUM.

THIS MATERIAL MAY BE COATED WITH A LIGHT PRESERVATIVE OIL AS A RUST INHIBITOR. IF SO COATED APPROPRIATE PRECAUTIONS ALONG WITH PERSONAL PROTECTIVE EQUIPMENT SHOULD BE ISSUED AS REQUIRED.

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