

# MATERIAL SAFETY DATA SHEET

## I. PRODUCT IDENTIFICATION

MANUFACTURER'S NAME: Metallurgical Processing, Inc

TELEPHONE NO: (860) 224-2648

ADDRESS: 68 Arthur Street  
New Britain, CT 06050

DATE PREPARED: September, 1997

TRADE NAME: BETA TiN  
CHEMICAL NAME: Titanium Nitride (TiN)

## 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 PEL (Mg/M <sup>3</sup> )	ACGIH TLV(Mg/M <sup>3</sup> )
Titanium (Ti)	7440-32-6	77.3	15	5
Nitrogen (N <sub>2</sub> )	7727-37-9	22.7	N/A	N/A

## III. PHYSICAL DATA

BOILING POINT:	8000° F	MELTING POINT:	5306° F
SPECIFIC GRAVITY (H <sub>2</sub> O=1)	Approx. 7.0-9.0 (60° F)	VAPOR PRESSURE:	N/A
VAPOR DENSITY (AIR=1)	N/A	SOLUBILITY IN H <sub>2</sub> O:	Insoluble
% VOLATILES BY VOLUME:	N/A	EVAPORATION (BUTYL ACETATE=1)	N/A

APPEARANCE: Golden colored coating about .0001" thick, odorless  
Titanium Nitride is a chemically inert substance.

This extremely thin film of Titanium 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 PHYSICAL HAZARD OR A HEALTH HAZARD. SUBSEQUENT OPERATIONS SUCH AS ABREADING, MELTING, WELDING, CUTTING OR PROCESSING IN ANY OTHER FASHION, A TITANIUM 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 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.
	Ingestion		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 Nitride coated tools. Prolonged, repeated exposure to fumes or dusts generated during heating, cutting, brazing or 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)

