

PROTECTIVE METAL ALLOYS INC -- PWA 694 -- 3439-00-015-3776

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

Product ID:PWA 694

MSDS Date:02/04/1991

FSC:3439

NIIN:00-015-3776

MSDS Number: BWMMX

=== Responsible Party ===

Company Name:PROTECTIVE METAL ALLOYS INC

Address:8726 PRODUCTION AVE SUITE A

City:SAN DIEGO

State:CA

ZIP:92121

Country:US

Info Phone Num:619-271-1880

Emergency Phone Num:619-271-1880

CAGE:60597

=== Contractor Identification ===

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Phone:619-271-1880

CAGE:60597

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

Ingred Name:MANGANESE (SARA 313)

CAS:7439-96-5

RTECS #:OO9275000

Fraction by Wt: 0 - 1%

Other REC Limits:NONE RECOMMENDED

OSHA PEL:C 5 MG/M3 DUST

ACGIH TLV:5 MG/M3 DUST 9495

Ingred Name:SILICON

CAS:7440-21-3

RTECS #:VW0400000

Fraction by

Wt: 0 - 5%  
Other REC Limits:NONE RECOMMENDED  
OSHA PEL:15 MG/M3 TDUST  
ACGIH TLV:10 MG/M3 TDUST; 9495

Ingred Name:CHROMIUM (SARA 313) (CERCLA)  
CAS:7440-47-3  
RTECS #:GB4200000  
Fraction by Wt: 5 - 35%  
Other REC Limits:NONE RECOMMENDED  
OSHA PEL:1 MG/M3  
ACGIH TLV:0.5 MG/M3; 9495  
EPA Rpt Qty:1 LB  
DOT Rpt Qty:1 LB

Ingred Name:NICKEL (SARA 313) (CERCLA)  
CAS:7440-02-0  
RTECS #:QR5950000  
Fraction by Wt: 0 - 30%  
Other REC Limits:NONE RECOMMENDED  
OSHA PEL:1 MG/M3  
ACGIH TLV:1 MG/M3; 9495

Ingred Name:MOLYBDE  
NUM  
CAS:7439-98-7  
RTECS #:QA4680000  
Fraction by Wt: 0 - 35%  
Other REC Limits:NONE RECOMMENDED  
OSHA PEL:10 PPM.  
ACGIH TLV:10 PPM.

Ingred Name:TUNGSTEN,AS W  
CAS:7440-33-7  
RTECS #:YO7175000  
Fraction by Wt: 0 - 15%  
Other REC Limits:NONE RECOMMENDED  
OSHA PEL:NOE ESTABLISHED  
ACGIH TLV:1 MG/M3/3 STEL; 9495

Ingred Name:VANADIUM (SARA 313)  
CAS:7440-62-2  
RTECS #:YW1355000  
Fraction by Wt: 0 - 2%  
Other REC Limits:NONE RECOMMENDED

Ingred Name:IRON  
CAS:7439-89-6  
RTECS #:NO4565500  
Fraction by Wt: 0 - 10%  
Ot

her REC Limits:NONE RECOMMENDED  
OSHA PEL:10 MG/M3 (TDUST)  
ACGIH TLV:5 MG/M3 (OXIDE FUME)

Ingred Name:COBALT (SARA 313)  
CAS:7440-48-4  
RTECS #:GF8750000  
Fraction by Wt: 30 - 60%  
Other REC Limits:NONE RECOMMENDED  
OSHA PEL:0.1 MG/M3  
ACGIH TLV:0.02 MG/M3; A3; 9495

Ingred Name:BORON  
CAS:7440-42-8  
RTECS #:ED7350000  
Fraction by Wt: 0 - 3%  
Other REC Limits:NONE RECOMMENDED  
OSHA PEL:10 MG B203/M3  
ACGIH TLV:10 MG B2O3/M3

===== Hazards Identification =====

LD50 LC50 Mix

ture:LD50 (ORAL RAT) IS NOT RELEVANT.

Routes of Entry: Inhalation:YES Skin:NO Ingestion:NO

Reports of Carcinogenicity:NTP:YES IARC:YES OSHA:NO

Health Hazards Acute and Chronic:TARGET ORGANS:LUNGS, EYES, SKIN.

ACUTE- FUMES CAN CAUSE IRRITATION, DIZZINESS, HEADACHE, BACKACHE,  
JOINT PAIN, METAL FUME FEVER, BODY ACHE, HEMOLYTIC ANEMIA, NAUSEA,  
CNS EFFECTS. ARC RAYS & UV CAN INJ URE EYES & BURN SKIN. ELECTRIC  
SHOCK CAN KILL. CHRONIC- MAY CAUSE DEPOSIT OF IRON IN LUNG  
(SIDER

OSIS), LUNG DISEASES.

Explanation of Carcinogenicity:CONTAINS NICKEL AND CHROMIUM.

Effects of Overexposure:EYES, SKIN, RESPIRATORY TRACT IRRITATION,  
DIZZINESS, WATERY EYES, HEADACHE, NAUSEA, BREATHING DIFFICULTY,  
COUGHING, CHEST PAINS, FEVER, BODY ACHE, CHILLS. EYE INJURY, SKIN  
BURNS, CONVULSION, MUSCULAR WEAKNESS, LOSS OF CONSCIOUSNESS,  
FATIGUE, PERFORATION TO THE NASAL SEPTUM, JOINT PAIN, SLEEPINESS,  
DOUBLE VISION...

Medical Cond Aggravated by Exposure:PERSONS WITH SENSITI

## VITY TO METALS

OR WITH IMPAIRED PULMONARY FUNCTION, AIRWAY DISEASES AND CONDITIONS SUCH AS ASTHMA, EMPHYSEMA, CHRONIC BRONCHITIS, ETC... CAN BE AGGRAVATED BY THE EXPOSURE.

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

First Aid:GET MEDICAL ATTENTION IF SYMPTOMS PERSIST. EMPLOY FIRST AID TECHNIQUE RECOMMENDED BY RED CROSS. IF BREATHING IS DIFFICULT, PROVIDE OXYGEN AND CALL PHYSICIAN. PROVIDE CPR IF NEEDED. FOR ELECTRIC SHOCK, DISCONNECT POWER. FOR ARC BURNS, APPLY COLD, CLEAN COMPRESSES AND CALL A PHYSICIAN. IF IN EYES, FLUSH WITH WATER FOR 15 MINUTES.

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

Flash Point:NONFLAMMABLE

Extinguishing Media:WATER SPRAY, CARBON DIOXIDE, FOAM OR DRY CHEMICAL FOR SURROUNDING FIRE. USE WATER SPRAY TO COOL FIRE EXPOSED CONTAINERS.

Fire Fighting Procedures:WEAR FULL PROTECTIVE CLOTHING AND NIOSH-APPROVED SELF-CONTAINED BREATHING APPARATUS. IF IN POWDER FORM, USE DRY SAND/GRAPHITE/CLASS "D" EXTINGUISHING POWDER.

Unusual Fire/Explosion Hazard:WELDING ARC AND SPARKS CAN IGNITE COMBUSTIBLES.

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

Spill Release Procedures:IF IN POWDER OR DUST FORM, CLEAN UP BY USING A HIGH EFFICIENCY PARTICULATE AIR FILTER SYSTEM. AVOID GENERATING DUST.

Neutralizing Agent:NOT RELEVANT

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

Handling and Storage Precautions:SOLID FORMS POSE NO STORAGE PROBLEM.

STORE METAL POWDER IN A DRY AREA. DO NOT STORE NEAR MINERAL ACIDS.

Other Precautions:AVOID BREATHING FUMES. USE WITH ADEQUATE VENTILATION. WASH THOROUGHLY AFTER HANDLING AND BEFORE EATING AND DRINKING.

### ===== Exposure Controls/Personal Protection =====

Respiratory Protection:USE NIOSH APPROVED SUPPLIED AIR RESPIRATORY PROTECTION OR RESPIRABLE FUME RESPIRATOR WHEN WELDING, BRAZING OR SOLDERING IN CONFINED SPACE OR WHERE LOCAL EXHAUST OR

VENTILATION

DOES NOT KEEP EXPOSURE BELOW TLV.

Ventilation:LOCAL EXHAUST VENTILATION SHOULD BE USED TO CONTROL EXPOSURE TO AIRBORNE FUMES WHENEVER POSSIBLE.

Protective Gloves:FLAME-PROOF WELDING GLOVES

Eye Protection:SAFETY GLASSES UNDER WELDING HELMET

Other Protective Equipment:EYE WASH STATION AND SAFETY SHOWER, WORK CLOTHING AND APRON AS REQUIRED.

Work Hygienic Practices:OBSERVE GOOD PERSONAL HYGIENE PRACTICES AND RECOMMENDED PROCEDURES. DO NOT WEAR CONTAMINATED CLOTHING.

Supplemental Safety and Health

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

HCC:T6

NRC/State Lic Num:NOT RELEVANT

Melt/Freeze Pt:M.P/F.P Text:2282F,1250C

Spec Gravity:8.75

Viscosity:NOT RELEVANT

Evaporation Rate & Reference:NOT RELEVANT

Solubility in Water:INSOLUBLE

Appearance and Odor:SOLID SILVER COLOR - ODORLESS

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

Stability Indicator/Materials to Avoid:YES

STRONG ACIDS, STRONG OXIDIZING AGENTS (MAY FORM HYDROGEN GAS)

Stability Condition to Avoid:CONTACT WITH ACIDS

Hazardous Decomposition Products:COMPLEX OXIDES OF IRON, NICKEL...; OZONE, CARBON MONOXIDE, CARBON DIOXIDE, OXIDES OF NITROGEN & CERTAIN INERT GASES

===== Disposal Considerations =====

Waste Disposal Methods:PRIOR TO DISPOSAL, CONSIDER IF MATERIAL HAS RECOVERY VALUE. DISPOSE OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS. PREVENT WASTE FROM CONTAMINATING ENVIRONMENT

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