



Titan Engineering Pte Ltd

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MATERIAL SAFETY DATA SHEETS (MSDS)



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To Our Customers:

Enclosed are copies of Material Safety Data Sheets (MSDS) from a mill source for the products Titan Engineering supplies you. These documents are being sent to you in compliance with the OSHA Communication Standard 29CFR 1910-1200. The information in these MSDS sheets should be made available to your health and safety personnel as well as personnel handling the products.

Please note that all products supplied present no health hazard in their natural state during use, transportation, or storage; however, operations such as burning, welding or grinding may generate concentrations of dust particles that may present hazards.

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MATERIAL SAFETY DATA SHEETS (MSDS)

SECTION 1 – PRODUCT IDENTIFICATION

Product Name: Titanium Base Alloy
Trade Name: See Section II-A

SECTION II – HAZARDOUS INGREDIENTS

This section covers ingredients contained in the product as shipped and is applicable to cutting and grinding. Fumes and gases from welding are covered in Section VI.

INGREDIENTS	C.A.S. NO.	PEL (OSHA) mg/m3	TLV (ACGIH) mg/m3
Aluminum (Al)	7429-90-5	none	10
Molybdenum (Mo)	7439-98-7	15	10
Tin (Sn)	7440-31-5	2	2
Titanium (Ti)	7440-32-6	15	10
Vanadium (V)	1314-62-1	0.5	.05
Zirconium (Zr)	7440-67-7	5	5

Reference – US Department of Labor (www.osha.gov)

SECTION 11-A - TRADE NAME AND NOMINAL CONDITION

Wt. % - 1% or greater

Ni and Cr - 1% or greater

PRODUCT NAME	AL	Mo	Sn	Ti	V	Zr
Ti 6-4	6			90	4	-
Ti 6-4 ELI	6			90	4	-
Ti 5-2.5	5		2.5	92	-	-
Ti 5-2.5 ELI	5		2.5	92	-	-
Ti 6-6-2	6		2	86	6	-
Ti 8-1-1	8	1	-	90	1	-
Ti 6-2-4-2	6	2	2	86	-	4
Ti 6-2-4-6	6	6	2	82	-	4
Ti CP	-		-	100	-	-



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SECTION 111 – PHYSICAL DATA

Titanium base alloy products are shipped as solid metal forms.

SECTION 1V - FIRE AND EXPLOSION DATA

Nonflammable, however, grindings and turnings from machining are flammable. If a fire breaks out, apply sand or salt or Metal X fire extinguisher to contain fire then let it burn itself out.

SECTION V - HEALTH HAZARD INFORMATION

Exposure limits: Section II lists specific ingredients and exposure limits. IMPORTANT – Determine actual exposure by industrial hygiene monitoring.

POSSIBLE SIGNS AND SYMPTOMS OF EXPOSURE TO DUST, WELDING 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: Adverse effects may result from long time exposure to welding fumes, gases, or dusts. These effects may include skin sensitization, neurological damage, and respiratory disease such as bronchial asthma, lung fibrosis or pneumoconiosis.

Aggravation of preexisting respiratory or allergic conditions may occur in some workers.

EMERGENCY AND FIRST AID: Remove victim from exposure and obtain prompt medical attention. If victim is unconscious, administer oxygen.

SECTION VI - REACTIVITY INFORMATION

Metal products themselves are not reactive, however, caution must be taken when welding due to fumes and gases.

SECTION VII - SPILL AND LEAK PROCEDURES

Residue from cutting or grinding should be swept or vacuumed and placed in suitable containers for disposal by local, state, or federal waste disposal regulations.

SECTION VII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: When exposure limits are exceeded, use proper, approved respirator.

VENTILATION: Use local exhaust when cutting, grinding, or welding.

EYE PROTECTION AND PROTECTIVE CLOTHING: Should be used when cutting, grinding or welding.

SECTION IX - SPECIAL PRECAUTIONS

PEL/TLV exposures should be kept below recommendations by OSHA and ACGIH to insure proper health protection of worker.