

RMI TITANIUM CO -- TITANIUM ALUMINUM VANADIUM ALLOY, GRADES 454, 464, 465, 466 --
3439-01-097-5989

===== Product Identification =====

Product ID:TITANIUM ALUMINUM VANADIUM ALLOY, GRADES 454, 464, 465, 466

MSDS Date:10/31/1994

FSC:3439

NIIN:01-097-5989

Status Code:A

Kit Part:Y

MSDS Number: CLGDH

=== Responsible Party ===

Company Name:RMI TITANIUM CO

Address:1000 WARREN AVE

City:NILES

State:OH

ZIP:

44446

Country:US

Info Phone Num:330-544-7710; 216-544-7802 TECH#

Emergency Phone Num:800-424-3900 OR 216-544-7655

Chemtrec Ind/Phone:(800)424-9300

CAGE:99403

=== Contractor Identification ===

Company Name:RMI TITANIUM CO

Address:1000 WARREN AVE

Box:City:NILES

State:OH

ZIP:44446

Country:US

Phone:330-544-7710; 216-544-7802 TECH#

CAGE:99403

===== Composition/Information on Ingredients =====

Ingred Name:ALUMINUM

CAS:7429-90-5

RTECS #:BD0330000

Minimum % Wt:3.

Maximum % Wt:6.

OSHA

PEL:15 MG/M3 DUST
ACGIH TLV:10 MG/M3 DUST

Ingred Name:TITANIUM
CAS:7440-32-6
RTECS #:XR1700000
Minumum % Wt:90.
Maxumum % Wt:94.5
OSHA PEL:10 MG/M3 (TIO2)
ACGIH TLV:10 MG/M3 (TIO2)

Ingred Name:VANADIUM
CAS:7440-62-2
RTECS #:YW1355000
Minumum % Wt:2.5
Maxumum % Wt:4.
OSHA PEL:0.05 MG/M3 (V205)
ACGIH TLV:0.05 MG/M3 (V205)

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===== Hazards Identification =====
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Health Hazards Acute and Chronic:PRODUCT UNDER NORMAL CONDITIONS DO NOT PRESENT AN INHALATION, INGESTION OR CONTACT HEALTH HAZARD. HOWEVER, SUCH AS BURNING, WELDING, SAWING, BRAZING, GRINDING, & POSSIBLY MACHINING, ETC. WHICH RESULTS IN ELEVATING THE TEMPERATURE OF THE PRODUCT AT OR ABOVE ITS MELTING POINT OR RESULTS IN THE GENERATION OF AIRBORNE PARTICULATES, MAY PRESENT HEALTH HAZARDS.

Explanation of Carcinogenicity:NEITHER THE PRODUCT AS A MIXTURE NOR ITS INGREDIENTS HAVE BEEN DETERMINED TO BE CARCINOGENIC.

Effects of Overexposure:ALUMINUM-ALUMINUM DUST/FUMES ARE LOW HEALTH

RISK BY INHALATION & TREAT AS NUISANCE DUST. TITANIUM-THERE IS NOT EVIDENCE OF A HEALTH HAZARD FROM INHALATION OF TITANIUM OXIDE IN CONCENTRATIONS OF AIR NOT EXCEEDING 10MG/M3 CONTAINING < 1% QUARTZ. THE TOXICITY OF TITANIUM OXIDE HAS BEEN FOUND TO BE RELATIVELY INERT. SKIN CONTACT WITH TITANIUM DUST MAY CAUSE PHYSICAL ABRASION. EYE CONTACT WITH PURE MATERIAL HAS SHOWN PARTICULATE IRRITATION. A NCI BIOASSAY OF TITANIUM OXIDE ADMINISTERED IN THE DIET OF RATS &

MICE WAS REPORTED TO BE
NEGATIVE. VANADIUM-RESPIRATORY IRRITATION, SKIN PALLOR, GREENISH
BLACK TONGUE, CHEST PAIN, COUGH, DYSPNEA.

===== First Aid Measures =====

First Aid:FOR OVEREXPOSURE TO AIRBORNE FUMES AND PARTICULATES GENERATED
DURING VARIOUS MILLING OPERATIONS, REMOVE EXPOSED PERSON TO FRESH
AIR. IF BREATHING IS DIFFICULT OR HAS STOPPED, ADMINISTER
ARTIFICIAL RES PIRATION OR OXYGEN AS INDICATED. SEEK MEDICAL
ATTENTION PROMP
TLY.

===== Fire Fighting Measures =====

Flash Point:NONE

Extinguishing Media:PRODUCT IS NON FLAMMABLE. IF IGNITABLE METAL WASTE
IS FORMED, USE DRY CHEMICAL, SALTS, OR INERT GAS. DO NOT USE
WATER!!

Fire Fighting Procedures:THIS PRODUCT DOES NOT BURN. GRINDING/POLISHING
IN THE ABSENCE OF OXYGEN, SUCH AS UNDER WATER, CAN RESULT IN
FINELY DIVIDED WASTE WHICH IS IGNITED WITH FLAME OR SPARK. USE
EXTINGUISHERS DESIGNED FOR M ETAL FIRES, DRY CHEM
ICAL POWDERS,
SALTS OR INERT GASES.

Unusual Fire/Explosion Hazard:THE APPLICATION OF WATER TO BURNING
TITANIUM CAN CAUSE AN EXPLOSION DUE TO THE EVOLUTION OF HYDROGEN
GAS.

===== Accidental Release Measures =====

Spill Release Procedures:SHOULD SPILLS OF THE DUST OCCUR COLLECT THE
MATERIAL IN APPROPRIATELY LABELED CONTAINERS AND DISPOSE OF
PROPERLY. DO NOT USE COMPRESSED AIR TO CLEAN SPILLS OF THE DUST.
WEAR PERSONAL PROTECTION EQUIPM ENT AS N
CESSARY.

===== Handling and Storage =====

Handling and Storage Precautions:STORE WET AND KEEP AWAY FROM HEAT AND
OPEN FLAME. MAINTAIN HUMIDITY ABOVE 50% TO PREVENT ELECTROSTATIC
BUILD-UP. USE NON-SPARKING METAL EQUIPMENT.

Other Precautions:KEEP WORK AREA FREE FROM WASTE. NO SMOKING IN AREA.
EXTINGUISHING MEDIA DRY CHEMICAL POWDERS, SALTS OR INERT GAS. DO
NOT USE WATER OR LIQUID EXPLOSION HAZARD COULD RESULT.

===== Exposure Controls/

Personal Protection =====

Respiratory Protection:RESPIRATOR RECOMMENDED FOR ALL GRINDING, CUTTING, ETC. WHERE OVEREXPOSURE IS POSSIBLE. CONSULT LOCAL SUPPLIER FOR SELECTION OF APPROPRIATE NIOSH/MSHA APPROVED RESPIRATOR BASED ON MAGNITUDE AND DURATION OF EXPOSURE.

Ventilation:ADEQUATE GENERAL AND/OR LOCAL EXHAUST SHOULD BE PROVIDED AS NECESSARY.

Protective Gloves:MAY BE REQUIRED.

Eye Protection:SAFETY GLASSES SHOULD BE WORN.

Other Protective Equipment:PROTECTIVE CLOTHING AND GLOVES MAY BE

REQUIRED FOR CERTAIN HANDLING OPERATIONS.

Work Hygienic Practices:MFR: ? HMIS:USE GOOD INDUSTRIAL HYGIENE

PRACTICE. AVOID UNNECESSARY EXPOSURE. WASH THOROUGHLY BEFORE EATING OR DRINKING

Supplemental Safety and Health

NAME: TITANIUM ALUMINUM VANADIUM ALLOY. GRADES: 454, 464, 465, 466.

SYNONYMS: TITANIUM (3 AL 2.5 V) TITANIUM (6 AL 4V).

===== Physical/Chemical Properties =====

HCC:N1

NRC/State Lic Num:NONE

Melt/Freeze Pt:M.P/F.P Tex

t:1560-1840C

Appearance and Odor:GRAY METALLIC SOLID; NO ODOR.

===== Stability and Reactivity Data =====

Stability Indicator/Materials to Avoid:YES

TITANIUM ALLOYS IN CONTACT WITH RED FUMING NITRIC ACID MAY BE SENSITIVE TO AND REACT VIOLENTLY WITH THE ACID.

Stability Condition to Avoid:THIS IS A STABLE MATERIAL AT ROOM

TEMPERATURE UNDER NORMAL STORAGE AND HANDLING CONDITIONS.

===== Toxicological Information =====

Toxicological In

formation:NO INFORMATION IS AVAILABLE ON THE LC50 OR

LD50 OF THE PRODUCT AS A MIXTURE. HOWEVER, OPERATION SUCH AS BURNING, WELDING, GRINDING, ETC. MAY FORM OXIDE BYPRODUCTS OF THE LISTED HAZARDOUS INGREDIENTS FOR WHICH SOME TOXICOLOGIC INFORMATION IS AVAILABLE.

===== Ecological Information =====

Ecological:EXPOSURE: WELDING FUMES AND GASES CANNOT BE CLASSIFIED

SIMPLY. COMPOSITION AND QUALITY OF BOTH ARE DEPENDENT UPON METAL BEING WELDED

D, PROCESS, PROCEDURE, ELECTRODES USED. OTHER CONDITIONS THAT INFLUENCE COMPOSITION AND QUANTITY OF FUMES AND GASES TO WHICH WORKERS MAY BE EXPOSED INCLUDE: COATINGS ON METAL BEING WELDED (PAINT, PLATING, GALVANIZING), NUMBER OF WELDERS, VOLUME OF WORK AREA, QUALITY AND AMOUNT OF VENTILATION. POSITION OF WELDER'S HEAD WITH RESPECT TO FUME PLUME, PRESENCE OF CONTAMINANTS IN ATMOSPHERE (CHLORINATED HYDROCARBON VAPORS FROM CLEANING AND (CONTD. SEE SARA TITLE III))

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===== Regulatory Information =====

SARA Title III Information: INVENTORIES OF THIS PRODUCT IN EXCESS OF THRESHOLD PLANNING QUANTITY (TPQ) WILL REQUIRE REPORTING UNDER SARA TITLE II, SECTION 311 AND 312. THE FEDERAL TPQ FOR THIS PRODUCT IS 10,000 POUNDS HOWEVER THE STATE IN WHICH YOUR FACILITY IS LOCATED MAY HAVE A LOWER TPQ. YOU SHOULD CHECK WITH YOUR STATE EMERGENCY PLANNING COMMITTEE TO DETERMINE THE EXACT REPORTING REQUIREMENTS IN YOUR

STATE. SARA HAZARD CATEGORIES: IMMEDIATE (ACUTE) HEALTH HAZARD AND DELAYED (CHRONIC) HEALTH HAZARD.

Federal Regulatory Information: THE TITANIUM PRODUCT OR PRODUCTS WE SELL YOU CONTAIN ONE OR MORE SPECIFIC TOXIC CHEMICALS UNDER SECTION 313 OF THE EMERGENCY PLANNING AND COMMUNITY RIGHT TO KNOW ACT OF 1986. THIS LAW REQUIRES CERTAIN MANUFACTURERS TO REPORT ANNUAL EMISSIONS OF SPECIFIC TOXIC CHEMICAL & CHEMICAL CATEGORIES. ALUMINUM AND VANADIUM RE LISTED AS SECTION 313 TOXIC CHEMICALS.

State Regulatory Information:

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