

SAFETY DATA SHEET
TITANIUM COBALT

GENERAL

MANUFACTURER/SUPPLIER: LTS RESEARCH LABORATORIES, INC.
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COMPANY'S TEL #: (949)407-8904
DATE MSDS PREPARED: 02/03/05
DATE MSDS REVISED: 11/05/12

1. PRODUCT IDENTIFICATION

PRODUCT NAME: TITANIUM COBALT
CHEMICAL NATURE: METALLIC ELEMENT
FORMULA: TiCo
CAS #: 440-32-6 (Ti)
7440-48-4 (Co)

2. PHYSICAL AND CHEMICAL CHARACTERISTICS

BOILING POINT 760 mm Hg: N/A
MELTING POINT: N/A
SPECIFIC GRAVITY: N/A
VAPOR DENSITY: N/A
VAPOR PRESSURE: N/A
% VOLATILES: N/A
SOLUBILITY IN H₂O: INSOLUBLE
APPEARANCE AND ODOR: GREY TARGET, NO ODOR

3. HAZARD IDENTIFICATION

HAZARDOUS COMPONENTS %
TITANIUM 97%
COBALT: 3%
OSHA/PEL: N/E
ACGIH/TLV N/E

4. FIRE FIGHTING MEASURES

FLASH POINT: N/A
AUTOIGNITION TEMPERATURE: N/A
FLAMMABLE LIMITS:
UPPER: N/A
LOWER: N/A
FLAMMABILITY: NON-FLAMMABLE SOLID
EXTINGUISHING MEDIA: USE SUITABLE EXTINGUISHING MEDIA FOR SURROUNDING MATERIALS AND TYPE OF FIRE
SPECIAL FIRE FIGHTING PROCEDURES: USE NORMAL FIREFIGHTING PROCEDURES WHICH INCLUDE WEARING NIOSH/MSHA APPROVED SELF-CONTAINED BREATHING APPARATUS, FLAME AND CHEMICAL RESISTANT CLOTHING; HATS, BOOTS AND GLOVES. IF WITHOUT RISK, REMOVE MATERIAL FROM FIRE AREA.

5. HEALTH HAZARD INFORMATION

EFFECTS OF EXPOSURE:	TITANIUM IS GENERALLY CONSIDERED TO BE PHYSIOLOGICALLY INERT. THERE IS NO REPORTED CASE. COBALT HAS A LOW TOXICITY BY INGESTION. INGESTION OF SOLUBLE SALTS PRODUCES NAUSEA AND VOMITING BY LOCAL IRRITATION.
ACUTE EFFECTS:	
INHALATION:	PROLONGED INHALATION MAY CAUSE MILD IRRITATION TO THE LUNGS AND RESPIRATORY TRACT
INGESTION:	RELATIVELY NON-TOXIC, POORLY ABSORBED FROM THE ALIMENTARY TRACT.
SKIN:	MAY CAUSE IRRITATION.
EYE:	DUST OR POWDER MAY CAUSE IRRITATION
CHRONIC AFFECTS:	NONE KNOWN
INHALATION:	MAY CAUSE HISTOLOGIC FIBROSIS OF LUNGS, NASAL AND/OR LUNG CANCER.
INGESTION:	NO CHRONIC HEALTH EFFECTS RECORDED.
SKIN:	NO CHRONIC HEALTH EFFECTS RECORDED.
EYE:	NO CHRONIC HEALTH EFFECTS RECORDED.
ROUTES OF EXPOSURE:	INHALATION, INGESTION, SKIN, EYES.
TARGET ORGAN:	MUCOUS MEMBRANES
MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE:	ANY PREEXISTING RESPIRATORY, SKIN PROBLEMS
CARCINOGENITY:	
NTP:	NO
IARC:	NO
OSHA:	NO
EPA:	NO

6. STABILITY

STABILITY:	STABLE
CONDITION TO AVOID:	HEAT, FLAME, OTHER SOURCES OF IGNITION, MOISTURE. MASSIVE TITANIUM IS STABLE AT ORDINARY TEMPERATURES. TITANIUM IS IGNITABLE AND MAY EXPLODE IF IN A FINELY DIVIDED FORM.
INCOMPATIBILITY (MATERIAL TO AVOID):	AIR, ALUMINUM, BROMINE TRIFLUORIDE, CARBON BLACK, CARBON DIOXIDE, METAL CARBONATES, NITROGEN, HALOCARBONS, HALOGENS, METAL OXIDES, METAL OXOSALTS, NITRYL FLUORIDE, OXIDIZING AGENTS, OXYGEN, SILVER FLUORIDE, STEAM, ACIDS
HAZARDOUS DECOMPOSITION PRODUCTS:	METAL OXIDES.
HAZARDOUS POLYMERIZATION:	WILL NOT OCCUR.

7. EMERGENCY AND FIRST AID PROCEDURES:

INHALATION:	REMOVE FROM EXPOSURE, RESTORE AND/OR SUPPORT BREATHING AS NEEDED. SEEK IMMEDIATE MEDICAL ATTENTION.
INGESTION:	SEEK MEDICAL ATTENTION
SKIN:	WASH THOROUGHLY WITH SOAP AND WATER. REMOVE AND PROPERLY DISPOSE OR LAUNDRER CONTAMINATED CLOTHING BEFORE WEARING IT AGAIN. CLEAN MATERIAL FROM SHOES AND EQUIPMENT. SEEK MEDICAL ATTENTION IF SYMPTOMS PERSIST.

EYE: IMMEDIATELY FLUSH EYES, INCLUDING UNDER EYELIDS, WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. CALL A PHYSICIAN

8. HANDLING AND STORAGE

HANDLING AND STORAGE KEEP CONTAINER TIGHTLY CLOSED. STORE IN A COOL, DRY, WELL-VENTILATED AREA AWAY FROM INCOMPATIBLE MATERIALS. WASH THOROUGHLY AFTER HANDLING.

9. SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED: WEAR APPROPRIATE RESPIRATORY AND PROTECTIVE EQUIPMENT. 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

RESPIRATORY PROTECTION (SPECIFY TYPE): NIOSH APPROVED DUST RESPIRATOR
VENTILATION: LOCAL EXHAUST VENTILATION MAY BE NECESSARY TO CONTROL ANY AIR CONTAMINANTS TO WITHIN THE RECOMMENDED PEL, TLV. MECHANICAL EXHAUST IS NOT RECOMMENDED.

PROTECTIVE GLOVES: RUBBER GLOVES.
EYE PROTECTION: SAFETY GLASSES.
OTHER CLOTHING AND EQUIPMENT: PROTECTIVE GEAR SUITABLE TO PREVENT CONTAMINATION
WASTE DISPOSAL METHOD: IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL REGULATIONS.

10. TOXICITY DATA

LD50/LC50: N/A
EPIDEMIOLOGY: N/A.
TERATOGENICITY: N/A.
REPRODUCTIVE EFFECTS: N/A.
NEUROTOXICITY: N/A.
MUTAGENICITY: N/A.
OTHER STUDIES: N/A.

11. TRANSPORTATION DATA

UN NUMBER: N/A
HAZARD CLASS: NONE
ADR//RID CLASS: NOT RESTRICTED
IMDG CLASS: NOT RESTRICTED
AIR TRAN. ICAO/IATA CLASS: NOT RESTRICTED
MARITIME TRAN. IMDG CLASS: NOT RESTRICTED

12. OTHER INFORMATION

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.

