



## MATERIAL SAFETY DATA SHEET

### SECTION 1 IDENTITY

**NAME OF PRODUCT:**

**Carbide Tool Bit with TA, TB, VSC, PLB, GAS or ASPC Prefix. (Exm: TB-810)**

**MANUFACTURER'S NAME AND ADDRESS:**

SUNNEN PRODUCTS COMPANY  
7910 MANCHESTER  
ST. LOUIS, MO 63143

**CONTACT:**

CHUCK KORN

**DATE:**

NOVEMBER 28, 1996

**EMERGENCY TELEPHONE NUMBER:**

314-781-2105

### SECTION 2 INGREDIENTS/IDENTITY (PER 29 CFR 1910.1200(g))

CHEMICAL NAME OF COMPONENTS	CAS NO.	Wt.%	OSHA Z1A 8 HR TWA	OSHA Z1A STEL	OSHA Z1A CEILING mg./cu. m.	OSHA Z1A SKIN	ACGIH TWA	CARCINOGENIC
Aluminum Oxide	1344-28-1	<0.5	10 Total Dust/5 Respirable	NONE	NONE	NONE	10	N
Cadmium (metal) as dust	7440-43-9	16(2)	0.2	NONE	0.3	NONE	.01	N
as fume	7440-43-9	(2)	0.1	NONE	0.6	NONE	NONE	N
Chromium Carbide	UNKNOWN	<5.0	1 (as Cr)	NONE	NONE	NONE	.5 (as Cr)	N
Chromium (+III)	7440-47-3	<4.5	.5	NONE	NONE	NONE	.5	N (1)
Cobalt	7440-48-4	2-30	.05	NONE	NONE	NONE	.05	N
Copper (metal) as fume	7440-50-8	15.5(2)	0.1	NONE	NONE	NONE	0.2	N
as dust/mist	7440-50-8	(2)	1	NONE	NONE	NONE	1	N
Molybdenum Carbide	12069-89-5	5-15	10	NONE	NONE	NONE	10	N
Nickel	7440-02-0	3-15	1	NONE	NONE	NONE	.05	N (1)
Niobium Carbide	12069-94-2	0.1-15	10 Total Dust/5 Respirable	NONE	NONE	NONE	10 (dust)	N
Silver (metal) as dust/fume	7440-22-4	50(2)	.01	NONE	NONE	NONE	0.1	N
Tantalum Carbide	12070-06-3	0.1-50	5 (as Ta)	NONE	NONE	NONE	5 (as Ta)	N
Titanium Carbide	12070-08-5	0.1-70	10 Total Dust/5 Respirable	NONE	NONE	NONE	10 (dust)	N
Titanium Nitride	25583-20-4	5-25	10 Total Dust/5 Respirable	NONE	NONE	NONE	10 (dust)	N
Tungsten Carbide	12070-12-1	5-97	5	10	NONE	NONE	5 (as W)	N
Zinc	7440-66-6	15.5(2)	5.0 as Oxide fume	10 as Oxide fume	NONE	NONE	5.0 as Oxide fume	N

(1) I.A.R.C. & N.T.P. REPORT THAT ALL COMPOUNDS CONTAINING NICKEL OR CHROMIUM ARE POTENTIALLY CARCINOGENIC. (2) BRAZING FILLER METAL ON BRAZED TOOLS. FOR FURTHER SAFETY AND HEALTH INFORMATION REGARDING THE COMPOSITION OF THIS MATERIAL CONTACT SUNNEN PRODUCTS. This mixture contains toxic chemicals subject to the reporting requirements of Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

These mixture ingredients are cited on the following lists:

NAME	CAS	CITATIONS
Aluminum Oxide	1344-28-1	4,9,13,16,17
Cadmium	7440-43-9	1,2,3,4,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Chromium Carbide	UNKNOWN	2,4,8,11,12,15,16,17,21,22,23
Chromium (+III)	7440-47-3	1,2,3,4,8,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Cobalt	7440-48-4	2,4,8,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Molybdenum Carbide	12069-89-5	4,13,14,16,17,19,20,22,23
Nickel	7440-02-0	1,2,3,4,5,7,8,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Niobium Carbide	12069-94-2	2,4
Tantalum Carbide	12070-06-3	2,4,13,16,17
Titanium Carbide	12070-08-5	none known
Titanium Nitride	25583-20-4	none known
Tungsten Carbide	12070-12-1	4,13,16,17,22
Copper	7440-50-8	2,4,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23
Silver	7440-22-4	2,4,8,9,10,11,12,13,14,15,16,17,18,19,20,21,22
Zinc	7440-66-6	8,9,10,13,18,21,22

### SECTION 3 PHYSICAL & CHEMICAL CHARACTERISTICS

SPECIFIC GRAVITY (WATER=1).....	5.0 to 8.7	PERCENT VOLATILE BY WEIGHT.....	Not applicable
BOILING POINT.....	4946 F (2730 C)	VAPOR DENSITY (Air=1) .....	Not applicable
EVAPORATION RATE.....	Not applicable	REACTIVITY IN WATER.....	Not reactive
SOLUBILITY IN WATER.....	Practically insoluble	APPEARANCE AND ODOR.....	Gray Solid Object

### SECTION 4 SPECIAL PRECAUTIONS

**HANDLING AND STORAGE:** None for solid object. If dust is present, avoid dispersion of dust in air. Finely divided particles, dust, or fumes may be flammable or explosive. Keep away from sparks or ignition sources. Contents should be stored in a clean, dry, cool area. **OTHER PRECAUTIONS:** If exposed to dust or mist wash hands thoroughly after handling, before eating or smoking. Do not shake clothing, rags or other items to remove dust. Dust should be removed by washing or vacuuming. Periodic medical examinations are recommended for individuals regularly exposed to dust or mist.

### SECTION 5 CORROSION AND REACTIVITY DATA

**STABILITY:** Material in solid form is stable under normal conditions of transport and storage. **POLYMERIZATION:** Hazardous polymerization will not occur. **INCOMPATIBILITY (MATERIALS TO AVOID):** Fluorine, Ammonium Nitrite, Hydrazine, Ammonia, Performic Acid, Oxidants, and strong acids: May react violently. **NICKEL WITH:** Aluminum: May react explosively upon heating. Aluminum Trichloride and Ethylene: Explode with nickel catalyst upon heating. Hydrogen: Exothermic above 150 C. Titanium and Potassium Chlorate: May explode due to friction. Selenium, Sulfur, and Sulfur Compounds: Incandescent upon heating. **COBALT WITH:** Ammonium Nitrate + Metals or Bromine Pentafluoride: Reacts violently and sometimes explosively. Hydrazinium Nitrate: Decomposes explosively upon rapid heating. Nitryl Fluoride: Reacts Incandescently. Acetylene: Reacts incandescently. Molybdenum Carbide with: Oxidizing materials incompatible. **TUNGSTEN CARBIDE WITH:** Chlorine Trifluoride: Reacts with a flame. Fluorine: Incandesces. Nitrogen Dioxide: Burns with incandescence if heated to dull red. Nitrous Oxide: Burns with incandescence if heated to dull red. Iodine Pentafluoride: Violent reaction. Lead Oxide: Violent reaction. **CONDITIONS TO BE AVOIDED:** Heating over 250 F or contact with incompatible materials (see above). **HAZARDOUS DECOMPOSITION PRODUCTS:** Thermal decomposition may release toxic fumes. Precautions should be taken to avoid over exposure to freshly generated toxic molybdenum fumes which may be released under thermal decomposition for example when soldering, brazing or in the intense heat of a fire.

### SECTION 6 HEALTH, FIRST AID AND MEDICAL DATA

**PRIMARY ROUTE(S) OF ENTRY ARE:** INHALATION AND SKIN ABSORPTION. **ACUTE AND CHRONIC HEALTH EFFECTS AND EFFECTS OF OVEREXPOSURE - THE INFORMATION PRESENTED AND THE CONCLUSIONS DRAWN ARE FROM OTHER THAN DIRECT TEST DATA. ABBREVIATIONS USED IN THE FOLLOWING SECTION:** NAIF= NO APPLICABLE INFORMATION FOUND, SKIN= SKIN ABSORPTION, EYE= EYE CONTACT, INHAL= INHALATION, INGEST= INGESTION

**WARNING:** During normal use (use carbide bit to machine metal) carbide products do not present inhalation, ingestion, or other chemical hazards of any kind. However, operations such as grinding, cutting, burning and welding of carbide products may release dusts, fumes and vapors which may present health hazards if exposure limits are exceeded. Overexposure to this material in the form of metallurgical powder, dust or mist from grinding or sweeping is hazardous to health. May cause eye, skin, and mucous membrane irritation. May cause temporary or permanent respiratory (breathing) disease. Permanent respiratory (breathing) disease can lead to disability or death. Certain pulmonary (breathing) and skin conditions may be aggravated (made worse) by exposure.

**ALUMINUM OXIDE: ACUTE:** SKIN: NAIF. EYE: Dust may irritate eyes. **INHAL:** Nuisance particulate. **INGEST:** NAIF.

**CHRONIC:** SKIN: NAIF. EYE: NAIF. **INHAL:** NAIF. **INGEST:** NAIF.

CADMIUM: ACUTE: SKIN: Literature reports skin absorption appears negligible. EYE: NAIF. INHAL: Cadmium is relatively well absorbed by inhalation. Generally a latent period of a few hours after exposure before symptoms

develop. Slight irritation of the respiratory tract. May be followed over the next few hours by cough, pain in the chest, sweating, and chills which resemble the symptoms of nonspecific upper respiratory infection. Eight to twenty-four hours following acute exposure severe pulmonary irritation may develop, with pain in the chest, dyspnea, cough, and generalized weakness. May lead to emphysema and cor pulmonale. Damage to kidneys, prostate and blood. INGEST: Literature reports cadmium compounds are poorly absorbed from the intestinal tract. CHRONIC: SKIN: NAIF. EYE: NAIF. INHAL: May cause mild anemia, inflammation of the nose and throat, behavioral disorders (sleeplessness, loss of appetite, etc) and significant renal damage. Cadmium has exhibited teratogenic effects in rats, mice and hamsters. Effect in humans unknown. Possible human carcinogen. INGEST: NAIF.

CHROMIUM CARBIDE & CHROMIUM (III): ACUTE: SKIN: For some workers, chromium compounds act as allergens which cause dermatitis. EYE: May cause irritation and inflammation. INHAL: The dusts of chromium metal may cause coughing and wheezing, headache, difficult breathing, fever and loss of weight. Fibrosis and simple accumulation in the lungs. INGEST: Toxicity Oral Hamsters LD Lo=71 mg./kg. Chromium is an essential trace element. CHRONIC: SKIN: Contact allergies to chromium are very persistent. Cross sensitization can occur between cobalt and chromium. EYE: Lesions from chronic contact with dust. INHAL: There are reports of a nodular type of pulmonary disease with impairment of lung function. Some insoluble chromium (VI) compounds are suspected carcinogens. INGEST: Literature reports some chromium compounds are related to stomach and intestinal cancer.

COBALT: ACUTE SKIN: Cobalt is an allergen. Sensitization dermatitis may occur in persons who are previously exposed. A rash may develop, usually in the areas of folded skin of the elbow, neck, and face. Cross sensitization can occur between cobalt and nickel and cobalt and chromium. Some cobalt salts are photosensitizers. Cobalt insoluble salts can form soluble complexes with body fluid on eczematous skin and sensitizes the skin. Cobalt in ionized form is known to react with proteins. EYE: May cause irritation with redness, pain, and itching. May cause lesions similar to contact dermatitis. INHAL: May cause shortness of breath, asthma, difficult breathing during exertion, wheezing, interstitial pneumonitis (inflammation of lung), and/or lung densities. Loss of sense of smell. Headaches, weakness, irritability, and changes to the electrical activity of the brain. INGEST: May cause hypotension (low blood pressure), pain, vomiting, weight loss, inflammation of nerves, nerve deafness, and sensations of hotness or nausea. Severe exposure may cause pericardial effusion (heart problem), convulsions, or enlargement of the thyroid. Cobalt reacts with alcohol to produce severe cardiac effects. CHRONIC SKIN: May cause contact dermatitis. Sensitization dermatitis may follow inhalation or prolonged contact. EYE: May cause inflammation. See acute effects. INHAL: May cause pneumoconiosis (a progressive lung disease), sensitization of the respiratory tract, obstructed airways syndrome (difficult breathing), interstitial lung disease (a disease affecting the connecting tissue between cells), and density of the lung with symptoms as described in acute exposure. Produces gastric disturbances and blood in the urine. INGEST: May adversely affect the pancreas, thyroid gland (goiter), heart (enlarged), or bone marrow. Increased red blood cell count.

NICKEL: ACUTE: SKIN: May cause swelling and irritation. Skin sensitization may occur upon repeated exposure. "nickel itch", a type of dermatitis resulting from sensitization to nickel may begin with a sensation of burning and itching at the place of contact and usually occurs seven days before the characteristic skin eruptions appear. The primary skin eruption is erythematous (red spots) or follicular (cavity); it may be followed by superficial discrete ulcers which discharge and become crusted. The eruption may spread to areas related to the activity of the primary site. Pigmented or de-pigmented plaques may be formed. This sensitization reaction may be accompanied by fever, inflammation of the mouth (stomatitis), gums (gingivitis), eyes (conjunctivitis), sudden asthmatic attacks and eosinophilic pneumonitis (inflammation of lungs). Recovery usually occurs within 7 days after exposure. Eczema was more severe in individuals with simultaneous sensitivity to nickel and cobalt than to a single metal. Nickel is not absorbed through the unbroken skin in amounts sufficient to cause intoxication. Metal may be affected by cutting oils or coolants and converted to a form that can penetrate the skin. EYE: May cause inflammation and irritation. Shown to be toxic to rabbit eye. INHAL: May cause respiratory irritation, cough, pneumonitis (inflammation of lung), and fever. Pulmonary edema (fluid in lungs) may be a delayed symptom. Pulmonary sensitization reaction or anaphylaxis (allergic shock) may occur causing eosinophilic pneumonitis (inflammation of lungs), asthma and host rejection of nickel. INGEST: Literature reports ingested nickel is eliminated and not absorbed to any great extent. CHRONIC SKIN: May cause sensitization dermatitis. EYE: May cause

inflammation. INHAL: May cause mucous membrane irritation and pulmonary sensitization. Carcinogenic.  
INGEST: None reported in humans.

MOLYBDENUM CARBIDE: ACUTE: SKIN: None reported in humans. EYE: May cause irritation. INHAL: May cause respiratory irritation. INGEST: Systemic poisoning not known to occur. CHRONIC: SKIN: None reported in humans. EYE: May cause inflammation. INHAL: None reported in humans. INGEST: None reported in humans.

NIObIUM CARBIDE: ACUTE: SKIN: NAIF EYE: NAIF INHAL: Nuisance Particulate INGEST: NAIF CHRONIC: SKIN: NAIF EYE: NAIF INHAL: NAIF INGEST: NAIF

TANTALUM CARBIDE: ACUTE: SKIN: None reported in humans. EYE: May cause irritation. INHAL: NAIF INGEST: NAIF CHRONIC: SKIN: NAIF EYE: NAIF INHAL: NAIF INGEST: NAIF

TITANIUM CARBIDE: ACUTE: SKIN: None reported in humans. EYE: May cause irritation. INHAL: May be considered a nuisance dust and may result in dust accumulation in the lungs. INGEST: Systemic poisoning not known to occur. CHRONIC: SKIN: None reported in humans. EYE: May cause inflammation. INHAL: May cause fibrosis (scar tissue) or pneumoconiosis (a progressive lung disease). INGEST: None reported in humans.

TITANIUM NITRIDE: ACUTE: SKIN: None reported in humans. EYE: May cause irritation. INHAL: May be considered a nuisance dust and may result in dust accumulation in the lungs, however, no irritation or respiratory impairment has been reported. INGEST: Systemic poisoning not known to occur. CHRONIC: SKIN: None reported in humans. EYE: NAIF INHAL: May cause fibrosis (scar tissue) or pneumoconiosis (a progressive lung disease). INGEST: None reported in humans.

TUNGSTEN CARBIDE: ACUTE SKIN: May cause irritation with dermatitis, eczema, and itching. May also cause sensitization dermatitis if previously exposed. EYE: May cause irritation with redness, pain, and itching. INHAL: May cause coughing, dyspnea, soreness in the chest, weight loss, hemoptysis (spitting blood), bronchitis, and asthma. May also cause pulmonary fibrosis (scar tissue) and radiological changes may be noticed in the lung. INGEST: Systemic poisoning not known to occur. CHRONIC SKIN: May cause contact dermatitis. EYE: May cause inflammation. INHAL: May cause "hard metal lung" with symptoms as described in acute exposure. Previously exposed individuals may be at increased risk. INGEST: None reported in humans.

COPPER: ACUTE: SKIN: Changes causing hard or horny skin located on the hands and the soles of the feet has been reported. Copper salts may cause skin irritation (itching, redness and dermatitis). EYE: Copper salts may cause swelling, ulceration and cloudy cornea. INHAL: Melting, grinding, cutting of copper may produce fumes or dust exposure and breathing these fumes or dust may present health hazards. Fumes of copper may cause "Metal Fume Fever" with flu-like symptoms and skin and hair discoloration. Copper dust and fume may cause irritation of the upper respiratory tract, metallic taste in the mouth, and nausea. INGEST: Salts of copper act as irritants producing salivation, nausea, vomiting, stomach pain, bleeding stomach inflammation and diarrhea. CHRONIC: SKIN: NAIF. EYE: NAIF. INHAL: Ulceration with perforation of the nasal septum. INGEST: Individuals with Wilson's disease (hepatolenticular degeneration) can experience fatal intoxication.

SILVER: ACUTE: SKIN: Small particles of silver can implant in the skin and cause permanent discoloration. EYE: Silver particles can cause permanent discoloration of the eyes causing them to appear blue gray. INHAL: NAIF. INGEST: NAIF. CHRONIC: SKIN: NAIF. EYE: NAIF. INHAL/INGEST: Inhaling or ingesting silver can cause bluish discoloration of the skin and mucous membranes. May cause permanent coloration of the skin and eyes. Silver accumulates after it enters the body.

ZINC: ACUTE: SKIN: Zinc oxide may produce a dermatitis called "oxide pox" due primarily to clogging of the sweat glands. EYE: NAIF. INHAL: Can cause flu like symptoms beginning four to twelve hours after exposure. Causes sweet or metallic taste in the mouth, dryness and irritation of the throat. Fever and shaking chills then develop. Symptoms last 24 to 48 hours. INGEST: NAIF. CHRONIC SKIN: NAIF. EYE: NAIF. INHAL: NAIF. INGEST: NAIF.

#### EMERGENCY FIRST AID FOR DUST EXPOSURE

INHALATION: Remove to fresh air. If not breathing, begin mouth to mouth resuscitation. Keep affected person warm and at rest. Seek medical attention immediately. EYE CONTACT: Remove contact lenses (if wearing) and wash eyes with large amounts of water, occasionally lifting upper and lower lids, until no evidence of material remains (approximately 15-20 minutes). Get medical attention immediately. SKIN CONTACT: If irritation or rash occurs, remove contaminated clothing and shoes immediately. Wash affected area with soap or mild detergent and large

amounts of water until no evidence of material remains (approximately 15-20 minutes). Get medical attention.  
INGESTION: If swallowed and person is awake, give large amounts of water. After water has been

swallowed, induce vomiting. Do not attempt to make an unconscious person vomit. Seek medical attention immediately.

## **SECTION 7 HANDLING, STORAGE AND USE PROCEDURES**

**NORMAL STORAGE AND HANDLING:** Store away from heat and moisture. **NORMAL USE:** Practice good personal hygiene by washing hands several times each day. Launder clothing contaminated with dust or mist before reuse. Avoid wearing clothing soiled with dust. Avoid any inhalation of dust. Use personal protection equipment and precautions as specified in Section 8. **STEPS TO BE TAKEN IN CASE OF LEAKS OR SPILLS:** Solid object: None. Dust: Pick up with a high-efficiency particulate filter vacuum or wet clean up. Avoid spreading dust. Use appropriate respiratory protection. **WASTE DISPOSAL METHOD:** Used inserts are classified by the EPA as "scrap metal" and are not subject to regulation under 40 CFR parts 262-266 or part 270 or part 124 and are not subject to the notification requirements of Section 3010 of RCRA. Dispose of in accordance with applicable federal, state and local laws, regulations, rules, orders and ordinances. Ref. 40 CFR 261.6 (a)(3)(iv).

## **SECTION 8 PERSONAL PROTECTION INFORMATION**

**RESPIRATORY PROTECTION:** Not required when using bit to machine metal. Respiratory protection is required if grinding insert to sharpen or modify it, or any other operation performed upon the insert that generates dust or mist.

0.5 mg(Co)/cu m: Dust mask, except single-use respirator.

1.0 mg(Co)/cu m: Dust mask, except single-use and quarter-mask respirators. Fume or high-efficiency particulate respirator.

5.0 mg(Co)/cu m: High-efficiency particulate respirator with a full face piece. Supplied-air respirator with a full face piece, helmet or hood. Self-contained breathing apparatus with a full face piece.

20.0 mg(Co)/cu m: Powered air-purifying respirator with a high-efficiency filter with a full face piece. Type "C" supplied-air respirator with a full face piece operated in pressure-demand or other positive-pressure mode.

**VENTILATION LOCAL:** Normal ventilation when using bit to machine metal. **MECHANICAL:** Not required if using bit to machine metal. If any dust is generated provide local exhaust ventilation or general dilution ventilation to maintain exposure levels below TLV/TWA. **SKIN PROTECTION:** Not required when handling solid material. Protective gloves and clothing are recommended to prevent contact of dust with skin if grinding bit to sharpen or modify it. Note that some barrier creams have been shown to increase skin absorption of metallic compounds and also that many people are allergic to chemicals used in protective gloves. **EYE PROTECTION:** Safety glasses with side shields or goggles are recommended. Where there is any possibility that an employee's eyes may be exposed to this substance, the employer should provide an eye-wash fountain within the immediate work area for emergency use. **OTHER PROTECTION:** Apron if desired. Do not wear dust soiled clothing as it may cause skin irritation. **MEASURES TO BE TAKEN DURING REPAIR AND MAINTENANCE OF CONTAMINATED EQUIPMENT THAT HAS BEEN IN CONTACT WITH THIS MATERIAL:** Remove traces of material dust if soldering, welding, brazing, cutting or other process involving ignition sources by cleaning with a high-efficiency particulate filter vacuum or wet clean up. Avoid spreading dust. Use appropriate respiratory protection.

## **SECTION 9 FIRE AND EXPLOSION HAZARD DATA**

**FLASH POINT:** Solid object does not present a fire hazard. Dust created by grinding or otherwise abrading the carbide is expected to be a fire and explosive hazard when exposed to ignition source. **FLAMMABLE LIMITS:** Not established. **EXTINGUISHING MEDIA:** For dust or powder, smother with dry sand, dry dolomite, sodium chloride or soda ash. **SPECIAL FIRE FIGHTING PROCEDURES:** Firefighters must use self-contained breathing apparatus with a full face piece operated in pressure-demand or other positive-pressure mode. **UNUSUAL FIRE AND EXPLOSION HAZARDS:** Dust may explode under favorable conditions of particle size and ignition source.

## NOTICE

THIS MATERIAL SAFETY DATA SHEET ("MSDS") IS SUPPLIED PURSUANT TO THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION'S HAZARD COMMUNICATION RULE (THE "RULE"), 29 CFR 1910.1200. THIS MSDS IS BEING FURNISHED TO THE IMMEDIATE PURCHASER OF THE MATERIAL TO WHICH IT REFERS WITHOUT REPRESENTATION OR WARRANTY AS TO THE COMPLETENESS OR ACCURACY OF ANY INFORMATION OR RECOMMENDATIONS CONTAINED HEREIN.

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