# MATERIAL SAFTEY DATA SHEET

#### I. PRODUCT IDENTIFICATION -----MANUFACTURER'S NAME: Metallurgical Processing, Inc. TELEPHONE NO: (860) 224-2648 ADDRESS: 68 Arthur Street DATE PREPARED: October, 1997 New Britain, CT 06050 TRADE NAME: AI HPA TICN CHEMICAL NAME: Titanium Carbon Nitride (TiCN) ----- II. HAZARDOUS INGREDIENTS The terms "hazardous" and hazardous materials" as used within this MSDS should be interpreted as defined by, and in accordance with, the OSHA Hazard Communications Standard (29 CFR Part 1910, 1200) including cited Appendices, Lists, References, etc., all of which hereby incorporated by reference. MATERIAL OR COMPONENT CAS NO. Wt% **OSHA ACGIH** PEL (Mg/M3) TLV(Mg/M3) 5 Titanium (Ti) 7440-32-6 71.3 15 Carbon (C) 7429-90-5 06.0 N/D N/D 7727-37-9 Nitrogen (N<sub>2</sub>) 22.7 N/A N/A III. PHYSICAL DATA 8125° F MELTING POINT: 5425° F **BOILING POINT:** SPECIFIC GRAVITY (H<sub>2</sub>O=1) Approx. 7.0-9.0 (60° F) VAPOR PRESSURE: N/A VAPOR DENSITY (AIR=1) ΝΆ SOLUBILITY IN HO: Insoluble % VOLATILES BY VOLUME: N/A **EVAPORATION (BUTYL ACETATE=1)** N/A APPEARANCE: Violet colored coating about .0001" thick, odorless Titanium Carbon Nitride is a chemically inert substance. This extremely thin film of Titanium Carbon Nitride coating is applied to cutting tools, forming tools, molds and wear parts for extending part life. ------ IV. FIRE AND EXPLOSION DATA FLASH POINT: None FIRE POINT: None ■■■■■■■■■■■■■■■■■■■■■ V. HEALTH HAZARD INFORMATION •■■■■■■■■ WE DO NOT CONSIDER THE COATING IN THE FORM IT IS SOLD TO CONSTITUTE A PHYCIAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABREADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION, A TITANIUM CARBON NITRIDE COATING OBJECT, MAY PRODUCE POTENTIALLY HAZARDOUS DUST OR FUMES WHICH CAN BE INHALED, SWALLOWED, OR COME IN CONTACT WITH THE SKIN OR EYES. THE DUST OF FUMES WHICH CAN BE INHALED, WILL CONSIST OF EXTREMELY MINUTE PARTICLES OF TITANIUM CARBON NITRIDE TOGETHER WITH ARTICLES

OF MATERIAL FROM THE COATED OBJECT (SUBSTRATE MATERIAL). USERS OF COATED TOOLS SHOULD CHECK MSDS SHEETS FOR SUBSTRATE MATERIAL FOR POSSIBLE HEALTH HAZARD EFFECTS FROM MATERIAL OF COATED OBJECT.

PRIMARY ROUTES OF ENTRY: Inhalation **EMERGENCY FIRST AID:** Remove to fresh air, if condition

continues, consult physician.

Eye Contact Flush well with running water to

remove particulate. Get medical

attention.

Skin Contact Brush off excess dust. Wash out

area with soap and water.

Inaestion Seek medical help if large quantities

of material have been ingested.

EFFECT OF EXPOSURE: No toxic effects would be expected from exposure to the solid form of Titanium Carbon Nitride coated tools. Prolonged, repeated exposure to fumes or dusts generated during heating, cutting, brazing of welding may or may not cause adverse health effects associated with the listed constituents in excess of OSHA permissible exposure limits established in 29 CFR Subpart Z. See Section II)

•••••• V. HEALTH HAZARD INFORMATION (CONT'D)

EXPOSURE LIMITS: Section II lists specific ingredients and permissible exposure limits.

IMPORTANT: Determine actual exposure by industrial hygiene monitoring.

POSSIBLE SIGNS AND SYMPTOMS OF EXPOSURE TO DUST, WELDING, FUME 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 of lack of oxygen.

LONG TERM EXPOSURE: There are no adverse effects for Titanium Carbon Nitride coated products in their solid form.

Adverse effects may or may not result from long-term (chronic) exposure to dust, fume, gases, etc. that occur by way of subsequent operations on the Titanium Carbon Nitride coated product. It is believed there are no reliable scientific studies which show that workers exposed to operations upon Titanium Carbon Nitride coated products suffer increased incidence of lung cancer or other

disease because of exposure to Titanium Aluminum Nitride.

Some studies would associate elements form various substrate materials (material the coated object is made of) with the potential for neurologic, pulmonary, respiratory, skin or other disease. Chromium, cobalt and nickel in various chemical compounds have been identified as suspect human carcinogens by the I.A.R.C., N.T.P Annual Report. Users of Titanium Carbon Nitride coated products should check MSDS sheets of substrate material for possible health hazard effects

from material of coated object.

AGGRAVATION OF PREEXISTING RESPIRATORY OR ALLERGIC CONDITIONS MAY OCCUR IN SOME WORKERS.

#### VI. REACTIVITY DATA

STABILITY: INCOMPATIBILITY: HAZARDOUS DECOMPOSITION PRODUCTS:

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Chemically Stable Reacts with Strong Acids Metallic Oxides

## **VII. SPILL OR LEAK PROCEDURES**

STEPS TO BE TAKEN IN CASE OF RELEASE OR SPILL:

WASTE DISPOSAL METHOD:

N/A Solids -

Sale as scrap for reuse

Dust, etc. - Follow federal, state and local regulations

regarding disposal

## **VIII. SPECIAL PROTECTION INFORMATION**

VENTILATION REQUIREMENTS: General - Recommended (to keep airborne concentration of dust and fumes below ACGIH TLV's

Local - As Required

PERSONAL PROTECTIVE EQUIPMENT:

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Respiratory Protection: If fumes, misting or dust condition occurs and TLV as indicated in Section II is exceeded, provide

NIOSH approved respirators.

Eye Protection: Recommended approved safety glasses of goggles when working with dusty material.

Gloves: As required

Other Clothing of Equipment: As Required

## IX. SPECIAL PRECAUTIONS

USE GOOD HOUSEKEEPING PRACTICES TO PREVENT ACCUMULATIONS OF DUSTS AND TO KEEP AIRBORNE DUST CONCENTRATIONS AT A MINIMUM.

THIS MATERIAL IS POTENTIALLY CONTAMINATED WITH COATINGS SUCH AS OILS FOR PRESERVATIVES AND OTHER CONTAMINANTS. IF THE MATERIAL IS CONTAMINATED, SPECIAL PRECAUTIONS (SUCH AS PROCESS CONTROL, AND PERSONAL PROTECTIVE EQUIPMENT APPROPRIATE TO THE NATURE OF THE SUSSPECTED CONTAMINANTS SHOULD BE TAKEN TO AVOID RESULTING EXPOSURES WHEN HANDLING, CUTTING (THERMAL OF MECHANICAL) AND/OR HEATING OR MELTING.

While the information set forth in this material safety date sheet is believed to be accurate, as of the effective date, Metallurgical Processing, Inc. makes no representations regarding the accuracy or completeness of the information and assumes no liability for any loss, damage, or injury of any kind which may result from or arise out of the use or reliance on the information by any person.

N/A = NOT APPLICABLE