ALTEMP ALLOYS, INC.

MATERIAL SAFETY DATA SHEET

IN COMPLIANCE WITH THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION HAZARD COMMUNICATION STANDARD #29 C.F.R. 1910.1200

SECTION I – PRODUCT DESCRIPTION – Niobium Base Alloys **COMMON NAME / GRADE – Columbium Base Alloys**

SECTION II – HAZARDOUS INGREDIENTS

BASE METAL, ALLOYING ELEMENTS, METALLIC COATING	% COMPOSITION BY WEIGHT (a)	CAS #	ACGIH TLV (mg/m³) (b)
BASE METAL			
Niobium	45-99	3-1-7440	10 Total / N. Ap.
ALLOYING ELEMENTS			
Titanium	0-55	7440-32-6	10 Total / N.Ap.
Zirconium	0-5	7440-67-7	5-10
Hafnium	0-30	7440-58-6	0.5/ N.Ap.
Tungsten	0-20	7440-33-7	5 insoluble/ N.Ap.
Tantalum	0-30	7440-25-7	5 / N.Ap.
Vanadium	0-10	7440-62-2	0.05 (as V2O5) / N.Ap.
Molybdenum	0-10	7419-98-7	10 Total / N.Ap.

(a) % of alloying materials varies with grade of material – (b) 1965-1966 ACGIH threshold limit value.

SECTION III – PHYSICAL DATA

Material is (at normal conditions) – Solid	Appearance and Odor – Silver grey metal, Odorless
Boiling Point (Base Metal) – Above 3000 º C	Specific Gravity (H2O=1) - 5.6-11.9

SECTION IV – FIRE AND EXPLOSION DATA

Extinguishing media – Dry chemical powders, salt or inert gas – Do not use water or liquid explosion hazard could result Special fire fighting procedure – If ignitable waste is generated. Special precautions and firefighting procedures should be followed ; Keep work areas free of the waste, store wet and keep away from heat and open flame – maintain humidity above 50% to prevent an electrostatic build-up. No smoking in area, use non-sparkling metal equipment.

SECTION V – HEALTH HAZARD DATA

Steel products in the natural state do not represent an inhalation, ingestion, or contact hazard. However, operations such as burning, welding, sawing, brazing, and grinding may release fumes and/or dust, which may present health hazard.

SECTION VI – REACTIVITY DATA

Stability – Stable	Incompatibility (Material to avoid) – Hydrofluoric Acid/Nitric rapidly dissolve niobium base alloys. Niobium will ignite in cold fluorine and above 200 º C will react exothermically with chlorine, bromine and halocarbons such as carbon tetrachloride, carbon tetrafluoride and Freon.
Hazardous Decomposition Products: These alloys will not decompose. However, the above reactions with incompatible materials will generate reaction products such as flammable hydrogen, toxic fumes of nitrogen oxide, or corrosive metal halide vapor	

SECTION VII – SPILL, LEAK OR DISPOSAL PROCEDURE

SECTION VIII – SPECIAL PROTECTION INFORMATION

Local exhaust ventilation should be utilized when welding, burning, grinding, or machining, NIOSH/MSHA approved dust and fume respirator should be used to avoid excessive inhalation of particulates, when exposure exceeds TLV's. Safety glasses or goggles should be utilized as required by exposure. Other protective equipment should be utilized as required by the welding standards.

330 W. Taft Avenue, Orange, CA 92865 Telephone (714) 279-0249 Fax (714) 279-3991
email: info@altempalloys.com www.altempalloys.com

Revision Date: April 1, 2017