



LTS RESEARCH LABORATORIES, INC.  
MATERIAL SAFETY DATA SHEET  
VANADIUM TITANIUM CHROMIUM

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1. PRODUCT AND COMPANY IDENTIFICATION

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TRADE NAME: VANADIUM CHROMIUM TITANIUM ALLOY  
CHEMICAL FORMULA: V-Cr-Ti

MANUFACTUER/SUPPLIER: LTS RESEARCH LABORATORIES, INC.  
COMPANY'S STREET: 37 RAMLAND ROAD  
COMPANY'S CITY: OANGEBURG  
COMPANY'S STATE: NEW YORK  
COMPANY'S ZIP CODE: 10962

EMERGENCY CHEMTREC #: 800-262-8200  
COMPANY'S EMERGENCY TEL. #: 800-424-9300 (LOCAL)  
703-527-3887 (INTERNATIONAL)  
COMPANY'S TEL #: 845-494-2940

RECOMMENDED USE: SCIENTIFIC RESEARCH AND DEVELOPMENT

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2. HAZARDS IDENTIFICATION

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SIGNAL WORD: DANGER



HAZARD SYMBOLS: HIGHLY FLAMMABLE AS POWDER  
IRRITANT TO EYES, RESPRITORY SYSTEM, AND SKIN

HMIS HEALTH RATINGS (0-4):

HEALTH: 1  
FLAMMABILITY: 3  
REACTIVITY: 2

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3. COMPOSITION

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CHEMICAL FAMILY: METAL ALLOY  
ADDITIONAL NAMES: N/A

VANADIUM (V):  
PERCENTAGE: 0-100 wt%  
CAS #: 7440-62-2

CHROMIUM (Cr):  
PERCENTAGE: 0-100 wt%  
CAS #: 7440-47-3

TITANIUM (Ti):  
PERCENTAGE: 0-100 wt%  
CAS #: 7440-32-6

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4. FIRST AID PROCEDURES

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IMPORTANT SYMTOMS: NONE  
SPECIAL TREATMENT: NONE  
GENERAL TREATMENT: SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.  
INHALATION: REMOVE VICTIM TO FRESH AIR GIVE OXYGEN IF BREATHING IS DIFFICULT.

INGESTION: GIVE 1-2 GLASSES OF MILK OR WATER AND INDUCE VOMITING. NEVER INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SKIN: WASH AFFECTED AREA WITH MILD SOAP AND WATER. REMOVE CONTAMINATED CLOTHING.

EYES: FLUSH EYES WITH WATER, LIFTING UPPER AND LOWER EYELIDS, FOR 20 MINUTES.

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#### 5. FIRE AND EXPLOSION HAZARDS DATA

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FLAMMABILITY: NON-FLAMMABLE, EXCEPT AS POWDER

FLASH POINT: N/A

AUTOIGNITION TEMPERATURE: 1200 °C

EXTINGUISHING MEDIA: EXTINGUISHING POWDER; DO NOT USE WATER FOR METAL FIRES.

SPEC. FIRE FIGHTING PROCEDURE: USE FULL-FACE, SELF-CONTAINED BREATHING APPARATUS WITH FULL PROTECTIVE CLOTHING TO PREVENT CONTACT WITH SKIN AND EYES.

UNUSUAL FIRE HAZARDS: MAY REACT VIOLENTLY WITH BR<sub>F</sub><sub>3</sub>, CL<sub>2</sub>, LI, NITRYL FLUORIDE AND OXIDANTS. IGNITES AND IS POTENTIALLY EXPLOSIVE IN ATMOSPHERES OF CARBON DIOXIDE. CHROMIUM REACTS VIOLENTLY OR EXPLOSIVELY WHEN HEATED WITH AMMONIUM NITRATE AND BROMINE PENTAFLUORIDE. IT HAS AN INCANDESCENT REACTION WITH NITROGEN OXIDE OR SULFUR DIOXIDE. POWDERS PREPARED BY EVAPORATION OF MERCURY FORM CHROMIUM AMALGAM MAY BE PYROPHORIC WHEN HEATED TO DECOMPOSITION, MAY EMIT TOXIC FUMES OXIDES.

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#### 6. ACCIDENTAL RELEASE MEASURES

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IF MATERIAL IS RELEASED/ SPILLED: WEAR APPROPRIATE RESPIRATORY AND PROTECTIVE EQUIPMENT SPECIFIED IN SPECIAL PROTECTION INFORMATION. ISOLATE SPILL AREA AND PROVIDE VENTILATION. VACUUM UP SPILL USING A HIGH EFFICIENCY PARTICULATE ABSOLUTE (HEPA) AIR FILTER AND PLACE IN A CLOSED CONTAINER FOR DISPOSAL. TAKE CARE NOT TO RAISE DUST.

ENVIRONMENTAL PRECAUTIONS: ISOLATE RUNOFF TO PREVENT ENVIRONMENTAL POLLUTION.

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#### 7. HANDLING AND STORAGE

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HANDLING CONDITIONS: WASH THOROUGHLY AFTER HANDLING.

HMS PROTECTIVE EQUIPMENT: GLASSES, GLOVES, APRON, DUST RESPIRATOR

STORAGE CONDITIONS: STORE IN A COOL DRY PLACE IN A TIGHTLY SEALED CONTAINER.

WORK/HYGIENIC MAINTENANCE: DO NOT USE TOBACCO OR FOOD IN WORK AREA. WASH THOROUGHLY BEFORE EATING AND SMOKING. DO NOT BLOW DUST OFF CLOTHING OR SKIN WITH COMPRESSED AIR.

VENTILATION: PROVIDE SUFFICIENT VENTILATION TO MAINTAIN CONCENTRATION AT OR BELOW TLV.

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#### 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

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OSHA PEL: 1 mg/m<sup>3</sup> AS CHROMIUM

ACGIH TLV: 0.5 mg/m<sup>3</sup> AS CHROMIUM

SPECIAL EQUIPMENT: NONE

RESPIRATORY PROTECTION: NIOSH APPROVED DUST/MIST RESPIRATOR

PROTECTIVE GLOVES:	RUBBER GLOVES
EYE PROTECTION:	SAFETY GLASSES
BODY PROTECTION:	PROTECTIVE WORK CLOTHING. WEAR CLOSE-TOED SHOES AND LONG SLEEVES/PANTS.
OTHER:	N/A

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### 9. PHYSICAL AND CHEMICAL CHARACTERISTICS

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COLOR:	LUSTROUS GREY
FORM:	POWDER, PIECES, PELLETS, GRANULES, SPUTTERING TARGET
ODOR:	ODORLESS
SOLUBILITY IN H <sub>2</sub> O:	INSOLUBLE
BOILING POINT:	~3300 °C
MELTING POINT:	~1850 °C
SPECIFIC GRAVITY (H <sub>2</sub> O=1):	N/A
MOLECULAR WEIGHT:	N/A

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### 10. REACTIVITY

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STABILITY:	STABLE
INCOMPATIBILITY:	ACIDS, OXIDIZING AGENTS, ALKALI METALS, HALOGENS, INTERHALOGENS, CO <sub>2</sub> , AIR
HAZ. DECOMPOSITION PRODUCTS:	NONE
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR

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### 11. TOXICOLOGICAL INFORMATION

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POTENTIAL HEALTH EFFECTS:	
EYE:	MAY CAUSE ABRASIVE IRRITATION
SKIN:	MAY CAUSE ABRASIVE IRRITATION
INGESTION:	MODERATELY TOXIC BY INGESTION. MAY CAUSE GASTROINTESTINAL DISORDERS.
INHALATION:	MAY CAUSE IRRITATION TO THE RESPIRATORY TRACT. MAY CAUSE HISTOLOGICAL FIBROSIS OF LUNGS, NASAL, OR LUNG CANCER AFTER PROLONGED EXPOSURE
ROUTES OF ENTRY:	INHALATION, SKIN, EYES, AND INGESTION.
SIGNS & SYMPTOMS OF EXPOSURE:	N/A
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE:	PRE-EXISTING RESPIRATORY DISORDERS.
CARCINOGEN:	YES

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### 12. ECOLOGICAL INFORMATION

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ECOLOGICAL DATA IS NOT AVAILABLE.

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### 13. DISPOSAL CONSIDERATIONS

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DISPOSE OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

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### 14. TRANSPORTATION DATA

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HAZARDOUS:	HAZARDOUS AS POWDER ONLY
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HAZARD CLASS:	4.1
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PACKING GROUP: II  
UN NUMBER: 3089  
UN PROPER SHIPPING NAME: METAL ALLOY POWDER, FLAMMABLE, N.O.S  
ROAD ADR/RID CLASS: 4.1 (F3) FLAMMABLE SOLIDS, SELF-REACTIVE SUBSTANCES  
AND SOLID EXPLOSIVES  
AIR IATA CLASS: 4.1  
MARITIME IMDG CLASS: 4.1

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15. REGULATORY INFORMATION

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SEC.302 (EHS): YES  
SEC.304 (RQ): N/A  
SEC.313 (SARA): YES

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16. OTHER INFORMATION

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THIS SAFETY DATA SHEET SHOULD BE USED IN CONJUNCTION WITH TECHNICAL SHEETS. IT DOES NOT REPLACE THEM. THE INFORMATION GIVEN IS BASED ON OUR KNOWLEDGE OF THIS PRODUCT, AT THE TIME OF PUBLICATION. IT IS GIVEN IN GOOD FAITH. THE ATTENTION OF THE USER IS DRAWN TO THE POSSIBLE RISKS INCURRED BY USING THE PRODUCT FOR ANY OTHER PURPOSE OTHER THAN THAT FOR WHICH IT WAS INTENDED. THIS DOES NOT IN ANY WAY EXCUSE THE USER FROM KNOWING AND APPLYING ALL THE REGULATIONS GOVERNING HIS ACTIVITY. IT IS THE SOLE RESPONSIBILITY OF THE USER TO TAKE ALL PRECAUTIONS REQUIRED IN HANDLING THE PRODUCT. THE AIM OF THE MANDATORY REGULATIONS MENTIONED IS TO HELP THE USER TO FULFILL HIS OBLIGATIONS REGARDING THE USE OF HAZARDOUS PRODUCTS.

DATE MSDS PREPARED: 07/01/14  
DATE LAST REVISED: N/A

